Prepared for

The Boeing Company
Santa Susana Site
5800 Woolsey Canyon Road
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Santa Susana Field Laboratory

Site-Wide Stormwater Annual Report

2017/18 Reporting Year

Prepared by

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and

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Acronyms

BAF	Bioaccumulation Factor
BMP	Best Management Practice
CA	California
CASQA	California Stormwater Quality Association
CM	Culvert Modification
COC	Constituent of Concern
DMR	Discharge Monitoring Report
DNQ	Detected not Quantified
DOE	Department of Energy
DTSC	Department of Toxic Substances Control
ELV	Expendable Launch Vehicle
GETS	Groundwater Extraction and Treatment System
ISRA	Interim Source Removal Action
LARWQCB	Los Angeles Regional Water Quality Control Board
LOX	Liquid Oxygen Plant
mg	milligram
µg/L	micrograms per liter
NASA	National Aeronautics and Space Administration
ND	Northern Drainage
NPDES	National Pollutant Discharge Elimination System
OF009	Outfall 009
PL	Permit Limit
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Feasibility Investigation
RMMP	Restoration, Mitigation, and Monitoring Plan
SAP	Sampling and Analysis Plan
SSFL	Santa Susana Field Laboratory
SWPPP	Stormwater Pollution Prevention Plan
SWTS	Stormwater Treatment System
TCDD	Tetrachlorodibenzo-*p*-dioxin
TEQ	Toxic Equivalence
TSS	Total Suspended Solid

1 Introduction

The Santa Susana Field Laboratory (SSFL) occupies approximately 2,850 acres and is located at the top of Woolsey Canyon Road in the Simi Hills, Ventura County, California. The SSFL has the potential to discharge stormwater runoff impacted by constituents from the facility. As such, discharges from SSFL are currently regulated by the Los Angeles Regional Water Quality Control Board (LARWQCB) under *National Pollutant Discharge Elimination System (NPDES) Permit No. CA0001309 for the Boeing Company, SSFL, Canoga Park, CA, Order No. R4-2015-0033* ("2015 Permit") (LARWQCB, 2015). The 2015 Permit[1] became effective on April 1, 2015 and states the following:

> *"The Discharger has agreed to maintain the Surface Water Expert Panel. With input from the Surface Water Expert Panel, the Discharger shall submit annual reports that describe the previous year's monitoring results, evaluation of existing BMP performance, and submit a workplan that includes recommendations for modified and/or new storm water controls and monitoring that will address exceedances from any outfall addressed by this permit. The Discharger shall also support the Surface Water Expert Panel in organizing periodic public interaction events and encouraging public communication involvement. The first annual report shall be due within 6 months of the effective date of this permit [October 1, 2015]."*

The *Site-Wide Stormwater Work Plan and 2014/15 Annual Report* ("2015 Work Plan") (Santa Susana Stormwater Expert Panel and Geosyntec Consultants, 2015a) was intended to meet the aforementioned requirements. This Annual Report is intended to meet the commitments outlined in the 2015 Work Plan. This report focuses on the results and findings of the 2017/18 reporting year.

1.1 Background

The SSFL is jointly owned by the Boeing Company (Boeing) and the federal government. The National Aeronautics and Space Administration (NASA) administers the portion of the property owned by the federal government. As shown in Figure 1, the site is divided into four administrative areas (Areas I, II, III, and IV) with undeveloped land areas to both the north and south. Administrative Areas I and III are operated by Boeing, which owns the majority of Area I and all of Area III. A portion of Area I (40 acres) and all of Area II are owned by the federal government and are administered by NASA. The land within Area IV is owned by Boeing, was formerly operated by Boeing for the Department of Energy (DOE). DOE owns specific facilities located on approximately 90 acres of Area IV. Industrial operations at the SSFL have ceased; current activities at the site include environmental monitoring and sampling, demolition, and remediation planning. The site also provides exceptional wildlife habitat and undeveloped land (open space).

Stormwater discharges[2] from the SSFL are typically captured and treated upstream of or at the outfalls, up to a design storm size. An exception to this outfall-based treatment approach is at Outfalls 001 and 002 in the southern undeveloped land, where stormwater runoff consists of runoff from undeveloped

[1] Prior to April 1, 2015 this site was regulated since 2010 under the *National Pollutant Discharge Elimination System (NPDES) Permit No. CA0001309 for the Boeing Company, SSFL, Canoga Park, CA, Order No. R4-2010-0090* ("2010 Permit")

[2] Treated groundwater discharges are also covered in the 2015 Permit however these discharges are not addressed in this Work Plan.

areas with no or minimal history of industrial activity or known surface soil contamination, as well as treated stormwater from Outfalls 011 and 018, respectively. Runoff to Outfalls 001 and 002, downstream of Outfalls 011 and 018, is discharged without additional treatment. Another exception to this is at Outfalls 008 and 009, where the stormwater quality management strategy instead combines distributed source controls with natural treatment systems due to the challenge of treating stormwater at these canyon outfalls (i.e., outfall-based treatment would require construction of large dams with substantial environmental impact and potential risk to the public downstream). At Outfalls 008 and 009, Interim Source Removal Action (ISRA) and Best Management Practices (BMP) programs were implemented beginning in 2010 with oversight and participation of the LARWQCB to improve compliance with the 2010 Permit limits through the dual approach of remediation of surface soils that are above defined thresholds for NPDES constituents of concern, and through distributed control and/or treatment of stormwater runoff from prioritized subareas, respectively. The BMP Plan for the Outfall 008 and 009 Watersheds (MWH et al., 2010) ("2010 BMP Plan") was developed under the oversight of the Surface Water Expert Panel (referred to herein as the "Stormwater Expert Panel" or "Expert Panel"). The 2015 Work Plan replaced the 2010 BMP Plan, provides an overall strategy for improving NPDES compliance for stormwater discharges site-wide, and continues the important process of public outreach and engagement on stormwater issues.

The Stormwater Expert Panel - - consisting of Dr. Robert Pitt (University of Alabama), Dr. Robert Gearheart (Humboldt State University), Dr. Michael Stenstrom (University of California Los Angeles), Dr. Michael Josselyn (WRA Environmental Consultants), and Jonathan Jones (Wright Water Engineers) -- continues to oversee stormwater planning and design work at the SSFL, as well as provide input on monitoring, source removal activities and other NPDES Permit issues. The Stormwater Expert Panel also oversees scientific studies related to SSFL stormwater quality issues and BMP design, supported the stormwater Human Health Risk Assessment (HHRA), and interfaces with the public on SSFL stormwater activities and health risk communication. Their original mission, to improve stormwater at NPDES Outfalls 008 and 009, was expanded through the 2015 Work Plan to include all NPDES outfalls as required through the 2015 Permit. This year, the Expert Panel also reviewed the SSFL SWPPP, BMP Plan, and Spill Contingency Plan, providing comments on these plans to increase their effectiveness.

1.2 Site Overview

The outfalls regulated under the 2015 NPDES Permit are listed in Table 1 and depicted in Figure 1. The NPDES Permit states that 60% of the annual stormwater discharge from SSFL exits the property via two southerly discharge points (Outfalls 001 and 002) to Bell Creek, a tributary to the Los Angeles River. Upstream outfalls that contribute to the discharge at Outfalls 001 and 002 include Outfalls 011 and 018. Outfall 019 is permitted for the injection of treated groundwater, but not planned for the discharge of surface water. Outfall 020, while included in the NPDES Permit, is also not planned for the discharge of surface water. The Stormwater Expert Panel's scope does not include groundwater; a separate Groundwater Expert Panel is available to oversee Boeing related groundwater tasks, including addressing seeps and springs.

Stormwater from the northern areas of the site, toward Outfalls 003 through 007 and 010, is transferred to Silvernale Pond for treatment prior to discharge at Outfall 018. Higher flows, beyond the storage/transfer system capacity, discharge at Outfalls 003 through 007 and 010. At Outfalls 011 and 018, active treatment systems have been in place since 2012 for advanced treatment of stormwater

which is modulated using storage ponds. Because of the location, size and terrain of the Outfall 008 and 009 watersheds, flows from these areas are not captured and treated by the active treatment systems[3], and instead a distributed stormwater treatment and iterative (or adaptive management-based) approach is employed in both the Outfall 008 and 009 watersheds, as described in the 2010 BMP Plan. Thus, Outfall 009 naturally flows to Arroyo Simi and stormwater runoff from Happy Valley (Outfall 008) naturally flows via Dayton Canyon Creek to Chatsworth Creek. Chatsworth Creek flows south to Bell Creek southwest of the intersection of Shoup Avenue and Sherman Way. Bell Creek subsequently flows southeast to the Los Angeles River.

Table 1. NPDES Outfall Descriptions

Outfall*	Status/Discharge Description
001	Downstream of Outfall 011; discharge to Bell Creek
002	Downstream of Outfall 018; discharge to Bell Creek
003	Runoff transferred to Silvernale for treatment prior to discharge at Outfall 018
004	Runoff transferred to Silvernale for treatment prior to discharge at Outfall 018
005	Runoff transferred to Silvernale for treatment prior to discharge at Outfall 018
006	Runoff transferred to Silvernale for treatment prior to discharge at Outfall 018
007	Runoff transferred to Silvernale for treatment prior to discharge at Outfall 018
008	Stormwater from Happy Valley; discharge to Dayton Creek
009	Stormwater from Northern Drainage; discharge to Arroyo Simi
010	Runoff transferred to Silvernale for treatment prior to discharge at Outfall 018
011	Stormwater and perimeter pond (treated at SWTS); discharge to Outfall 001
018	Stormwater and R-2 pond (treated at SWTS); discharge to Outfall 002
019	Injection of treated groundwater (GET System); no surface discharge
020	Not planned for use

*Outfalls 012 through 017 were excluded from the 2015 Permit

[3] An exception to this is at the helipad, located in Area II in the Outfall 009 watershed, where some runoff is captured and piped to Silvernale Pond for treatment in the Outfall 018 active treatment system.

DRAINAGE TO MEIER CANYON

DRAINAGE TO ARROYO SIMI

AREA I (NASA)

AREA I

AREA II (NASA)

AREA III

AREA IV

OUTFALL 018 WATER TREATMENT SYSTEM

OUTFALL 011 WATER TREATMENT SYSTEM

Silvernale Pond

R-2B Pond

R-2A Pond

Coca Pond

Perimeter Pond

DRAINAGE TO DAYTON CANYON

UNDEVELOPED LAND

DRAINAGE TO BELL CANYON

DESCRIPTIONS OF DISCHARGE OUTFALL LOCATIONS

NPDES OUTFALL	DESCRIPTION	PRIMARY OVERSIGHT AGENCY
001	Stormwater, South Slope	RWQCB
002	Stormwater, South Slope	RWQCB
003	Stormwater, Radioactive Material Handling Facility	RWQCB
004	Stormwater, Sodium Reactor Experiment Area	RWQCB
005	Stormwater, Sodium Burn Pit 1	RWQCB
006	Stormwater, Sodium Burn Pit 2	RWQCB
007	Stormwater, Building 100	RWQCB
008	Stormwater, Happy Valley	RWQCB
009	Stormwater, WS-13 Drainage (Northern Drainage)	RWQCB
010	Stormwater, Building 203	RWQCB
011	Stormwater, Perimeter Pond (Treated at SWTS)	RWQCB
012	Stormwater, Alfa Test Stand (Removed from permit)	RWQCB
013	Stormwater, Bravo Test Stand (Removed from permit)	RWQCB
014	Stormwater, Advanced Propulsion Test Facility (Removed from permit)	RWQCB
015	STP-1 (Removed from permit)	--
016	STP-2 (Removed from permit)	--
017	STP-3 (Removed from permit)	--
018	Stormwater, R-2 Pond Spillway (Treated at SWTS)	RWQCB
019	Treated Groundwater (GET System)	RWQCB
020	Not planned for use	RWQCB

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. MAP COORDINATES IN STATE PLANE NAD 27, ZONE V.

LEGEND

- FORMER NPDES OUTFALL LOCATION
- NPDES OUTFALL LOCATION
- POSSIBLE FUTURE NPDES OUTFALL LOCATION
- GROUNDWATER EXTRACTION TREATMENT (GET) SYSTEM
- SSFL PROPERTY BOUNDARY
- ADMINISTRATIVE AREA BOUNDARY
- EXISTING BUILDING/STRUCTURE
- STORMWATER TREATMENT SYSTEM
- STORMWATER CONVEYANCE PIPELINE WITH FLOW DIRECTION
- DIRT ROAD
- 25' ELEVATION CONTOUR
- SURFACE WATER DIVIDE
- NATURAL DRAINAGE
- EFFLUENT PATHWAY
- SURFACE WATER POND

N

0 1,200 2,400

SCALE IN FEET

HALEY ALDRICH

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

SITE MAP WITH DRAINAGES, DRAINAGE AREAS, OUTFALL LOCATIONS, AND SURFACE WATER BODIES

OCTOBER 2016

FIGURE 1

GIS FILE PATH: G:\40458_SSFL\Global\GIS\MapProjects\2016-10\40458-091-001-SiteMap.mxd — USER: gkm — LAST SAVED: 10/19/2016 11:17:24 AM

1.3 Existing Stormwater Treatment

BMPs have been implemented throughout the site to treat stormwater prior to discharge. The major structural treatment BMPs (i.e., excluding site-wide erosion controls, unpaved road control measures, and demolition of buildings and paved areas) are summarized in the *ISRA Performance Monitoring and BMP Monitoring for the Outfalls 008 and 009 Watersheds, 2014/2015 Rainy Season* ("2015 Annual Report for Outfalls 008 and 009") (MWH *et al.*, 2015b), the 2015 BMP Plan (Haley & Aldrich, 2015), and subsequent Annual Reports, and include (see Figure 2 for photos of each) the following, by completion date:

- 2009: Outfall 009 Culvert Modifications (CMs), completed in 2009
- 2010: Outfall 008 ISRA Excavations
- 2011: Outfall 009 Helipad Berms and Pumps
- 2011: Outfall 011 Stormwater Conveyance and Treatment System (SWTS)
- 2011: Outfall 018 Stormwater Conveyance and Treatment System
- 2012: Outfall 009 B-1 Sedimentation Basin and Media Filter
- 2012: Outfall 009 Northern Drainage Restoration Measures
- 2012: Outfall 009 CM-9 Additional Improvements
- 2013: Outfall 009 Lower Parking Lot Sedimentation Basin and Biofilter
- 2013: Outfall 009 ISRA Excavations
- 2013: Outfall 009 ELV Treatment BMP
- 2013: Outfall 009 LOX Sandbag Berms and Slope Drains
- 2015: Outfall 009 B1436 Detention Bioswales
- 2017: Outfall 009 Wattles added around Poles along Roads
- 2017: Outfall 009 Upper Parking Lot Media Filter
- 2017: Outfall 009 Roadway Diversion to CM-3
- 2017: Outfall 009 Administration Area Inlet Filters
- 2017: Outfall 009 Enhanced Erosion Controls in the Former Shooting Range Area
- 2017: Outfall 009 Roadway Diversion to CM-1
- 2017: Outfall 009 CM-1 Reconstruction

In addition, there has been extensive use of erosion and sediment control BMPs, revegetation, stabilization of repaved road, and other activities to stabilize soil. Impervious surfaces, such as buildings and parking lots, have also been removed across the site, restoring those sites to more natural conditions.

Stormwater from Outfall 011 is pumped to a storage pond and, when volumes exceed the pond storage capacity, is treated using an advanced treatment system. The treated stormwater then flows to Outfall 001. All stormwater (up to a certain size design storm event that varies by outfall based on site-specific pumping and storage capacities) from Outfalls 003, 004, 005, 006, 007, 009[4], 010 and 018 is pumped to

[4] Stormwater runoff from a small area within the Outfall 009 watershed (helipad area) is pumped to the storage pond for treatment prior to being discharged from Outfall 018, while stormwater runoff from the remaining, vast majority of the watershed flows to Outfall 009.

another storage pond and treated using an advanced treatment system. This treated stormwater is conveyed to the downstream drainage, flowing toward Outfall 002.

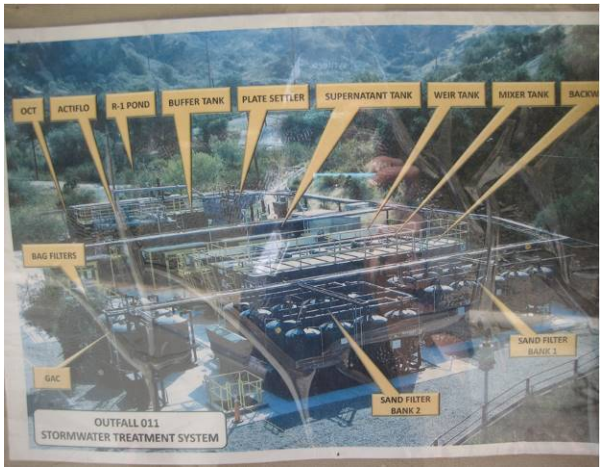
The various BMPs in the Outfall 009 watershed (e.g., widespread revegetation, erosion and sediment controls, natural treatment BMPs, etc.) have also been effective at reducing the concentrations of the constituents of concern (COCs) in the watershed's stormwater. In general, the statistical evaluation of influent versus effluent BMP performance sample results included in this Annual Report indicated that significant COC removals are occurring in these subareas, particularly for BMP influent samples that exceed Permit Limits.

In part due to the ongoing historic drought, limited runoff has occurred at Outfall 008 since the completion of ISRA activities (the identification, evaluation, remediation or stabilization, and restoration of areas of contaminated soil containing COCs that may have contributed to exceedances of NPDES Permit limits in stormwater) and installation of the new erosion and sediment controls, along with intensive revegetation and unpaved road stabilization, in 2012. During this post-2012 period, 4 samples were collected (with each analyzed for approximately 160 parameters), and only three results were at concentrations above the 2015 Permit Limits. This outcome reflects positive performance of the ISRA soil removal activities, revegetation/restoration, and erosion controls targeting sediment-bound COCs.

2009: Culvert Modifications

2010: Outfall 008 ISRA Excavations

2011: Helipad Berms and Pumps



2011: Outfall 011 SWTS

2011: Outfall 018 SWTS

2012: B-1 Sedimentation Basin and Media Filter

2012: Northern Drainage Restoration Measures

2012: CM-9 Additional Improvements (Perforated Pipe and Rip Rap Berm)

2013: Lower Parking Lot Sedimentation Basin and Biofilter

2013: Outfall 009 ISRA Excavations

2013: ELV Treatment BMP

2013: LOX Sandbag Berms and Slope Drains

2015: B1436 Detention Bioswales

2017: Wattles around Poles along Roads

2017: Upper Parking Lot Media Filter

2017: Roadway Diversion to CM-3

2017: Administration Area Inlet Filters (Filter Basket)

2017: Administration Area Inlet Filters (Weighted Wattle)

2017: Enhanced Erosion Controls in Former Shooting Range Area

2017: Roadway Diversion to CM-1

2018: CM-1 Reconstruction

Figure 2. Photos of Example Structural BMPs and Year of Construction

1.4 History of Compliance

An overview of past SSFL stormwater permits, Expert Panel involvement, and Permit limit and benchmark exceedances at the regulated outfalls over the past 20 years is provided in Figure 3. The number of Permit limit and benchmark exceedances that occur each year are a function of permit changes, annual rainfall, treatment BMPs and stormwater dicharge avoidance strategies implemented, and natural variability of stormwater quality. Notable milestones shown on Figure 3 include:

- **1998 NPDES Permit:** NPDES Permit No. CA0001309 issued to regulate wastewater and stormwater discharged from SSFL.
- **2004 NPDES Permit:** The 2004 Permit included new CTR-based effluent limits and added 11 new compliance monitoring locations. As a result for the increased regulation, the number of benchmark and Permit limit exceedances increased.
- **2006 NPDES Permit:** The 2004 Permit was revised to also incldue the waste load allocations (WLAs) from the applicable TMDLs for the downstream waterbodies.
- **2007 Cease and Desist Order (CDO):** Through the CDO, the RWQCB required "the assembly of a panel to review site conditions, modeled flow, contaminants of concern, and evaluate the BMPs capable of providing treatment to meet the final effluent limits." The CDO also required BMP planning, performance evaluation, and reporting requirements.
- **2010 NPDES Permit:** No major changes to Permit. The Expert Panel continued to make data-informed BMP recommendations in the Outfall 008 and 009 watersheds, which were implemented at SSFL (see Section 1.3).
- In 2011, following the construction of the Outfall 018 treatment system, stormwater from Outfalls 003 through 007 and 010 was retained in storage tanks for transfer to the treatment system, reducing the number of discharges at these outfalls.
- **2015 NPDES Permit:** Permit expanded the Expert Panel's charge to all regulated SSFL outfalls. In response, the Panel reviews Permit limit and benchmark exceedances for all outfalls and makes data-driven BMP recommendations on a site-wide basis. In the 2015-2018 period, the number of Permit limit and benchmark exceedances has continued to decine for comparable rainfall years.

1.5 Report Organization

This report is organized as follows:

- Section 2: Monitoring Activities
- Section 3: BMP Activities
- Section 4: Watershed-Specific Assessments
- Section 5: Recommendations
- Section 6: Milestones/Schedule
- Section 7: References

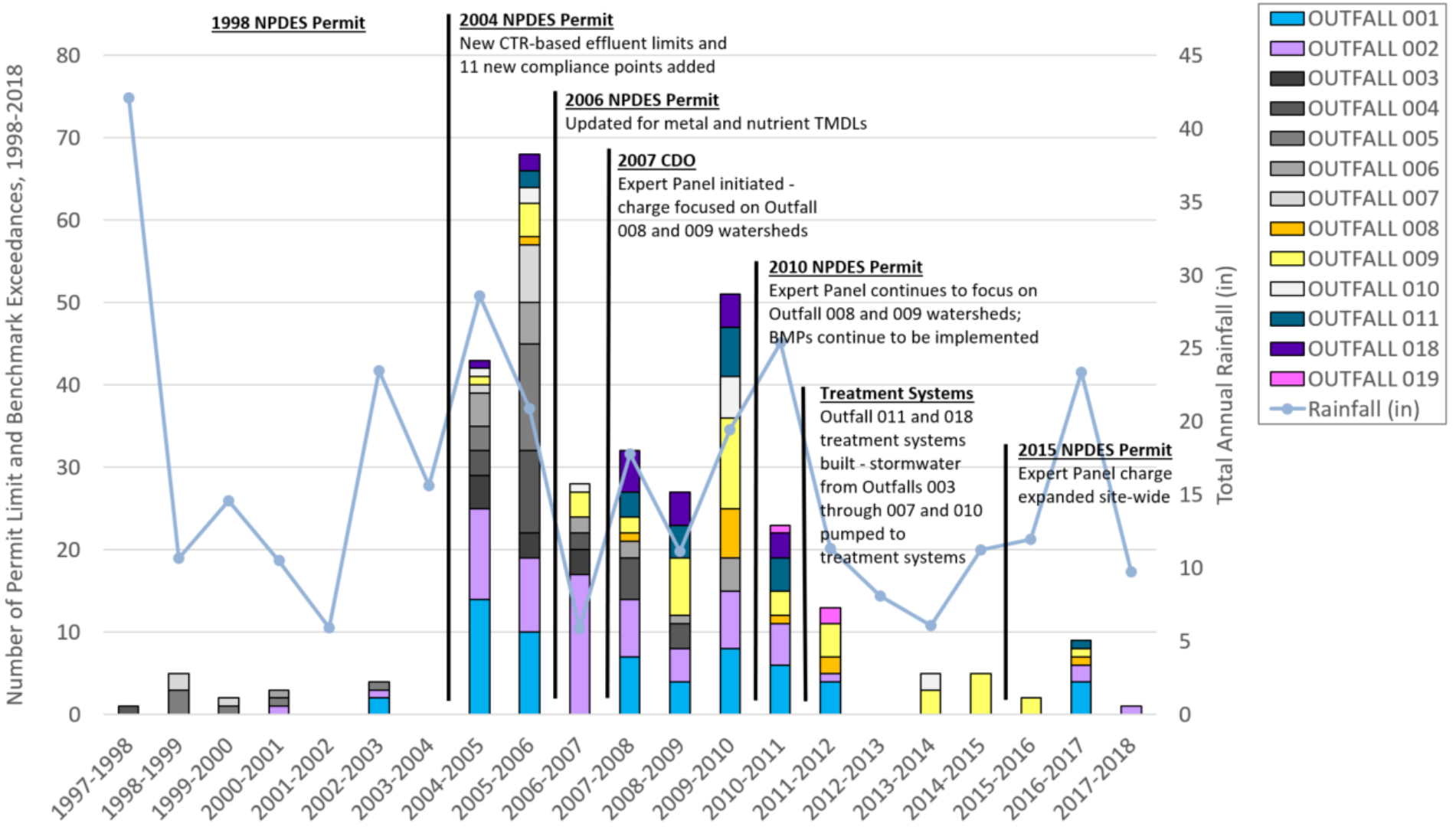


Figure 3. Summary of SSFL Permits, Expert Panel Involvement, and Water Quality, 1998-2018

2 Monitoring Activities

This section describes the hydrologic characteristics of the past reporting year, as well as a summary of the results of stormwater samples collected at NPDES compliance outfalls (in accordance with the 2015 NPDES Permit), BMP monitoring in watersheds 008 and 009 (in accordance with the 2017/18 Sampling and Analysis Plan [Stantec, 2016]), as well as a summary of monitoring activities conducted as part of the Northern Drainage assessment and the non-industrial sources special study (Santa Susana Stormwater Expert Panel and Geosyntec Consultants, 2015b).

2.1 2017/18 Rainfall

The long-term average annual rainfall at SSFL from 1959 to 2018 is 16.8 inches[5], primarily occurring as winter storms from October through March. Cyclical periods of above average and below average annual rainfall amounts are common. Little rainfall occurs during the April through September dry season. 9.8 inches of rainfall were measured in the 2017/18 reporting year (the reporting year is defined as June 1 – May 31). This past season's rainfall was considerably lower than average and is equivalent to the 19th percentile rain year for the 1959-2018 period of record. Four rain events (where a "rain event" is defined in the Permit as greater than 0.1 inches of rainfall in a 24-hour period and preceded by at least 72 hours of dry weather) occurred in the 2017/18 reporting year, with three of these storms producing observable flow at one or more BMP monitoring sites. For historical context, Table 2 summarizes the rainfall over the past nine reporting years, since submittal of the Stormwater Expert Panel Work Plan in 2010. Only three of these nine years have had above average rainfall.

Table 2. Historical Rainfall at SSFL, since 2010 Stormwater Expert Panel Work Plan

Reporting Year	Annual Rainfall	Number of Rain Events
2017/18	9.8	4
2016/17	23.4	14
2015/16	12.0	13
2014/15	11.2	9
2013/14	6.1	5
2012/13	8.1	9
2011/12	11.3	10
2010/11	23.4	14
2009/10	19.4	11

Table 3 summarizes the 2017/18 individual rainfall event characteristics, as well as the number of NPDES outfall samples, and watershed 009 BMP subarea monitoring samples. A total of 36 watershed BMP

[5] Data from the Simi Hills – Rocketdyne Lab gauge (Ventura County Watershed Protection District site 249) was used to determine annual rainfall from 1958/59 through 2000/01. However, rainfall data are not available at this gauge from 1977/78 through 1984/85. Data from the Area 4 gauge (which was moved to Area 1 on January 1, 2013) were used to determine annual rainfall from 2001/02 through 2017/18. This results in a period of record of 52 years.

samples (including BMP performance, potential BMP subarea[6], and background) were collected in the 2017/18 reporting year.

Figure 4 illustrates the cumulative rainfall and sample dates. The 2015/16 cumulative rainfall curve is presented as a comparison of the most recent near-average rainfall year, showing a more evenly distributed rainfall event distribution as compared to this 2017/18 season, in which all four events occurred post-December.

Table 3. 2017/18 Reporting Year and Monitoring Event Summary

Rain Event	Total Rainfall[1] (in)	24-hr Return Interval (years)	Average Rainfall Intensity[1] (in/hr)	Maximum 1-Hour Rainfall Intensity[1] (in/hr)	Number of NPDES Outfall Samples (outfalls not listed did not discharge)		Number of BMP Subarea Monitoring Samples
					002	009	
1/8/18-1/10/18	2.79	<1	0.06	0.37	0	0	11
2/26/18-3/3/18	1.66	<1	0.02	0.15	0	0	10
3/10/18-3/17/18	1.93	<1	0.01	0.30	0	0	0
3/20/18-3/23/18	3.03	<1	0.05	0.45	1	1	15
Non-Rain Event Total[2]	0.34	--	--	--	--	--	--
Total	**9.75**	**--**	**--**	**--**	**1**	**1**	**36**

[1] Total rainfall, average rainfall intensity, and maximum 1-hour rainfall intensity were calculated based on rainfall recorded at a LARWQCB-approved weather station within Area I.

[2] On the following 12 days, rainfall was measured but was not considered a rain event per the NPDES Permit definition: July 10, 2017 (0.01"), September 4, 2017 (0.10"), September 25, 2017 (0.01"), November 2, 2017 (0.04"), November 5, 2017 (0.01"), November 27, 2017 (0.01"), February 14, 2018 (0.06"), April 19, 2018 (0.02"), May 1, 2018 (0.02"), May 12, 2018 (0.03"), May 24, 2018 (0.01"), and May 30, 2018 (0.02").

[6] "Potential BMP subarea monitoring locations" are defined here as drainage areas with an outlet location for stormwater runoff sampling, and including land uses that include ISRA, RCRA Facility Investigation (RFI), and/or developed areas (i.e., subareas containing buildings, asphalt parking lots, roads, etc.) so that impacted runoff quality might be expected and/or treatment BMPs might be necessary, pending an evaluation of the monitoring results.

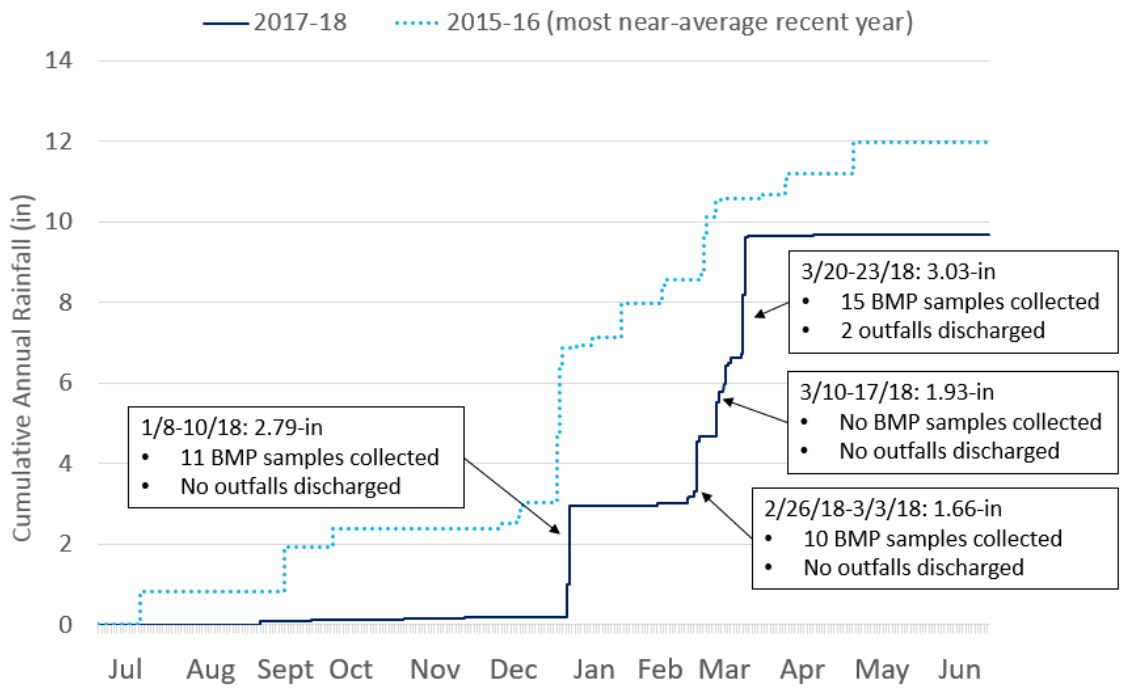


Figure 4. Annual Cumulative Rainfall and Samples Collected, 2017-18

The two largest events by total rainfall occurred on January 8-10, 2018 (2.79-in) and March 20-23, 2018 (3.03-in), with 6-hour return intervals of less than 1-year, and just above 1-year, for each event respectively (Figure 5 and Table 4). Both events had similar average and maximum rainfall intensities, with the latter storm (and larger event) resulting in the only two discharges all season, at Outfalls 002 and 009.

Table 4. NOAA Point Precipitation Frequency Estimates for Event Intensity at SSFL, 1-hour duration

Average Recurrence Interval (years)	1	2	5	10	25	50
Precipitation Intensity (in/hr)	0.51	0.67	0.87	1.0	1.2	1.4

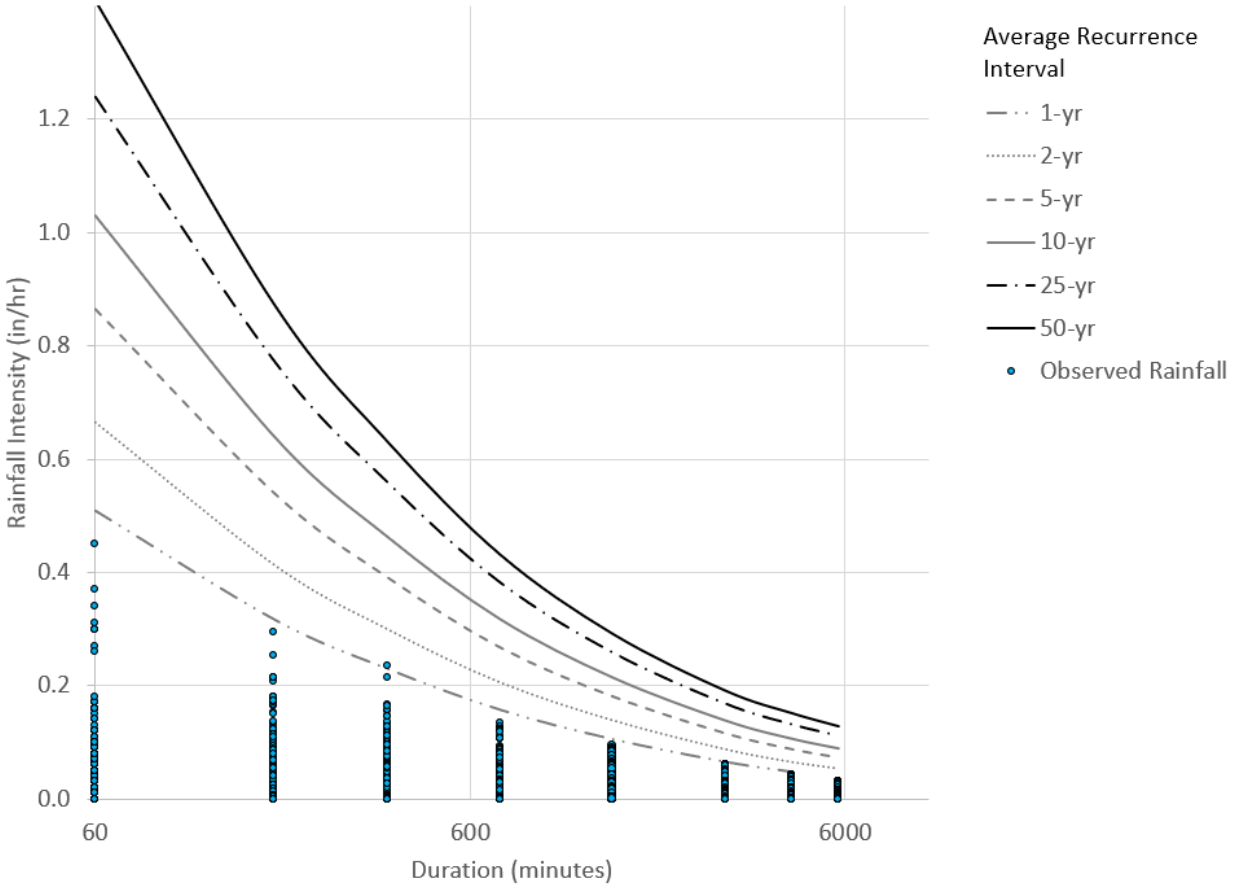


Figure 5. Observed Precipitation Intensities and Durations for 2017/18 Reporting Year, Area I Gauge, with NOAA Point Precipitation Frequency Estimates

2.2 2017/18 Stormwater Sampling

During the 2017/18 rainy season, two outfalls discharged, and 36 BMP performance or BMP subarea samples were collected. The results from these samples are discussed in the sections below.

2.2.1 NPDES Outfalls

SSFL outfall discharges are monitored for compliance with the 2015 NPDES Permit. This past reporting year, two total discharges were reported between Outfalls 002 and 009, as shown in Table 5, both of which occurred during the largest storm event of the season (event with both highest total event rainfall and highest hourly intensity). Of the two discharges and across the suite of parameters sampled, one benchmark exceedance was measured at Outfall 002 for iron. This single exceedance is discussed following Table 5. No discharge (and thus no opportunities for Permit limit or benchmark exceedances) occurred at Outfalls 001, 003, 004, 005, 006, 007, 008, 010, 011, 018, 019, or 020.

Table 5. NPDES Outfalls – Reported 2017/18 Stormwater Discharges and Exceedances

Outfall	Dates of Reported Discharges	Number of Reported Exceedances	Reported Exceedances
002	3/22/18-3/23/18	1	• Iron = 2.1 mg/L (Benchmark = 0.3 mg/L)
009	3/21/18-3/22/18	0	N/A
Total	**2**	**1 Benchmark**	**N/A**

2.2.1.1 Outfall 002

One benchmark exceedance was measured at Outfall 002 during the 3/20-23/18 event. The exceeding result was for total iron, with a result of 2.1 mg/L, which was above the benchmark of 0.3 mg/L. The dissolved iron result was 0.14 mg/L, which was below the benchmark. Outfall 018, which flows into the Outfall 002 watershed when the pond capacity is exceeded, did not discharge during this event. The capacity of the Silvernale Pond was not exceeded, only reaching 61% (8'6" depth reading) at the end of the event (Figure 6). Therefore, the discharge at Outfall 002 resulted from surface runoff within the Outfall 002 watershed, downstream of Outfall 018.

Figure 6. Silvernale Pond before the event on 3/19/2018 (left) and after the event on 3/26/2018 (right)

The exceedance value for iron was 2.1 mg/L, which was above the benchmark of 0.3 mg/L. The basis for this benchmark is the secondary maximum contaminant level (or "SMCL") for drinking water. SMCLs are established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations such as taste, color, and odor. However, constituents with SMCLs are not considered to present a risk to human health at that level (USEPA, 2018). Additionally, the California Toxics Rule, which is intended to be protective of both human health and that of organisms in freshwater, has not established a criterion for iron. The USEPA does recommend a freshwater chronic criterion for iron of 1.0 mg/L, however the dissolved (and bioavailable portion) iron concentration of 0.14 mg/L met this criterion, and the toxicity result met the Permit limit. Therefore, iron in stormwater is similarly not considered to present a risk to aquatic life.

A discussion of the iron exceedance is as follows:

- **3/23/2018:** Iron is one of the most abundant elements in the earth's crust, typically comprising several percent by mass in topsoil. As a result, stormwater runoff containing small quantities of suspended soil can exceed low Permit limits or benchmarks for iron. To evaluate whether the Outfall 002 iron benchmark exceedance was due to natural background soils, two background datasets were compared and a site-specific analysis was performed:
    - *Background Concentrations of Trace and Major Elements in California Soils (*Kearney Foundation, 1996): California iron concentrations in natural soils range from approximately 10,000 to 87,000 mg/kg (1 to 8.7%). For a TSS concentration of 14 mg/L (concentration measured for this exceeding sample), between 0.14 and 1.2 mg/L of iron would be an expected result attributable to the background soils. The exceeding result was 2.1 mg/L. Therefore, based on these estimates, it is plausible that this exceeding concentration measured at the outfall could be explained at least partially by natural background soils.
    - *Report 500: Assessment of Water Quality Concentrations and Loads from Natural Landscapes* (SCCWRP, 2007): The runoff from two to three storms at each of 30 sites across Southern California (Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego Counties) were monitored during two wet seasons. A range of flow-weighted mean concentrations were calculated for both developed sites (dark grey shading in Figure 7) and natural sites, which were further split into sites underlain by either igneous rock (light grey shading in Figure 7) or sedimentary rock (white shading in Figure 7). Comparing the range of results of the natural sites underlain by sedimentary rock (similar to SSFL), the 2.1 mg/L result (or 2,100 ug/L) is within the range of expected background concentrations for similar undeveloped watersheds in the Southern California region.

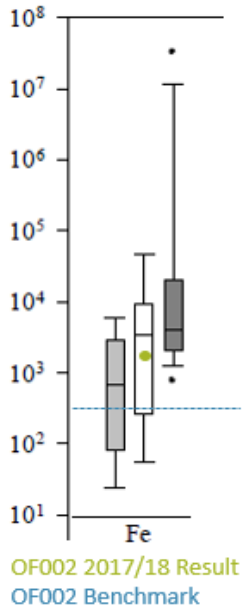


Figure 7. Iron Concentrations in Stormwater (µg/L) (SCCWRP, 2007)

- *Comparison of Iron Concentration Observations ta SSFL and Potential Iron Sources* (Pitt, R., 2018): The SSFL stormwater quality database contains approximately 250 iron datapoints collected between 2008 and 2018, which were separated into outfall samples (specifically Outfalls 001, 002, 004, 006, 008, 009, 001, and 018), background samples in the Outfall 009 watershed, influent samples to site stormwater controls in the Outfall 009 watershed, and other samples being evaluated for potential stormwater controls in the Outfall 009 watershed. Particulate strengths[7] were found to be similar across data groups, with no statistically significant differences for the number of samples available, suggesting similar sources of iron across SSFL. Furthermore, the measured iron runoff concentrations were found to be below values referenced for wash-off of steel materials, and therefore were not likely significantly enhanced by onsite materials or equipment.

  Included as Appendix E to this report, the analysis presents a comprehensive weight-of-evidence that the SSFL historic outfall iron observations, including the exceedance at Outfall 002, are most likely associated with natural background soils. The report is also further discussed in Section 4.4. The report includes recommendations to further assess onsite sources of iron, if necessary.

In summary, the weight of evidence above demonstrates that the iron exceedance at Outfall 002 is most likely due to natural background soils.

2.2.1.2 Summary

In summary, this past reporting year experienced four rainfall events, each of which had relatively low rainfall depths and intensities. None of the storms exceeded the design storm for the treatment controls in the Outfall 009 watershed (including the Northern Drainage mitigation measures) nor were the Outfall 018 or 011 pond capacities exceeded. Looking at hydrologically similar years, this past season experienced fewer discharges and fewer exceedances than in past years (Figure 8). It is important to note that within a single discharge sample many parameters are analyzed. For example, in 2017/18, Outfall 002 discharged one time, that single sample was analyzed for 49 constituents that have benchmarks, and one constituent recorded an exceedance. This means that Outfall 002 was compliant with the benchmarks for over 98% of discharge/constituent combinations in 2017/18.

This improvement in compliance can be attributed to the numerous control measures that have been implemented across SSFL, including demolition of buildings and paved areas, restoration measures, natural treatment BMPs and advanced treatment systems, in-channel measures, extensive erosion controls, and stormwater consolidation through pumping and storage (in tanks and ponds). These controls, including activities in 2017/18, are discussed further in Section 3 of this report.

[7] Particulate strength is a means to normalize stormwater pollutant concentrations by TSS.

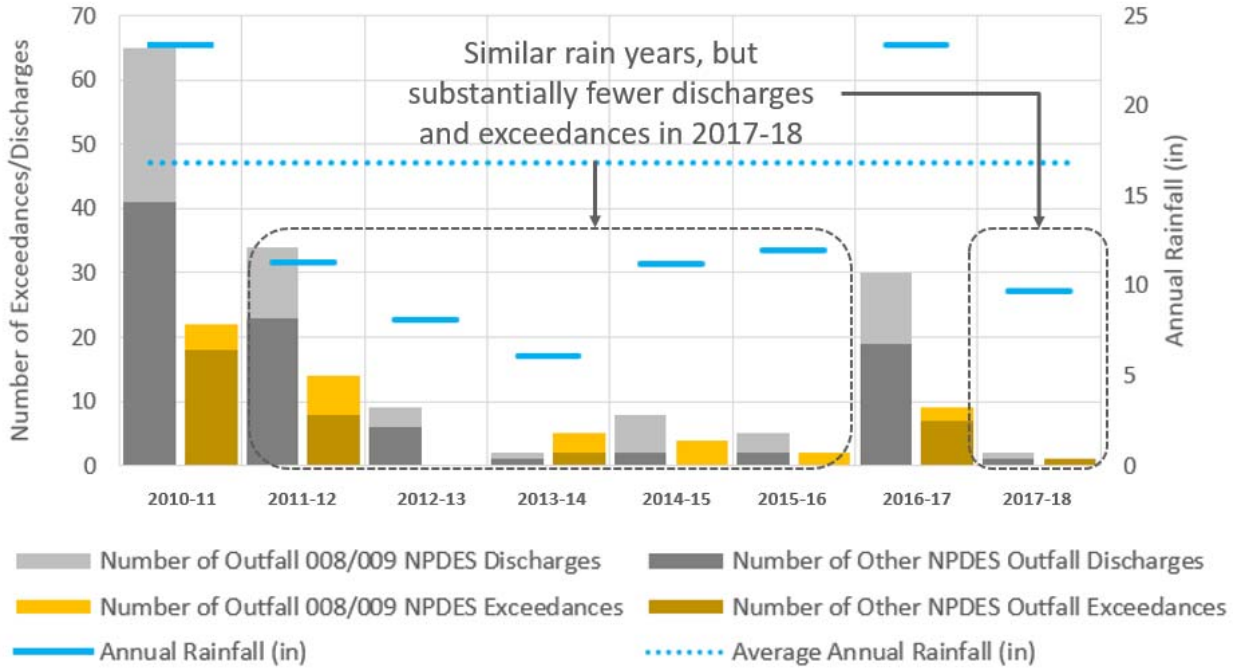


Figure 8. Summary of NPDES Outfall Discharges and "Exceedances" (of both Permit Limits and Benchmarks), 2010/11 to 2017/18

2.2.2 BMP Performance Monitoring

BMP monitoring in watersheds 001, 008, and 009 was conducted throughout the 2017/18 reporting year as outlined in the *2017/18 Rainy Season Sampling and Analysis Plan (SAP) Updates, Best Management Practice (BMP) Monitoring Program* ("2017/18 SAP") (Appendix A to this report) (HAI, 2017). This SAP is updated on an annual basis, and was updated for the 2018/19 reporting year, as later discussed in Section 5.2.1.

This past reporting year, stormwater samples at BMP subarea monitoring locations were collected in the Outfall 001 and 009 watersheds only, as subarea sampling in the Outfall 008 watershed was temporarily discontinued per the 2017/18 SAP until site activities resume. Sampling at the BMP performance and potential BMP subareas was also temporarily reduced to two samples per year until site activities resume. Background sites were planned to be sampled every storm to continue to increase the background dataset size. Table 6 summarizes the number of samples collected at each BMP monitoring location in the Outfall 001 and 009 watershed subareas, as well as the number of lead and dioxin (TCDD TEQ [excluding 'Detected not Quantified {"no DNQ"}]) results greater than the Outfall 009 Permit limits or Outfall 001 benchmarks, for reference only as historical COCs, as the Permit limits and benchmarks only apply to the outfall samples. A total of 36 samples were collected, with 14% (5 of 36) and 58% (21 of 36) of these samples having concentrations greater than the NPDES outfall Permit limits or benchmarks for lead and dioxins, respectively. Focusing on the 9 fully treated (BMP effluent) samples only, 0% (0 of 9) and 33% (3 of 9) of these samples measured concentrations greater than the NPDES Permit limits for lead and dioxins, respectively. It is notable that despite the relatively high percent of subarea results greater than the Permit Limit, there were no exceedances reported at Outfall 009, suggesting that the BMPs were successful at reducing these dioxin levels such that exceedances at the

009 discharge point were eliminated in this period. Additionally, there were four results for copper and 29 for field pH that were measured at concentrations and levels greater than the outfall Permit Limits. These data parameters are further analyzed and discussed in Section 4. Stormwater BMP monitoring data, specifically laboratory reports, are provided as Appendix B to this report.

Table 6. BMP Stormwater Monitoring Results, 2017/18 Reporting Year

Site	Type	Site Description	Number of Samples	Results Greater than OF009 Permit Limit or OF001 benchmarks, per monitoring location watershed (reference only, as limits apply to permitted outfall locations only)	
				Lead (5.2 mg/L)	TCDD TEQ (No DNQ) (2.8e-8 ug/L)
A1BMP0002-A	Influent	CM-9 upstream toward A1LF (post-A1LF asphalt removal), before treatment	1	0	0
A1BMP0003	Effluent	CM-9 downstream-underdrain outlet (post-perforated pipe and upper basin installed)	1	0	0
A2BMP0006	Background	Background - CM-1 upstream east tributary, before treatment	1	0	1
A2BMP0007	Effluent	CM-1 effluent (post-filter fabric over weir boards)	1	0	1
A2BMP0008	Potential BMP Subarea	Well 13 Road Runoff, north side	0	NA	NA
A2BMP0009	Potential BMP Subarea	Well 13 Road Runoff, east of OF0009 autosamplers	1	0	0
A2BMP0011	Potential BMP Subarea	Well 13 and Area 2 Road Runoff	1	0	0
APBMP0001-A	Potential BMP Subarea	Area II road runoff, post-ELV stormwater improvements	0	NA	NA
B1BMP0009	Influent	Upper lot media filter – road culvert influent	2	0	2
B1BMP0010	Influent	Upper lot media filter – parking lot influent	2	0	2
B1BMP0011	Effluent	Upper lot media filter – BMP effluent	2	0	1
CABMP001	Potential BMP Subarea	Hydrogen gas storage tank – downgradient driveway	1	1	1
CABMP0002	Potential BMP Subarea	Hydrogen gas facility buildings – downgradient driveway	1	1	1
CABMP0003	Potential BMP Subarea	Hydrogen gas facility buildings – road runoff	1	1	1
EVBMP0001-A	Potential BMP Subarea	ELV culvert inlet (helipad road and ELV ditch, composite)	0	NA	NA
EVBMP0002-B	Potential BMP Subarea	Helipad (post-sandbag berms raised, post-drainage holes in asphalt)	1	0	1
EVBMP0003-A	Influent	CM-1 upstream west, post-ELV improvements, before treatment	1	0	1

Site	Type	Site Description		Number of Samples	Results Greater than OF009 Permit Limit or OF001 benchmarks, per monitoring location watershed (reference only, as limits apply to permitted outfall locations only)	
					Lead (5.2 mg/L)	TCDD TEQ (No DNQ) (2.8e-8 ug/L)
EVBMP0007	Influent	Influent to ELV sedimentation, before treatment		1	0	0
EVBMP0008	Effluent	Effluent from ELV treatment BMP		1	0	0
EVBMP0009	Intermediate	Influent to ELV media filter, before treatment		1	0	0
EVBMP0010	Potential BMP Subarea	Area 2 Road Runoff, storm drain inlet on north side of road		0	NA	NA
ILBMP0001	Potential BMP Subarea	Lower parking lot 24" storm drain bypass		2	1	2
ILBMP0002	Influent	Road runoff to CM-9, before treatment		2	1	2
ILBMP0004	Influent	Upstream 1 (B1436 Southern Detention Bioswale influent)		2	0	2
ILBMP0005	Effluent	Downstream (B1436 Southern Detention Bioswale effluent)		2	0	0
ILBMP0008	Influent	Upstream 2 (B1436 Southern Detention Bioswale influent)		2	0	1
LPBMP0002	Influent	Lower parking lot influent to cistern, before treatment		2	0	1
LPBMP0003	Intermediate	Lower parking lot sediment basin outlet, before treatment		2	0	0
LPBMP0004	Effluent	Lower parking lot biofilter outlet		2	0	1
LXBMP0010	Influent	CM-3, road runoff diversion		0	NA	NA
LXBMP0011	Influent	CM-3, natural drainage		0	NA	NA
LXBMP0012	Effluent	CM-3, effluent		0	NA	NA
		SUBTOTAL BY SITE TYPE	BMP Influent	15	1	11
			BMP Intermediate	3	0	0
			BMP Effluent	9	0	3
			Potential BMP Subarea	8	4	6
			Background	1	0	1
			TOTAL	**36**	**5**	**21**

2.3 Northern Drainage Assessment

As identified in the *Northern Drainage Restoration, Mitigation, and Monitoring Plan* (RMMP) (Haley & Aldrich, 2011), recurring site investigations were performed annually along the Northern Drainage for a duration of five years (2011/12 to 2016/17).

Although the RMMP expired last year, one voluntary annual stream walk and inspection was conducted this year in May of 2018. A summary of recommended stabilization measures and maintenance activities was prepared by Geosyntec and reviewed by the Stormwater Expert Panel for Boeing.

2.4 Non-Industrial Sources Special Study

To address periodic lead and dioxin exceedances at Outfall 009, despite the implementation of numerous BMPs in the upper watershed, the 2015 Work Plan posed the following questions as the basis for a new non-industrial sources special study:

1. Where (spatially) within watershed 009 are dioxins and lead in stormwater predominantly coming from; and
2. What are the predominant pollutant sources to the paved subareas -- e.g., pavement material itself (weathered or newly resurfaced), vehicles, treated wood poles, historic shooting range, and/or atmospheric deposition?

The Stormwater Expert Panel and Geosyntec developed the *Special Monitoring Studies for the 009 Watershed* ("Special Study Work Plan") (Santa Susana Stormwater Expert Panel and Geosyntec Consultants, 2015b), which proposed approaches to collect data to further investigate the causes and sources of dioxins and lead in stormwater at Outfall 009. The Expert Panel has also recommended offsite sampling and lead isotope sampling in the Northern Drainage during the 2017/18 reporting year. The recurrence and past samples dates of these programs are provided in Table 7. A summary report will be made available in early 2019, after all monitoring activities have been completed and the results analyzed for lead (including isotopes), dioxin, and TSS.

Table 7. Non-Industrial Sources Special Study – Monitoring Events, Planned and Completed

Activity	Event Frequency	Events Scoped	Events Completed	Completed Event Dates
Atmospheric Deposition	Monthly	12	12	6/14/2016 7/14/2016 8/16/2016 9/16/2016 10/17/2017 11/15/2016 12/13/2016 3/14/2017 4/27/2017 5/31/2017 6/28/2017 7/31/2017
Pavement Solids	Quarterly	5	5	6/14-15/2016 7/28-29/2016 10/25-26/2017 3/13-14/2017 8/23-24/2017
Soils Near Treated Wood Poles	Single sampling event	1	1	5/11-12/2016
Northern Drainage Stormwater	Storm-based	Up to 8 + additional event scoped in 2017/18	9	3/7/2016 (4 of 7 sites) 12/24/2016 (4 of 7) 1/9/2017 (4 of 7) 1/19/2017 (5 of 7) 2/4/2017 (6 of 7) 2/11/2017 (6 of 7) 2/17/2017 (7 of 7) 2/26/2017 (6 of 7) 2/22/2018 (6 of 6)
Northern Drainage Sediments	Single sampling event	1 + additional event scoped in 2017/18	1	3/25-28/2016
Offsite Soils Near Treated Wood Poles	Single sampling event	1	0	Tentatively planned for 2018/19 season
Offsite Pavement Solids from Public Roads	Single sampling event	1	1	October 2018
Offsite Stormwater Runoff from Public Roads	Single sampling event	3	2	3/2/2018 3/22/2018
Lead Isotope Study	Single sampling event	1	1	August-October 2018

3 BMP Activities

The following sections summarize the construction and demolition activities conducted at SSFL, the BMP activities within each watershed (e.g., new BMPs, inspections, maintenance, etc.), and public involvement within the past year.

3.1 Demolition

NASA demolition activities in this most recent 2017/18 reporting year accounted for the removal of 6.4 acres of impervious area in the Alfa, Bravo, Delta, and Coca areas. As represented by acreage, 2017/18 represented approximately 34% of the total acreage that NASA demolished from the 2014/15, 2015/16, 2016/17, and 2017/18 water years combined.

3.2 New Activities/Maintenance

Outfall/BMP activities and maintenance conducted at SSFL during the past year (e.g., erosion, sediment control, and drainage stabilization inspections, removal of sediment and debris from outfalls following extreme storm events, BMP repairs, etc.) are incorporated by reference through the following quarterly NPDES Discharge Monitoring Reports (DMRs):

- The Boeing Company, 2017a. *Third Quarter 2017 NPDES Discharge Monitoring Report, Compliance File CI-6027 and NPDES No. CA0001309, Santa Susana Field Laboratory, Ventura County, California.* November 15.
- The Boeing Company, 2017b. *Fourth Quarter 2017 NPDES Discharge Monitoring Report, Compliance File CI-6027 and NPDES No. CA0001309, Santa Susana Field Laboratory, Ventura County, California.* February 15.
- The Boeing Company, 2018a. *First Quarter 2018 NPDES Discharge Monitoring Report, Compliance File CI-6027 and NPDES No. CA0001309, Santa Susana Field Laboratory, Ventura County, California.* May 15.
- The Boeing Company, 2018b. *Second Quarter 2018 NPDES Discharge Monitoring Report, Compliance File CI-6027 and NPDES No. CA0001309, Santa Susana Field Laboratory, Ventura County, California.* August 15.

As recommended in the 2016/17 SSFL Site-Wide Stormwater Annual Report (Stormwater Expert Panel and Geosyntec, 2017), the following actions were taken this past season:

- **Sandbags and wattles were added around rusted structure sources in the former hydrogen gas storage facility area:** This BMP was identified to prevent wash-off of iron and other metals to the downstream Outfall 001. In the past year, all buildings and structures were removed in this area, including the storage tank (Figure 9). The potential for downstream migration of any potential pollutants is controlled by the site SWPPP.

Figure 9. Hydrogen Gas Storage Area before (left) and after (right) Demolition

- **A new stormwater diversion was constructed at CM-1**: In last year's Annual Report, the Expert Panel continued to support the construction of a diversion of road runoff to CM-1. This diversion was completed in November 2017 and is shown in Figure 10. CM-1 was also recommended to be reconstructed due to sediment loading and observed ponding; this was completed in September of 2018 (Figure 11).

Figure 10. CM-1 Road Runoff Diversion

Figure 11. CM-1 Reconstructed

- **Rusted infrastructure was painted at Outfall 001 and 002:** In response to iron benchmark exceedances at both Outfalls 001 and 002 in the 2016/17 reporting year, the Expert Panel recommended that rusted infrastructure near the outfalls be painted using epoxy paint. Flow meter boxes were painted in October 2017 and stairs/handrails were painted in July 2018.
- **Sandbag berms at northern culvert inlet at end of Well 13 Road were raised and reinforced:** Last year, monitoring location A2BMP0008 was ranked third highest overall and third highest for metals. Since runoff form this culvert flows untreated to Outfall 009, the Expert Panel recommended that the sandbag berm be reinforced and raised, to slow runoff and retain solids behind the berms. These improvements were made in November 2017 as shown in Figure 12. This season, no samples were collected at this monitoring site due to a lack of sampleable flow.

Figure 12. Well 13 Road Culvert Inlet before (left) and after (right) Improvement

- **Erosion and sediment controls were reinforced at the former shooting range:** The 2016/17 Annual Report addressed the potential for lead from the former shooting range area to have contributed to the lead exceedance at Outfall 009. Although the Expert Panel concluded that they "did not presently believe that the lead exceedance measured at Outfall 009…was caused by soils or shot from the former shooting range", the Panel made additional recommendations for additional monitoring in the Northern Drainage, bolstering the existing erosion and sediment controls to further minimize any loss of soils and debris, and removing sediment from downstream BMPs to increase sediment capacity during the rainy season. The control recommendations were implemented in November 2017 and reviewed again in July of 2018.

- **Wattles around treated poles near Roads:** In response to preliminary findings from the Non-Industrial Source Special Study, wattles were placed around treated wood power and other utility poles in 2017, in locations adjacent to roads and paved surfaces to prevent the potential migration of associated pollutants. As recommended in the 2016/17 Annual Report, additional wattles continue to be placed around remaining treated wood poles as they are identified.

- **Northern Drainage:** Although the required Northern Drainage monitoring period under the RMMP ended in 2016/17, the Expert Panel recommended that inspections continue to be performed as needed (e.g., focusing on localized scour directly downstream of check structures) As such, a voluntary annual inspection was completed along the length of the Northern Drainage in May of 2018. The inspection resulted in one maintenance suggestion (to repair a broken sandbag) and two watch areas. The low number of maintenance suggestions was most likely a result of the lower than average annual rainfall, and the low to moderate rain intensities

associated with the four storms that did occur (all less than the 24-hours, 1-year recurrence interval, while the Northern Drainage control are designed to the 5-year event).

3.3 Public Involvement

Numerous stakeholder groups and members of the public have expressed interest in the stormwater issues at the SSFL at past public involvement activities and Regional Board hearings. To keep these groups and others apprised of progress, and provide an opportunity for public input, periodic public forum meetings or site tours will be held with the Stormwater Expert Panel throughout the duration of the 2015 Work Plan. Additionally, project status reports and submittal documents will also be posted on the Boeing project website after major project milestones and prior to public outreach meetings. Table 8 summarizes recent and planned public involvement activities that have occurred since the 2010 BMP Plan (MWH et al., 2010). The most recent public meeting was held on May 25, 2018. Prior to the meeting, a survey was developed and distributed to gauge interest and better address topics of concern through the Expert Panel's tailored presentation. The Stormwater Expert Panel presented on recent site activities and efforts to improve water quality, such as recent demolition and BMP construction, coupled with BMP performance data. Additionally, attendees participated in a guided tour to the new administration area inlet filters, the detention bioswales, the new upper lot media filter, the lower lot biofilter, the new road runoff diversions to CM-3 and CM-1, and the Outfall 018 stormwater treatment system.

Table 8. Stormwater Expert Panel Public Involvement Activities, 2011-2018

Date	Topic
May 25, 2018	Public meeting and SSFL tour
August 17, 2017	DIPCON LA Conference SSFL tour
March 21, 2017	Public meeting and SSFL tour
November 19, 2014	Community Action Group meeting
March 20, 2013	Public meeting and SSFL tour
October 6, 2013	Public meeting and SSFL tour
August 25, 2011	Public meeting
January 22, 2011	Public meeting and SSFL tour

4 Monitoring and Assessment Results

Watershed-specific assessments proposed by the 2015 Work Plan included the BMP subarea prioritization analysis and the BMP performance analysis, both of which were previously performed and reported upon annually under the 2010 BMP monitoring program. In addition to these assessments, a third analysis was proposed comparing local stormwater background monitoring results to Watershed 008 stormwater monitoring results. Since Watershed 008 did not discharge this year, no new data were available to update the analysis, and as such an updated Watershed 008 report is not included in this year's annual report. The following sections provide an overview of each of these annual data analysis projects; Section 4.5 then summarizes their findings.

4.1 BMP Subarea Prioritization Analysis

The BMP subarea prioritization approach, developed by the Stormwater Expert Panel and Geosyntec in 2010, uses stormwater monitoring results for prioritizing potential BMP subareas and assessing the performance of existing BMPs. This process was completed on a yearly basis, 2010 through 2015, which was the end of the 2010 BMP Plan coverage period. The 2015 Work Plan included the continuation of the annual subarea ranking process, which was originally limited to subareas in the Outfall 008 and 009 watersheds, but was this year expanded to also include potential source areas in the Outfall 001 watershed.

The purpose of this analysis is to rank subareas within Boeing's and NASA's Outfall 008, 009, and 001 watersheds for potential implementation of new or enhanced stormwater controls and to evaluate existing measures, based on the most current available data and subarea specific considerations. The Stormwater Expert Panel's recommended approach to this task is to rank potential BMP subarea monitoring locations based on the results of water quality sample comparisons between (a) stormwater concentrations and Permit limits, and (b) subarea stormwater particulate strengths[8] and background stormwater particulate strengths. A statistical methodology was developed to rank the subareas based on these comparison results, while accounting for the amount of useable data available at each subarea as well as number of data observations that fall above these thresholds (i.e., reflecting statistical confidence in how frequently each subarea will exceed the comparison thresholds). This methodology relied on "weighting factors" that are calculated for each COC for each subarea. The pollutant-specific weighting factors were then summed to produce a multi-constituent score to allow for relative ranking amongst the potential BMP subareas. This approach was submitted to the LARWQCB on June 22, 2011 (Santa Susana Stormwater Expert Panel, 2011), presented at a public meeting on August 25, 2011, the California Stormwater Quality Association (CASQA) conference in 2011 (Steets, *et al.*, 2011), published in Stormwater Magazine in 2013 (Otto, *et al.*, 2013), and published in Water Resources Impact in March 2016 (Costa, *et al.*, 2016).

This year, as in previous years, the Stormwater Expert Panel has overseen and reviewed the BMP subarea prioritization analysis and evaluated the results for new BMP recommendations. Initial analysis

[8] Particulate strength is determined by taking the total concentrations of the compound minus its filtered concentrations and dividing by the total suspended solids, which provides a measure of the mass of particulate form of the compound per mass of suspended sediment. These values are useful in evaluating the relative strength of sediment-based pollutant sources in stormwater samples.

results were presented to the Stormwater Expert Panel in a meeting held July 23-24, 2018. The Stormwater Expert Panel received the draft report in September 2018 and the revised draft in October 2018.

The final report, *2017/18 BMP Subarea Prioritization Analysis* (Santa Susana Stormwater Expert Panel and Geosyntec Consultants, 2018a), is provided as Appendix C to this report. Key findings are discussed in Section 4.4 below.

4.2 BMP Performance Analysis

The BMP Performance Analysis is conducted annually to evaluate the performance of existing treatment BMPs in the Outfall 009 watershed, using statistical, temporal, and other data analysis approaches, incorporating the 2017/18 reporting year data into a dataset that began in December 2009. Although other constituents were analyzed (e.g., mercury and cadmium), COCs are addressed in these analyses, and include total lead, total copper[9], and dioxins (TCDD TEQ, DNQ excluded, bioaccumulation factors [BAFs] included).

This year, as in previous years, similar to the subarea prioritization analysis, the Stormwater Expert Panel has overseen and reviewed the BMP performance analysis and evaluated the results for new BMP recommendations, if needed. Initial analysis results were presented to the Stormwater Expert Panel in a meeting held July 23-24, 2018. The Stormwater Expert Panel received the draft report in September 2018 and the revised draft in October 2018.

The final report, *2017/18 BMP Performance Analysis, Santa Susana Field Laboratory* (Santa Susana Stormwater Expert Panel and Geosyntec Consultants, 2018b), is provided as Appendix D to this report. Key findings are discussed in Section 4.4 below.

4.3 Background Analysis

The *Outfall 008 Stormwater Background Evaluation* (Santa Susana Stormwater Expert Panel and Geosyntec Consultants, 2017c) typically compares the quality of stormwater runoff at Outfall 008 to local background stormwater monitoring data collected within SSFL. "Background" is intended to represent stormwater runoff from areas without historical industrial operations, Resource Conservation and Recovery Act (RCRA) feasibility investigation (RFI) areas, or development surfaces (e.g., buildings, paved roads, or lots). This comparison is performed on an annual basis, when new data are added, to assess whether the remedial and restoration activities completed by Boeing within the Happy Valley area (i.e., Department of Toxic Substances Control [DTSC] Interim Measure, ISRA, and BMP programs) have restored stormwater quality at Outfall 008 to natural background conditions.

Since Outfall 008 did not discharge during the 2017/18 monitoring season, no new data are available to update this analysis. These analyses will be updated next year if Outfall 008 produces flows allowing samples to be collected during the 2018/19 reporting year.

[9] Copper is not included as a pollutant of concern for the Outfall 009 watershed in the 2015 Expert Panel Work Plan. However, data for total copper are still presented in the paired line plots.

4.4 Iron Observations and Sources

During the 2017/18 monitoring season, one exceedance of the Outfall 002 benchmark for iron (0.3 mg/L) was measured, with a result of 2.1 mg/L during the 3/22/18-3/23/18 discharge event. In responses to this and past iron exceedances, a summary of spatially distributed iron observations, associations of iron with other constituents, and an analysis of potential sources, was completed. This analysis is attached as Appendix E to this report (Pitt, 2018).

4.5 Key Findings

Data supporting answers to the following questions are provided in the analyses referenced above. The following findings significantly shape the BMP and monitoring recommendations presented in Section 5. In some cases, most often due to a lack of data, the question posed may be unanswerable at this time. In such cases, the question will be reassessed in next year's annual report, after incorporating the monitoring data collected during this upcoming reporting year.

a. Are the BMPs reducing the concentrations of lead, dioxin, and TSS and loads of these constituents between the untreated influent and the treated effluent?

As shown in Table 9 and Table 10, lead and dioxin reductions are observed for all BMP types, based on the percent of paired influent and effluent samples greater than the Permit limits: the percent of influent samples greater than the Outfall Permit limit is less than the percent of effluent samples greater than the Permit limits for both lead and dioxins for all BMPs, indicating an improvement in water quality between influent and effluent. Performance analysis results (Appendix D) indicate that statistically significant ($p<0.05$) lead and TCDD TEQ (No DNQ) concentration reductions are occurring between influent and effluent samples at the B-1 media filter, CM-9, CM-1, and upper lot media filter (grouped analyses for these similar controls), along with the detention bioswales, and the ELV treatment BMP. Statistically significant pollutant concentration reductions between influent and effluent samples were also observed for dioxins at the lower lot biofilter.

Table 9. Summary of TCDD TEQ (No DNQ) BMP Performance Stormwater Monitoring Results, Since Construction

BMP	Statistically Significant Removal?	Median % Change between Influent and Effluent[1]	% of Sample Concentrations Greater than Outfall Permit Limit	
			Influent	Effluent
B-1	Yes (grouped dataset)	-64% (grouped dataset)	85%	68%
CM-1			77%	60%
CM-9			47%	26%
Upper Lot Media Filter			90%	50%
Lower Lot Biofilter	Yes	-99.7%	92%	8.3%
ELV Treatment BMP	Yes	-98%	30%	7.7%
Detention Bioswales	Yes	-99.7%	73%	14%

[1] Percent change was calculated using the median influent and effluent concentrations before rounding. Negative values indicate a reduction in effluent concentrations compared to influent sample concentrations.

Table 10. Summary of Lead BMP Performance Stormwater Monitoring Results, Since Construction

BMP	Statistically Significant Removal?	Median % Change between Influent and Effluent[1]	% Greater than Outfall Permit Limit	
			Influent	Effluent
B-1	Yes (grouped dataset)	-45% (grouped dataset)	35%	8.7%
CM-1			42%	24%
CM-9			39%	28%
Upper Lot Media Filter			10%	0%
Lower Lot Biofilter	No[2]	30%	13%	4.2%
ELV Treatment BMP	Yes	-49%	20%	0%
Detention Bioswales	Yes	-49%	31%	0%

[1] Percent change was calculated using the median influent and effluent concentrations before rounding.
[2] Can likely be attributed to the much lower influent lead concentrations to the lower lot biofilter in recent years. Although the percent change as reflected by the median influent and effluent concentrations was found to increase, a decrease between influent and effluent was observed for the average results.

Figure 13 and Figure 14 present summaries of influent and effluent monitoring results by BMP group.

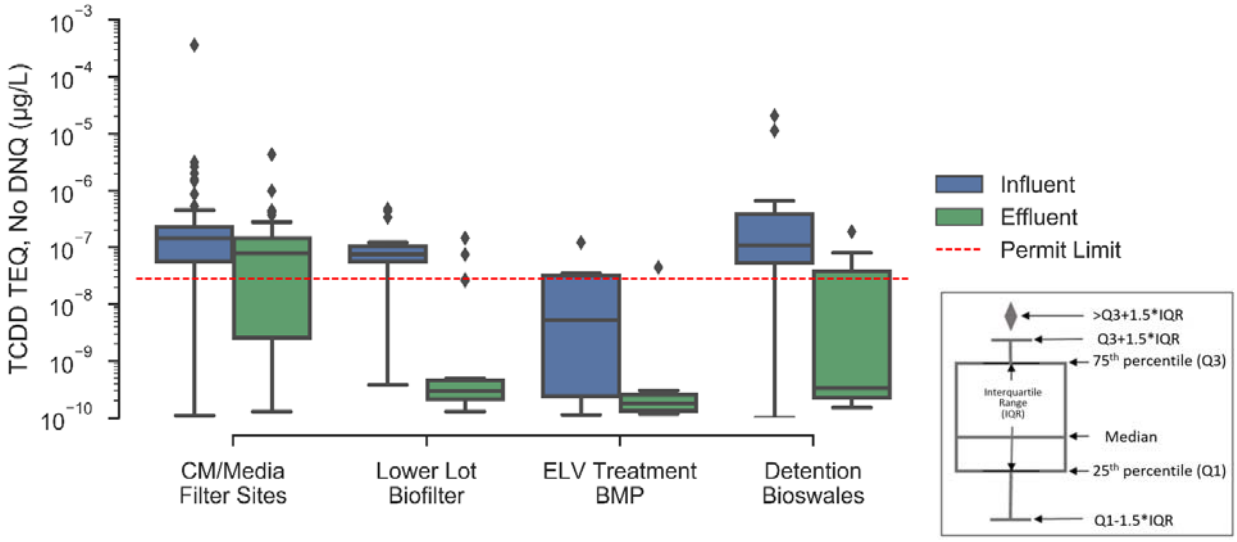


Figure 13. BMP Performance – Influent/Effluent Box Plot for Dioxins

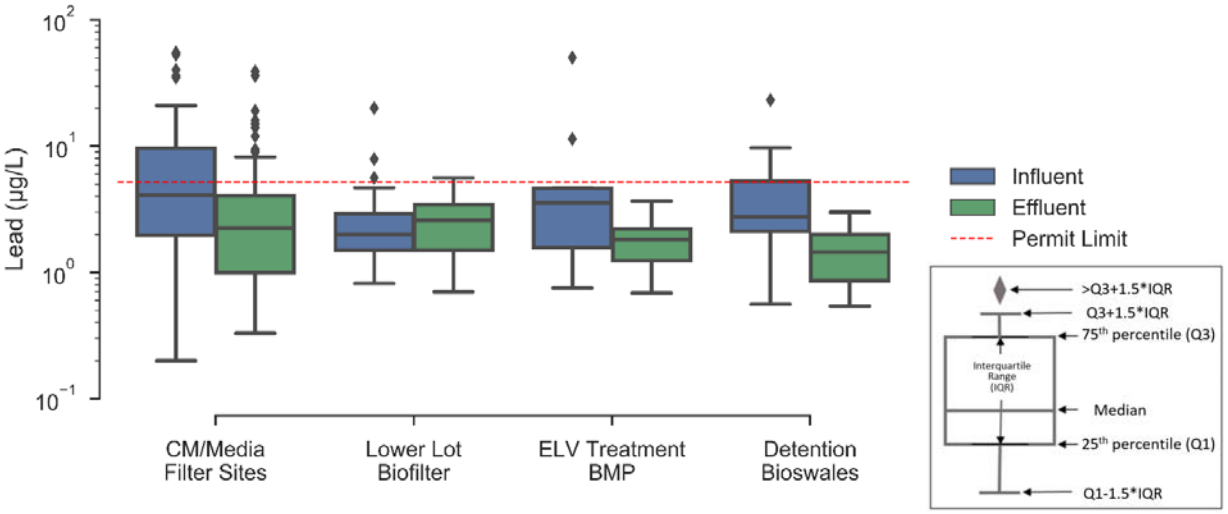


Figure 14. BMP Performance – Influent/Effluent Box Plot for Lead

Constituent loads are also being reduced, both because concentrations are being reduced, and because runoff volumes are being reduced by upstream pavement and building removal, stormwater storage in BMPs, soil roughening with mulch and seed, and water bars, etc..

b. Are improvements/modifications made to individual BMPs improving their performance over time?

As reported in the *BMP Subarea Prioritization Analysis* (Appendix C), Figure 15 depicts a select subset of subarea monitoring locations that are associated with BMP or drainage area modifications and/or improvements over time. In all cases, there was a decrease in the overall effluent rank after the BMP was implemented, or a modification to the BMP was made, demonstrating that BMP implementation and improvement has generally resulted in improved performance (effluent quality) over time.

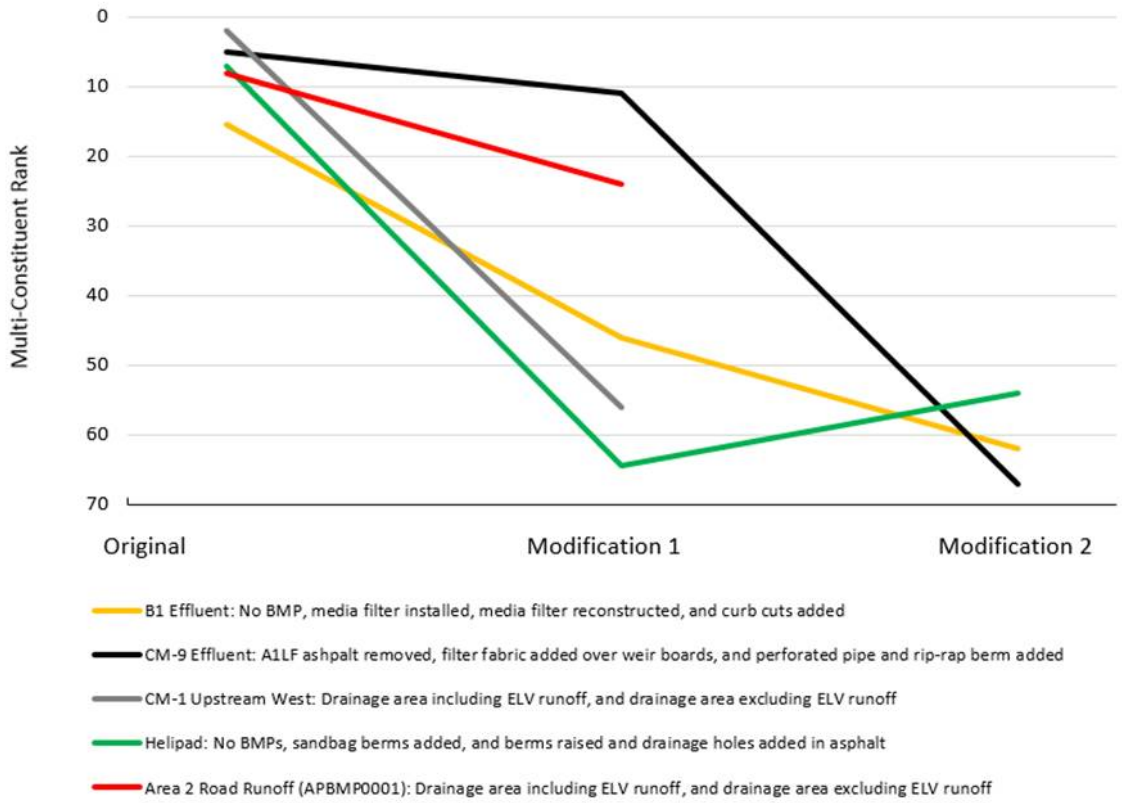


Figure 15. Graphical Comparison of Monitoring Locations Ranks, by Modification

c. Are the treatment controls aiding in compliance with NPDES Permit limits at Outfall 009?

Collectively, the treatment controls are exhibiting BMP-specific water quality improvement (see Table 9 and Table 10) and are expected to also support NPDES compliance at Outfall 009. This past reporting year, all BMP-COC combinations had the same or fewer effluent concentration results above Permit Limits compared to the influent concentrations. Historically, most grouped BMP-COC combinations also showed lower average and maximum exceedance ratios (i.e., exceeding sample concentrations divided by the Permit Limit) for effluent results compared to the influent results. For example, average influent exceedance ratios for CM-9 were 4.3 and 9.1 times higher than average Outfall 009 concentrations for lead and dioxins, respectively, while the average effluent exceedance ratios were reduced to 2.9 and 3.2 for lead and dioxins, respectively, during this same time period. This not only demonstrates that the treatment controls are effectively reducing NPDES COC concentrations in stormwater above Outfall 009, but also that the treatment control drainage areas (which include paved roads) are pollutant generating source areas that, without treatment, would have worsened water quality at the downstream NPDES compliance location.

This trend is further supported by the *BMP Prioritization Analysis* (Appendix C), which ranks Outfalls 008 and 009 lower than many of the potential source areas, based on their multi-

pollutant rank, which is intended to indicate "quality" of runoff sampled. A lower rank indicates better runoff quality and Outfalls 008 and 009 are both ranked 95, which is the lowest possible rank in the 2017/18 reporting year.

d. Is the lower lot biofilter preventing untreated stormwater runoff from discharging to the Northern Drainage?

Flow monitoring data at the lower lot biofilter were examined in the *BMP Performance Analysis* (Appendix D) to determine the low flow diversion's ability to prevent smaller storms from discharging to the Northern Drainage without first being treated. As shown in Figure 16, the diversion to the lower lot biofilter successfully prevented almost half of all storms less than or equal to one inch (event total) from discharging to the Northern Drainage.

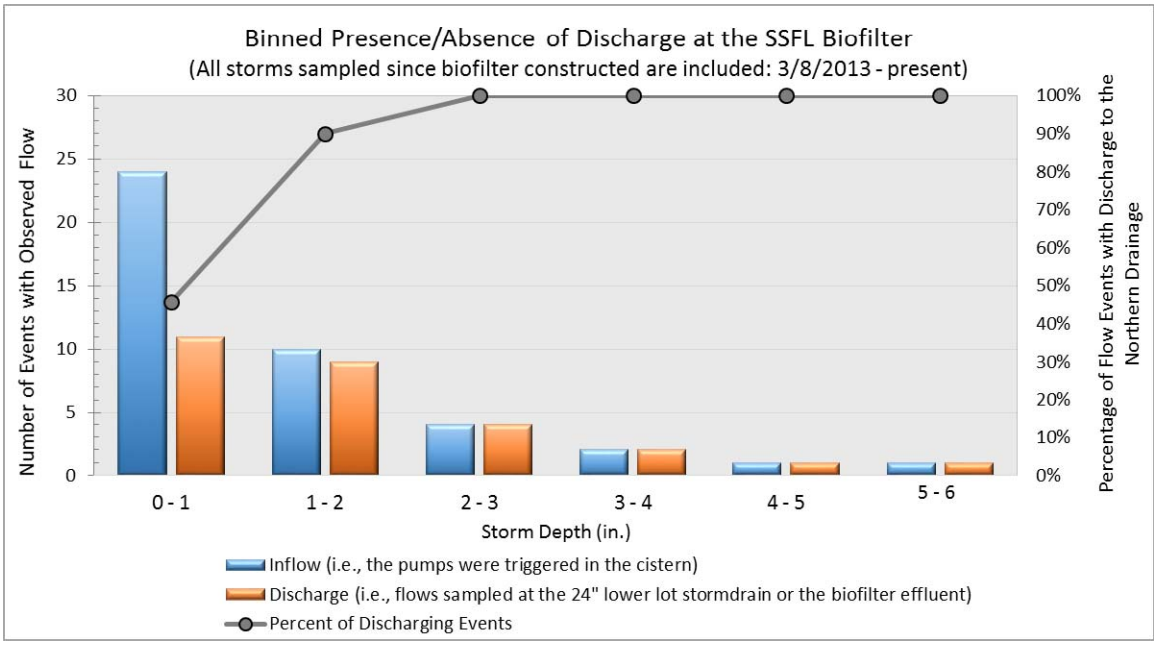


Figure 16. Binned Presence/Absence of Discharge at the SSFL Biofilter, 2013 to 2018

e. How much cumulative sediment loading has occurred at the BMPs, and how do these loads compare to when initial maintenance may be required based on lab column tests?

The *BMP Performance Analysis* (Appendix D) evaluated the cumulative TSS loading to the ELV treatment BMP, lower lot biofilter, B-1 media filter, CM-1, and CM-9, and compared each to the estimated value of cumulative sediment loading to the media before initial maintenance is needed based on column tests (Pitt, R.E. and Clark, S.E., 2010). The ELV treatment BMP and lower lot biofilter were only 4.7% and 6.3%, respectively, towards requiring initial maintenance, and it was estimated that maintenance would not be needed for another 32 and 31 years, respectively, assuming average rainfall years. Calculations showed that CM-1 has reached the cumulative sediment loading where maintenance was needed (136%) based on lab measurements of cumulative solids until media clogging. This is supported by field inspection results from the 2017/18 reporting year, which did observe some bypass/overflow potentially associated with media clogging; CM-1 was recently reconstructed to address this clogging.

Cumulative solids loading to B-1 and CM-9 was estimated to be 21% and 67% respectively, towards lab-based thresholds of media clogging, and initial maintenance is expected to be needed in approximately eight and two years, respectively, assuming average rainfall years.

To capture on-the-ground conditions, the Panel recommends that observations of clogging, overflow, and underdrain flows continue to be made at BMPs during and following storms so that this condition is tracked, and maintenance can be performed in a timely manner. It should be noted that the media mixture was designed to result in sediment clogging before pollutant removal capacity was exceeded. Therefore, ponding and bypass observations can be used as sentinel indicators in lieu of detailed pollutant breakthrough analyses. Clogging and associated flow bypasses of untreated or partially treated stormwater also reduce the performance of the stormwater controls. Therefore, these observations are critical to identify needed maintenance operations.

f. Based on the BMP subarea prioritization results, where would new BMPs be potentially effective at reducing Permit limit exceedances at Outfall 009?

BMPs would be the most effective at the top-ranked locations that are both actively monitored (i.e., not discontinued[10]) and not upstream of an existing BMP. As reported in the *BMP Prioritization Analysis* (Appendix C), only three locations met these criteria - all three locations are in the Outfall 001 watershed, in an area where demolition is currently underway, and stormwater runoff is controlled under an active SWPPP. Furthermore, the ranking is represented by a single sample at each location. Therefore, due to the removal of the infrastructure, the limited data, and since there were no flows or exceedances at Outfall 001 this year, additional BMPs are not warranted for these areas this year. One of these locations will continue to be monitored to indicate changes associated with this demolition.

Although no BMPs are recommended as a direct result of this year's BMP Prioritization Analysis, as discussed in Section 5.1, the Expert Panel does recommend some minor improvements to several existing BMPs, as described in Section 5.1.

g. Does the weight-of-evidence suggest that the iron benchmark exceedance at Outfall 002 is most likely associated with natural background iron associated with soil erosion?

Yes, the comprehensive weight-of-evidence presented in the *Comparison of Iron Concentration Observations at SSFL and Potential Iron Sources* (Appendix E) suggests that the outfall iron observations, including the exceedance at Outfall 002, are most likely associated with natural background iron sources associated with soil erosion.

[10] No site was discontinued if it had known water quality issues. Sites were typically discontinued due to reclassification due to upstream BMP implementation, redundancy, or termination of the required ISRA monitoring period.

5 Recommendations

5.1 BMP Recommendations

The following sections outline the proposed BMP recommendations for the Outfall 002 watershed, which measured a single Permit limit exceedance during the past reporting year, and the Outfall 009 watershed, which discharged but did not exceed any Permit limits this year.

5.1.1 Outfall 002 Watershed

As discussed in Sections 4.4 and 4.5, the Expert Panel believes that the weight of evidence supports the hypothesis that the iron result is associated with the erosion of natural background soils, consistent with other site-wide iron results and comparisons with other regional iron data from natural watersheds. Therefore, while no treatment controls are currently recommended for the Outfall 002 watershed, the Expert Panel has made new monitoring recommendations near the Outfall to continue to refine this hypothesis (Section 5.2.1).

5.1.2 Outfall 009 Watershed

Although no Permit limit exceedances were measured at Outfall 009 in 2017/18, and the prioritization analysis did not identify any potential BMP subareas that were both highly ranked and without downstream treatment, to continue to reinforce the reduction in discharges and improvement of stormwater quality at Outfall 009, the Stormwater Expert Panel makes the recommendations detailed in the following sections.

5.1.2.1 Lower Parking Lot Curb Extension

A portion of the lower parking lot is sloped to convey runoff to the cistern that flows towards the sedimentation basin and biofilter, comprising a treatment train that has been shown to have statistically significant removal of dioxins. However, there remains a portion of the lower parking lot to the northeast of the cistern from which runoff is not directed to the cistern, but instead flows to the northwest toward the Northern Drainage. To increase the area treated by the cistern/sedimentation basin/biofilter treatment train by approximately 0.7-acres, it is recommended that the originally proposed 6-inch curb be constructed as a truck-passable speed bump northeast of the trench drain as shown in Figure 17 (highlighted in red).

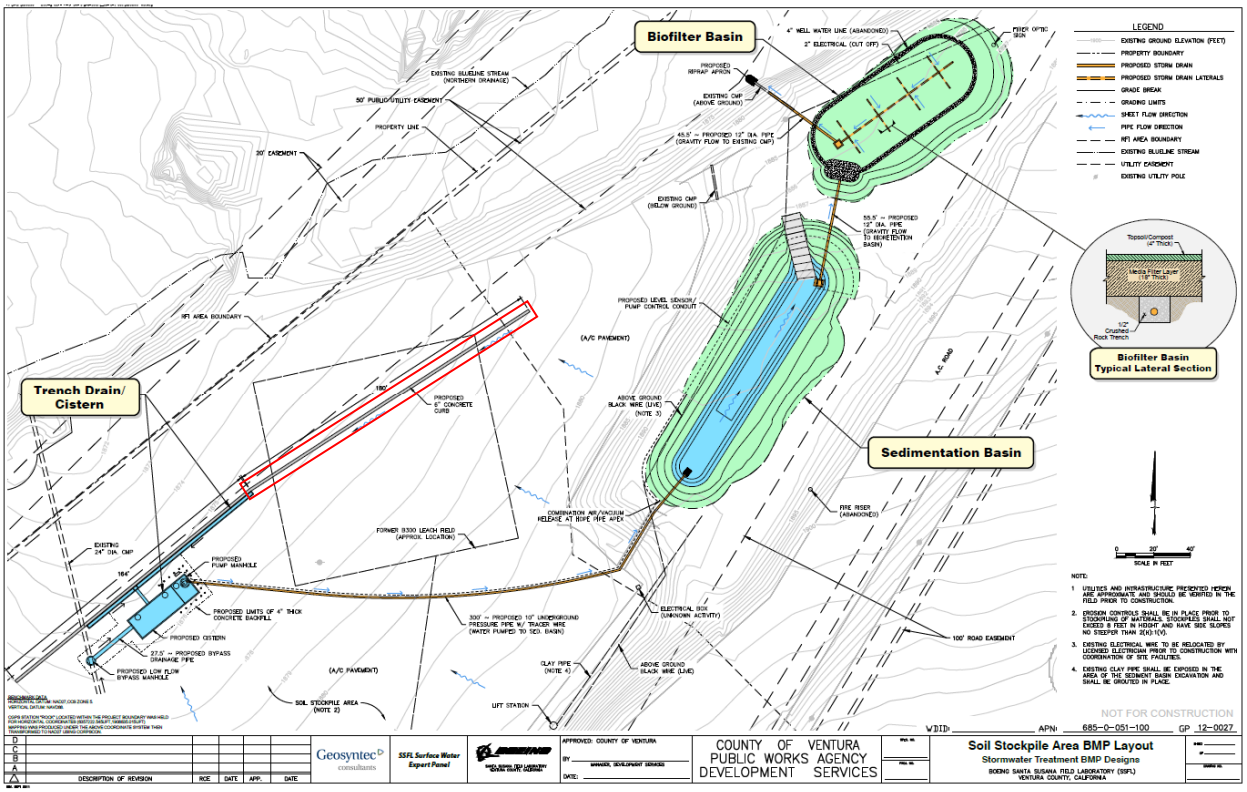


Figure 17. Lower Lot Curb Extension

5.1.2.2 Former Shooting Range BMPs

In July and November of 2017, Boeing installed substantial erosion control BMPs in the former shooting range area with the Expert Panel's initial input and oversight. Most recently, the Expert Panel visited the site in July of 2018. At that time, the Panel members made one additional recommendation that coir logs be added perpendicular to the slope in places where it was not feasible to extend the silt fences due to steep topography or natural barriers.

5.1.2.3 CM-3 Road Runoff Inlet

At the recommendation of the Expert Panel in the 2015/16 Annual Report, a diversion was constructed in 2017 to convey runoff from the Service Area Road to CM-3 for treatment. During the Expert Panel's site visit in July of 2018, this BMP was inspected, and two minor repairs were further recommended: 1) to repair any holes in the sheet metal wall on the northern side of the road near the inlet (Figure 18, left); and 2) to secure the fiber rolls upgradient of CM-3 along the road (Figure 18, right).

Figure 18. CM-3 Road Runoff Inlet: Sheet Metal Wall (left) and Fiber Rolls (right)

5.1.2.4 Administration Area Inlet Filters

At the recommendation of the Expert Panel in the 2015/16 Annual Report, filter baskets containing targeted media mix were installed in the drop inlets in the administration area parking lot, with the intent of treating runoff from the paved areas before entering the storm drain. The inlet filters were constructed in 2017. During the Expert Panel's site visit in July of 2018, this BMP was inspected, and the concern was raised that potential short circuiting could be occurring around the lip of the device during wet weather (Figure 19). Therefore, it is recommended that the lip be sealed before the start of the next rainy season. Additionally, to assess the inlet filter's performance, the Expert Panel has also recommended influent/effluent monitoring, as discussed in Section 5.2.1.

Figure 19. Administration Area Inlet Filter: Potential for Short-Circuiting around the Lip

5.2 Monitoring Recommendations

The sections below outline recommendations made by the Stormwater Expert Panel, with respect to stormwater monitoring of potential and existing BMP subareas as well as water level and flow bypass monitoring at specific BMPs in watersheds 009, continuation of as-needed inspections along the Northern Drainage, and potential additions to the non-industrial source special study.

5.2.1 Stormwater Monitoring

Informed by the data analyses performed above, the following recommendations are made for the 2018/19 stormwater monitoring program, as documented in the *2018/19 Sampling and Analysis Plan (SAP) Updates, Best Management Practice (BMP) Monitoring Program* (Haley & Aldrich, 2018):

- Continue to sample all active BMP subareas and BMP performance sites during two events per year. This reduced sample frequency (from all events to two per year) reflects the reduction in site activities within the Outfall 009 watershed anticipated for next year (e.g., limited ISRA, construction, demolition, etc. planned). The Panel will revisit all voluntary (not required by the NPDES Permit) monitoring frequencies when SSFL site activities increase.
- Continue to monitor BGBMP0001 (A2BMP0006) and BGBMP0004 (EPNDSW05) every storm, as these sites reflect background conditions, and more background data are needed to track potential changes with time and to increase the confidence of the measured results for comparison to other monitored sites.
- Consistent with the Special Studies Work Plan, complete the last remaining scope event at Northern Drainage sampling locations EPNDSW07, EPNDSW01, EPNDSW02, EPNDSW03, EPNDSW04, and EPNDSW06, with sample collection being triggered only when at least four sites are flowing. After the completion of this event, discontinue monitoring until a lead exceedance is measured at Outfall 009. Once an exceedance is measured, monitoring at these locations will be reevaluated.
- At the Expert Panel's discretion, when/where total Fe, Mn, Zn, and Al are already being analyzed in outfall samples as required by the permit, also analyze for the filtered form of that same metal.
- Add new BMP influent monitoring location (A2BMP0012) to characterize road runoff entering the stormwater diversion to CM-1.
- Add new BMP influent and effluent monitoring locations ILBMP0009 and ILBMP0010, respectively, to characterize the performance of one representative filter basket in the administration area. Collect samples for all events to enhance dataset.
- Due to the lack of flow and exceedances at Outfall 001 this past reporting year, and the demolition of the local tanks and buildings, the presence of which initially prompted the addition of these monitoring locations, discontinue monitoring of pavement runoff in the Outfall 001 watershed locations CABMP0002 and CABMP0003 downstream of the hydrogen gas storage tank and facilities. CABMP0001 is retained as a monitoring location for next year.

5.2.2 Northern Drainage

As specified in the RMMP, 2016/17 was the last year of required monitoring. As such, any future monitoring and maintenance will continue to be for NPDES compliance needs.

5.2.3 Non-Industrial Source Special Study

Initial monitoring activities associated with the Non-Industrial Source Special Study are now completed, as specified in Section 2.4. Additional activities recommended in the 2016/17 Annual Report are either complete, in progress, or planned for the start of the 2018/19 rainy season. A summary presentation will be prepared in early 2019.

6 Milestones/Schedule

Following BMPs/treatment control implementation, effectiveness of these measures will be evaluated primarily by the results of surface water samples collected at outfalls, supplemented by any subarea data collected as part of the 2015 Work Plan. These sampling results will continue to be reviewed annually to determine whether additional upgrades or maintenance may be warranted. If required, a Work Plan Addendum may be submitted for LARWQCB review and approval. The following milestones are planned for the remainder of the NPDES Permit term.

2018/19

October 2018	Submit Site-wide Stormwater 2017/18 Annual Report.
2018/19 Reporting Year	Perform monitoring as described in the 2015 Work Plan and any modifications identified in the 2017/18 Annual Report.
Summer – Fall 2018	Implement BMP, maintenance, and special study recommendations following approval of necessary permits, contractor selection and completion of required surveys. Work may be phased based on the scope of work identified in the Work Plan.

2019/20

October 2019	Submit Site-wide Stormwater 2018/19 Annual Report.

2020/21

March 2020	NPDES Permit Expires March 31, 2020
	Future activities to be determined based on Permit renewal

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Appendix A: 2017/18 Reporting Year Sampling and Analysis Plan

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10 October 2017
File No. 129095-002

Mr. Pete Zorba
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Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, California 91304

Mr. Jeffrey Wokurka
The Boeing Company
Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, California 91304

Subject: 2017/2018 Rainy Season Sampling and Analysis Plan (SAP) Updates,
Best Management Practice (BMP) Monitoring Program
Santa Susana Field Laboratory
Canoga Park, California

Dear Mr. Zorba and Mr. Wokurka:

This letter presents the sampling and analysis plan (SAP) updates to the Best Management Practice (BMP) subarea and BMP performance monitoring programs within the Outfalls 008 and 009 watersheds at the Santa Susana Field Laboratory (SSFL) for the 2017/2018 rainy season, and serves as an addendum to the 2015/2016 and 2016/2017 rainy season SAPs (MWH Americas, Inc. [MWH], 2015; 2016). BMP subarea monitoring is conducted at locations receiving runoff from potential source areas and other infrastructure (e.g., roads, buildings, parking areas) to evaluate the potential for contribution of constituents of concern (COCs) from the potential source areas to stormwater runoff and to identify locations for new BMPs. BMP performance monitoring is conducted at BMPs (e.g., Lower Parking Lot BMP, B1436 detention bioswales) to assess the effectiveness of the structural BMPs at promoting sediment settling and improving surface water quality to comply with NPDES permit limits at Outfalls 001 and 009.

The updates to the BMP monitoring program SAP for the 2017/2018 rainy season account for field observations of monitoring locations during the 2016/2017 rainy season and an evaluation of surface water sampling data collected to date, and are described below. In addition, attached to this letter are 2017/2018 rainy season versions of the SAP tables and figures as well as standardized BMP inspection forms. The changes described in this letter were developed with input from and in accordance with the recommendations from the SSFL Surface Water Expert Panel (Expert Panel) and Geosyntec Consultants (Geosyntec), and were initially presented in the 2016/2017 Site-wide Stormwater Annual Report (Surface Water Expert Panel and Geosyntec Consultants, 2017).

BMP Monitoring Updates

OUTFALL 001

Sampling frequency will be done twice per rainy season in the following locations (Figure 8):

- The hydrogen gas storage tank and facility buildings sampling locations (CABMP001, CABMP002, CABMP003).

OUTFALL 009

Sampling frequency will be reduced to twice per rainy season at several locations (Figures 1-7):

- The B-1 upper parking lot BMP (a media filter), at the two influent locations monitoring sheet flow from the upper lot (B1BMP0010) and the main road culvert (B1BMP0009), and the effluent monitoring location at the underdrains (B1BMP0011).
- The Southern Detention Bioswale, at the influent from the southeast (ILBMP0008), the influent from the northwest (ILBMP0004), and the effluent monitoring location at the underdrain (ILBMP0005).
- The biofilter treatment system bypass (ILBMP0001).
- The Lower Parking Lot sediment basin influent monitoring location (LPBMP0002).
- The biofilter influent (LPBMP0003) and effluent (LPBMP0004) monitoring locations.
- The CM-9 influent (ILBMP0002, A1BMP0002) and effluent (A1BMP0003) monitoring locations.
- The CM-3 influent (LXBMP0010, LXBMP0011) and effluent (LXBMP0012) monitoring locations.
- The CM-1 influent monitoring location from the west (EVBMP0003) and effluent monitoring location (A2BMP0007).
- The ELV treatment system bypass (EVBMP0001), influent (EVBMP0007), mid-point (EVBMP0009), and effluent (EVBMP0008) monitoring locations.
- The Helipad berm overflow monitoring location (EVBMP0002).
- The Well 13 Road monitoring locations (A2BMP0008, A2BMP0009, and A2BMP0011).
- The Area II Road runoff monitoring location (EVBMP0010).
- The ash pile/Area II Road asphalt swale monitoring location (APBMP0001).

Sampling frequency will remain at every storm event for the CM-1 upstream, eastern tributary drainage influent monitoring location (A2BMP0006) (Figure 6).

Seven locations will be removed from the monitoring program due to lack of flow or because sufficient data have been collected. Locations removed due to a lack of flow include the tributary drainage north of the landfill (A2BMP0001), the tributary drainage northeast of the landfill (A2BMP0002), and the ash pile drainage (APBMP0003). Locations removed because sufficient data have been collected include the Northern Detention Bioswale influent and effluent monitoring locations (ILBMP0006, ILBMP0007); the Area II Road runoff monitoring location west of CM-8 (A1BMP0004); and the culvert outlet on the west side of Well 13 Road, mid-point along the road (A2BMP0010).

Seven Special Studies monitoring locations will be added to the program (Figures 2,5,6). Two locations are on Sage Ranch Park near CM-5 (EPNDSW05) and near the entrance to Sage Ranch (EPNDSW07). Five locations are near or along the Northern Drainage: EPNDSW01 along the Northern Drainage above the confluence with the Area II drainage; EPNDSW02 along the Area II drainage above the confluence with the Northern Drainage; EPNDSW03 along the Northern Drainage downstream of LOX; EPNDSW04 along the Northern Drainage downstream of the box culvert; and EPNDSW06 along the Northern Drainage downstream of the lower lot stormdrain outlet. Samples collected from the Special Studies locations will be analyzed for lead, dissolved lead, total suspended solids, and dioxins (Table I).

As discussed in the 2016/2017 SAP, collect samples at the Helipad BMP monitoring location (EVBMP0002) when the sand bag berm is being overtopped by stormwater and the samples should be of the overflow runoff (Figure 6).

SEDIMENT SAMPLING

The Expert Panel has recommended doing one additional round of Northern Drainage sediment samples, using the same procedures as last year. Stormwater and stream bed sediments will be collected from seven locations in the Outfall 009 drainage area for dioxins, lead, and PSD.

Location ID	Site Description
NDSSSW01	Stormwater and stream sediment site (sieved into 3 particle sizes and analyzed), Northern Drainage above confluence with Area II drainage
NDSSSW02	Stormwater and stream sediment site (sieved into 3 particle sizes and analyzed), Area II drainage above confluence with Northern Drainage
NDSSSW03	Stormwater and stream sediment site (sieved into 3 particle sizes and stored for possible later analyses), Dirt access road adjacent to Northern Drainage
NDSSSW04	Stormwater and stream sediment site (sieved into 3 particle sizes and stored for possible later analyses), Dirt road crossing at box culvert
NDSSSW05	Stormwater and stream sediment site (sieved into 3 particle sizes and stored for possible later analyses), ND special studies background site at BGBMP0004 sampling location (Sage Ranch near CM-5)
NDSSSW06	Stormwater and stream sediment site (sieved into 3 particle sizes and stored for possible later analyses), Downstream of 24” stormdrain outlet discharge
NDSSSW07	Stormwater and stream sediment site (sieved into 3 particle sizes and analyzed), ND special studies background site at BGBMP0005 sampling location (Sage Ranch near entrance)

SAMPLE NAMING

Sample naming will be changed from the procedure described in the 2010-2011 BMP and Interim Source Removal Action (ISRA) Performance Monitoring Sampling and Analysis Plan (MWH, 2010) to be consistent with the procedure described in the Field Sampling Plan for the NPDES program (Haley & Aldrich, Inc., 2016). For internal purposes, the consecutive sample number for each BMP will be tracked in a database, but not used in the sample name.

The sample identification nomenclature will be:

Primary Sample:

- XXXXX#### = The location name (e.g., B1BMP00009, or EPNDSW01, etc.);
- Underscore;
- YYYYMMDD = The date of the sample;

  B1BMP0009_20171215

Equipment Blank:

- ILQW0007;
- Underscore; and
- YYYYMMDD = The date of the sample.

  ILQW0007_20171215

BMP INSPECTION FORMS

The BMP inspections will be conducted twice per rainy season and once after the rainy season using the "BMP Inspection Forms". These forms include observations, maintenance needs, and corrective actions and were revised to reflect current field conditions. As specified on each form, a standardized framed photo should be taken at the same location, facing the same direction, at each site visit. BMP inspection forms for Boeing locations were revised for the 2017/2018 rainy season to accommodate electronic data entry on a field tablet.

72 hours after the end of each rain event, field crew will inspect and record maximum ponding levels at locations listed in the "Boeing 72 Hours After Rain Event Ponding Inspection Form" and "NASA 72 Hours After Rain Event Ponding Inspection Form.

Sincerely yours,
HALEY & ALDRICH, INC.

Katherine Miller
Project Manager

Nancy Gardiner, CPESC, QSD, QISP
Program Manager

Enclosures:

References
Table I – BMP Monitoring Inspection Locations and Analytical Plan, 2017/2018 Rainy Season
Figure 1 – Outfalls 008 and 009, BMP Monitoring Locations
Figure 2 – Outfall 009, B-1 and Lower Parking Lot Areas – Boeing
Figure 3 – Outfall 009, IEL Area – Boeing
Figure 4 – Outfall 009, AILF Area – Boeing
Figure 5 – Outfall 009, CMs South of LOX Area – NASA
Figure 6 – Outfall 009, A2LF, CM-1, and Helipad Areas – NASA
Figure 7 – Outfall 009, ELV Area – NASA
Figure 8 – Outfall 001, Hydrogen Gas Tank Area – NASA
BMP Inspection Forms – Outfalls 008 and 009 – Boeing
BMP Inspection Forms – Outfall 009 – NASA
Boeing 72 Hours After Rain Event Ponding Inspection Form
NASA 72 Hours After Rain Event Ponding Inspection Form
Sample Collection Forms

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TABLE I
BMP MONITORING INSPECTION LOCATIONS AND ANALYTICAL PLAN
2017/2018 RAINY SEASON
SANTA SUSANA FIELD LABORATORY
CANOGA PARK, CALIFORNIA

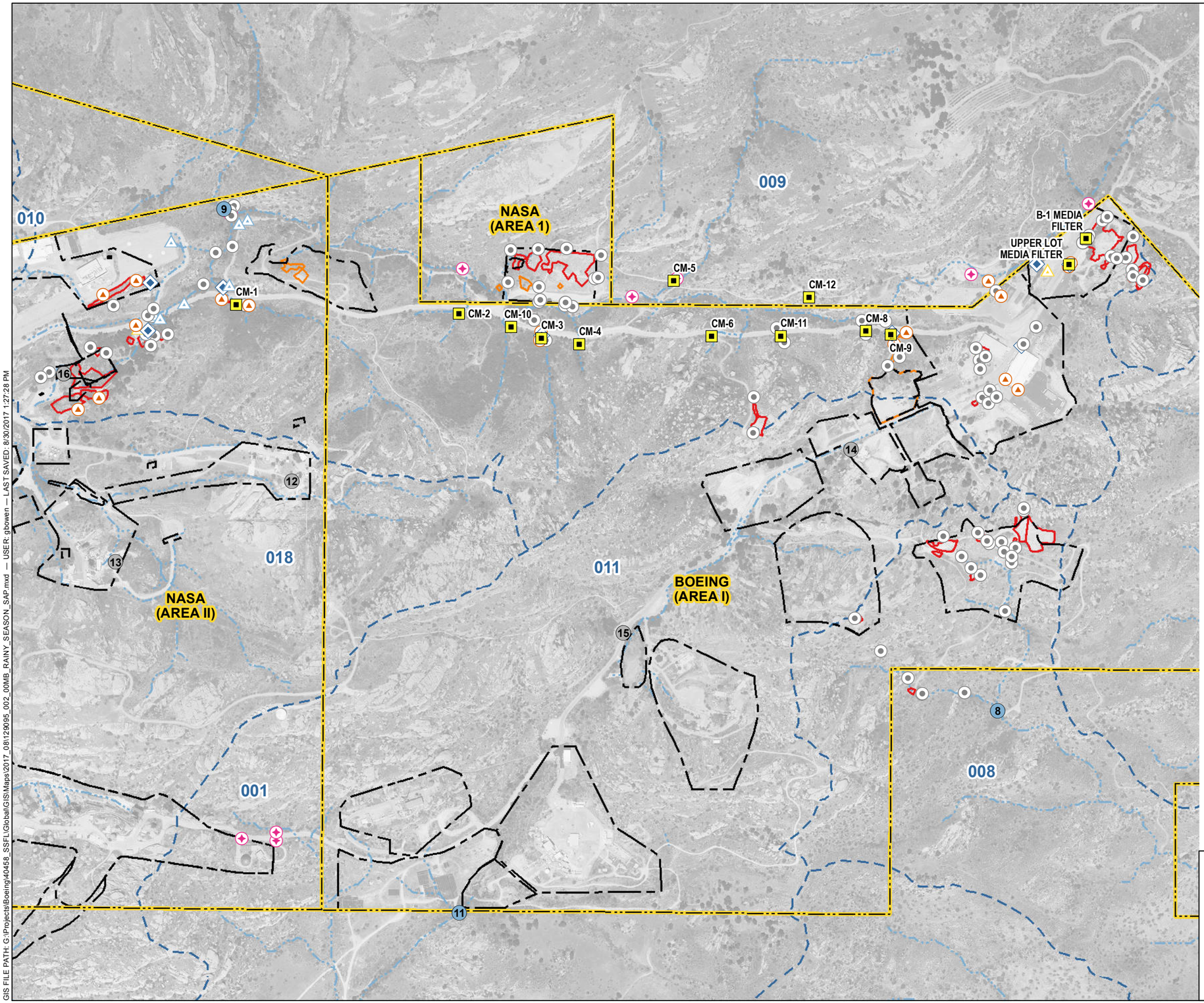
Object ID	Sampling Responsibility	Location	Areas Monitored	Purpose	Notes	Sample Frequency	Cd, Cu, Pb, Hg (Total Dissolved) (Method 200.7/200.8)	Cd, Cu, Pb, Hg (Total Recoverable) (Method 200.7/200.8)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)
A1BMP0002	Boeing	AILF	CM-9, AILF	US South, Treatment BMP Performance Monitoring	AILF tributary drainage	Twice per rainy season	X	X	X	X	X	
A1BMP0003	Boeing	AILF	CM-9, AILF, IEL, Area II Road	DS, Treatment BMP Performance Monitoring	CM-9 underdrain	Twice per rainy season	X	X	X	X	X	
A2BMP0006	NASA	CM-1	CM-1	US East, Treatment BMP Performance Monitoring	CM-1 eastern tributary drainage	Every storm	X	X	X	X	X	
A2BMP0007	NASA	CM-1	CM-1	DS, Treatment BMP Performance Monitoring	CM-1 culvert outlet	Twice per rainy season	X	X	X	X	X	
A2BMP0008	NASA	Well 13 Road	Well 13 Road Runoff	Potential BMP Location	Culvert inlet on north side of Well 13 Road	Twice per rainy season	X	X	X	X	X	X
A2BMP0009	NASA	Well 13 Road	Well 13 Road Runoff	Potential BMP Location	Culvert outlet above the Northern Drainage and east of OF009 autosamplers pad	Twice per rainy season	X	X	X	X	X	X
A2BMP0011	NASA	Well 13 Road	Well 13 Road and Area 2 Road Runoff	Potential BMP Location	Culvert outlet on west side of Well 13 Road, just north of Service Area Road	Twice per rainy season	X	X	X	X	X	X
APBMP0001	NASA	Ash Pile	AP/STP, ELV	Potential BMP Location	Area II Road asphalt swale	Twice per rainy season	X	X	X	X	X	X
B1BMP0009	Boeing	B-1	B-1 Upper Parking Lot Media Filter	US North, Treatment BMP Performance Monitoring	Gunite swale conveying road runoff	Twice per rainy season	X	X	X	X	X	
B1BMP0010	Boeing	B-1	B-1 Upper Parking Lot Media Filter	US South, Treatment BMP Performance Monitoring	Culvert outlet from upper parking lot area	Twice per rainy season	X	X	X	X	X	
B1BMP0011	Boeing	B-1	B-1 Upper Parking Lot Media Filter	DS, Treatment BMP Performance Monitoring	Underdrains	Twice per rainy season	X	X	X	X	X	
EVBMP0001	NASA	ELV	ELV, Helipad	ELV Treatment BMP Overflow Monitoring	Culvert inlet; runoff will only be present when rain events exceed ELV BMP design storm	Twice per rainy season	X	X	X	X	X	X
EVBMP0002	NASA	ELV, Helipad	Helipad	Helipad BMP Overflow Monitoring	Spillway inlet	Twice per rainy season	X	X	X	X	X	X
EVBMP0003	NASA	CM-1	CM-1, Area II Road	US West, Treatment BMP Performance Monitoring	Sheetflow along Area II Road upstream of sandbag berm	Twice per rainy season	X	X	X	X	X	
EVBMP0007	NASA	ELV	ELV Treatment BMP	US, Treatment BMP Performance Monitoring	Sample port in BMP influent pipe prior to "T" connection	Twice per rainy season	X	X	X	X	X	
EVBMP0008	NASA	ELV	ELV Treatment BMP	DS, Treatment BMP Performance Monitoring	Discharge from media filter tank pipe	Twice per rainy season	X	X	X	X	X	X
EVBMP0009	NASA	ELV	ELV Treatment BMP	Mid-Point Treatment BMP Performance Monitoring	Composite of samples from eastern and western sample ports between settling tanks and media filter	Twice per rainy season	X	X	X	X	X	X
EVBMP0010	NASA	ELV	Area 2 Road Runoff	Potential BMP Location	Storm drain inlet on north side of road	Twice per rainy season	X	X	X	X	X	X
CABMP001	NASA	Coca	Hydrogen gas storage tank	New site in watershed 001	Driveway downgradient of hydrogen gas storage tank	Twice per rainy season	X	X	X	X	X	X
CABMP002	NASA	Coca	Hydrogen gas facility buildings	New site in watershed 001	Driveway downgradient of hydrogen gas facility buildings	Twice per rainy season	X	X	X	X	X	X
CABMP003	NASA	Coca	Hydrogen gas facility buildings	New site in watershed 001	Road runoff downstream of hydrogen gas facility	Twice per rainy season	X	X	X	X	X	X
ILBMP0001	Boeing	Lower Parking Lot	IEL	Potential BMP Location	Culvert discharge under spillway chute	Twice per rainy season	X	X	X	X	X	X
ILBMP0002	Boeing	AILF	CM-9, IEL, Area II Road	US East, Treatment BMP Performance Monitoring	Culvert inlet off Area II Road	Twice per rainy season	X	X	X	X	X	

TABLE I
BMP MONITORING INSPECTION LOCATIONS AND ANALYTICAL PLAN
2017/2018 RAINY SEASON
SANTA SUSANA FIELD LABORATORY
CANOGA PARK, CALIFORNIA

Object ID	Sampling Responsibility	Location	Areas Monitored	Purpose	Notes	Sample Frequency	Cd, Cu, Pb, Hg (Total Dissolved) (Method 200.7/200.8)	Cd, Cu, Pb, Hg (Total Recoverable) (Method 200.7/200.8)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)
ILBMP0004	Boeing	IEL	B1436 Southern Detention Bioswale	US, Treatment BMP Performance Monitoring	Concrete swale (western) diverting sheetflow into rock crib	Twice per rainy season	X	X	X	X	X	
ILBMP0005	Boeing	IEL	B1436 Southern Detention Bioswale	DS, Treatment BMP Performance Monitoring	Bioswale underdrain (subsurface 12- inch drain connecting to existing culvert)	Twice per rainy season	X*	X*	X*	X	X	
ILBMP0008	Boeing	IEL	B1436 Southern Detention Bioswale	US, Treatment BMP Performance Monitoring	Concrete swale (eastern) diverting sheetflow into rock crib	Twice per rainy season	X	X	X	X	X	
LPBMP0002	Boeing	Lower Parking Lot	Lower Parking Lot BMP	US, Treatment BMP Performance Monitoring	Sample port in cistern discharge pipe	Twice per rainy season	X	X	X	X	X	
LPBMP0003	Boeing	Lower Parking Lot	Lower Parking Lot BMP	Mid-Point Treatment BMP Performance Monitoring	Sediment Basin outlet box	Twice per rainy season	X	X	X	X	X	
LPBMP0004	Boeing	Lower Parking Lot	Lower Parking Lot BMP	DS Treatment BMP Performance Monitoring	Discharge from Biofilter effluent pipe	Twice per rainy season	X	X	X	X	X	
LXBMP0010	Boeing	CM-3	Service Area Road BMP	US, Treatment BMP Performance Monitoring	Outlet pipe south side of road	Twice per rainy season	X	X	X	X	X	
LXBMP0011	Boeing	CM-3	Service Area Road BMP	US, Treatment BMP Performance Monitoring	Natural drainage upstream of CM-3	Twice per rainy season	X	X	X	X	X	
LXBMP0012	Boeing	CM-3	Service Area Road BMP	DS, Treatment BMP Performance Monitoring	Underdrains	Twice per rainy season	X	X	X	X	X	
EPNDSW05	Boeing	Sage Ranch	Background	Special Studies	Sage Ranch - CM-5 tributary drainage east of LOX	Every storm	X	X	X	X	X	X
EPNDSW01	Boeing	Northern Drainage	Northern Drainage above confluence with Area II drainage	Special Studies	Northern Drainage above confluence with Area II drainage	Twice per rainy season, with sampling trigger requiring >= 4 locations to be flowing	X	X	X	X	X	X
EPNDSW02	Boeing	Area II Drainage	Area II drainage above confluence with Northern Drainage	Special Studies	Area II drainage above confluence with Northern Drainage		X	X	X	X	X	X
EPNDSW03	Boeing	Northern Drainage	Downstream of LOX	Special Studies	Dirt access road adjacent to Northern Drainage		X	X	X	X	X	X
EPNDSW04	Boeing	Northern Drainage	Downstream of box culvert	Special Studies	Dirt road crossing at box culvert	Twice per rainy season, with sampling trigger requiring >= 4 locations to be flowing	X	X	X	X	X	X
EPNDSW06	Boeing	Northern Drainage	Downstream of lower lot stormdrain outlet	Special Studies	Downstream of 24" stormdrain outlet discharge		X	X	X	X	X	X
EPNDSW07	Boeing	Sage Ranch	Background	Special Studies	Sage Ranch near entrance, culvert inlet north of B-1		X	X	X	X	X	X

Notes:
* Collect one equipment blank per sampling day from the equipment used to sample the B1436 Detention Bioswales downstream monitoring location (under drains) and place on hold for metals and dioxins analysis; the analyses will be performed if unusual results are reported for primary sampes.
The EB sample ID will be based on the ID of the primary sample collected immediately before collecting the equipment blank, and will either be ILQW0005_yyyymmdd or ILQW0007_yyyymmdd.

Abbreviations:
CM - Culvert Modification
DS - Downstream
US - Upstream
X = Collect and Anal X = Collect and A X = Collect and Analyze



LEGEND

- CULVERT MODIFICATION (CM)
- UPSTREAM BMP PERFORMANCE MONITORING LOCATION
- DOWNSTREAM BMP PERFORMANCE MONITORING LOCATION
- MIDPOINT BMP PERFORMANCE MONITORING LOCATION
- PREVIOUS BMP PERFORMANCE MONITORING LOCATION
- POTENTIAL BMP PERFORMANCE MONITORING LOCATION
- ACTIVE NPDES OUTFALL
- FORMER NPDES OUTFALL
- SPECIAL STUDIES AND OTHER SAMPLING LOCATIONS
- DRAINAGE
- SURFACE WATER DIVIDE
- ADMINISTRATIVE AREA BOUNDARY
- STUDY
- ISRA EXCAVATION BOUNDARY
- FORMER ISRA EXCAVATION BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. SAP = SAMPLING AND ANALYSIS PLAN
3. BMP = BEST MANAGEMENT PRACTICE
4. AERIAL IMAGERY SOURCE: CIRGIS

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HALEY ALDRICH

2017/2018 RAINY SEASON SAP
GMP MONITORING PROGRAM
THE BOEING COMPANY
VENTURA COUNTY, CALIFORNIA

OUTFALLS 008 AND 009

OCTOBER 2017

FIGURE 1

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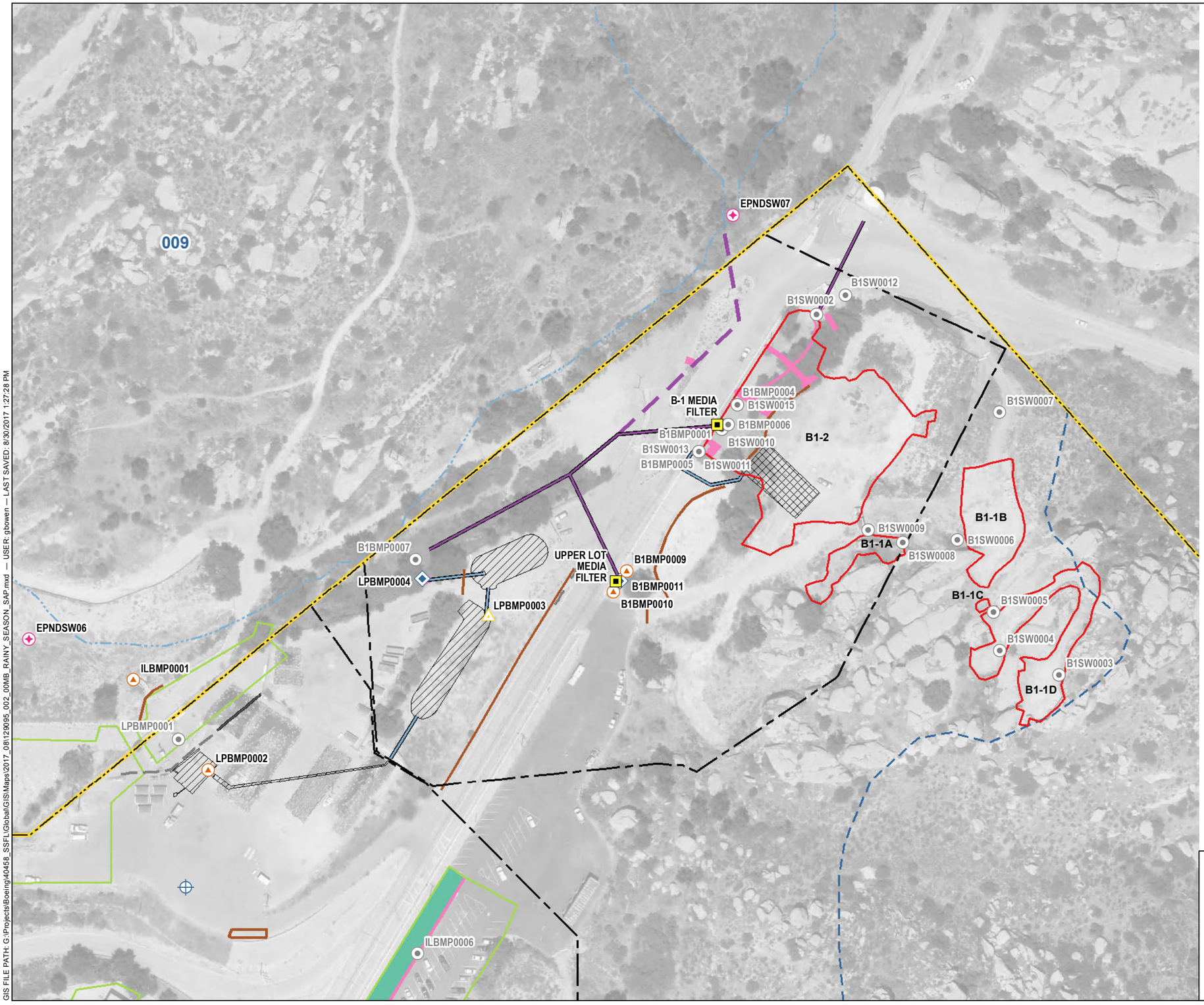

LEGEND

- CULVERT MODIFICATION (CM)
- UPSTREAM BMP PERFORMANCE MONITORING LOCATION
- DOWNSTREAM BMP PERFORMANCE MONITORING
- MIDPOINT BMP PERFORMANCE MONITORING LOCATION
- PREVIOUS BMP PERFORMANCE MONITORING LOCATION
- SPECIAL STUDIES AND OTHER SAMPLING LOCATIONS
- 24" STORM DRAIN
- DRAINAGE
- SURFACE WATER DIVIDE
- CONVEYANCE PIPELINE
- SANDBAG
- ASPHALT CURB
- ROLLING AC BERM
- STORM DRAIN (ESTIMATED SUBSURFACE TRACE)
- STORM DRAIN INFERRED
- ASPHALT/CONCRETE REMOVAL AREA
- DETENTION BIOSWALE
- ENGINEERED NATURAL TREATMENT SYSTEM
- ROCK CRIB SWALE
- SEDIMENTAION BASIN
- ADMINISTRATIVE AREA BOUNDARY
- STUDY
- ISRA EXCAVATION BOUNDARY

NOTES

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HALEY ALDRICH

2017/2018 RAINY SEASON SAP
GMP MONITORING PROGRAM
THE BOEING COMPANY
VENTURA COUNTY, CALIFORNIA

OUTFALL 009
B-1 AND LOWER PARKING LOT AREAS - BOEING

OCTOBER 2017

FIGURE 2

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ILSW0005

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ILSW0006

ILSW0002

IEL-1

ILSW0001

ILBMP0004

ILBMP0008

ILSW0008

ILSW0004

IEL-2

ILSW0007

IEL-2 Soil Borrow Area

ILSW0003

LEGEND

- UPSTREAM BMP PERFORMANCE MONITORING LOCATION
- DOWNSTREAM BMP PERFORMANCE MONITORING
- PREVIOUS BMP PERFORMANCE MONITORING LOCATION
- 24" STORM DRAIN
- SURFACE WATER DIVIDE
- SANDBAG
- ROLLING AC BERM
- ASPHALT/CONCRETE REMOVAL AREA
- DETENTION BIOSWALE
- ROCK CRIB SWALE
- ADMINISTRATIVE AREA BOUNDARY
- STUDY
- ISRA EXCAVATION BOUNDARY

NOTES

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3. BMP = BEST MANAGEMENT PRACTICE
4. AERIAL IMAGERY SOURCE: CIRGIS

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HALEY ALDRICH

2017/2018 RAINY SEASON SAP
GMP MONITORING PROGRAM
THE BOEING COMPANY
VENTURA COUNTY, CALIFORNIA

OUTFALL 009
IEL AREA - BOEING

OCTOBER 2017

FIGURE 3

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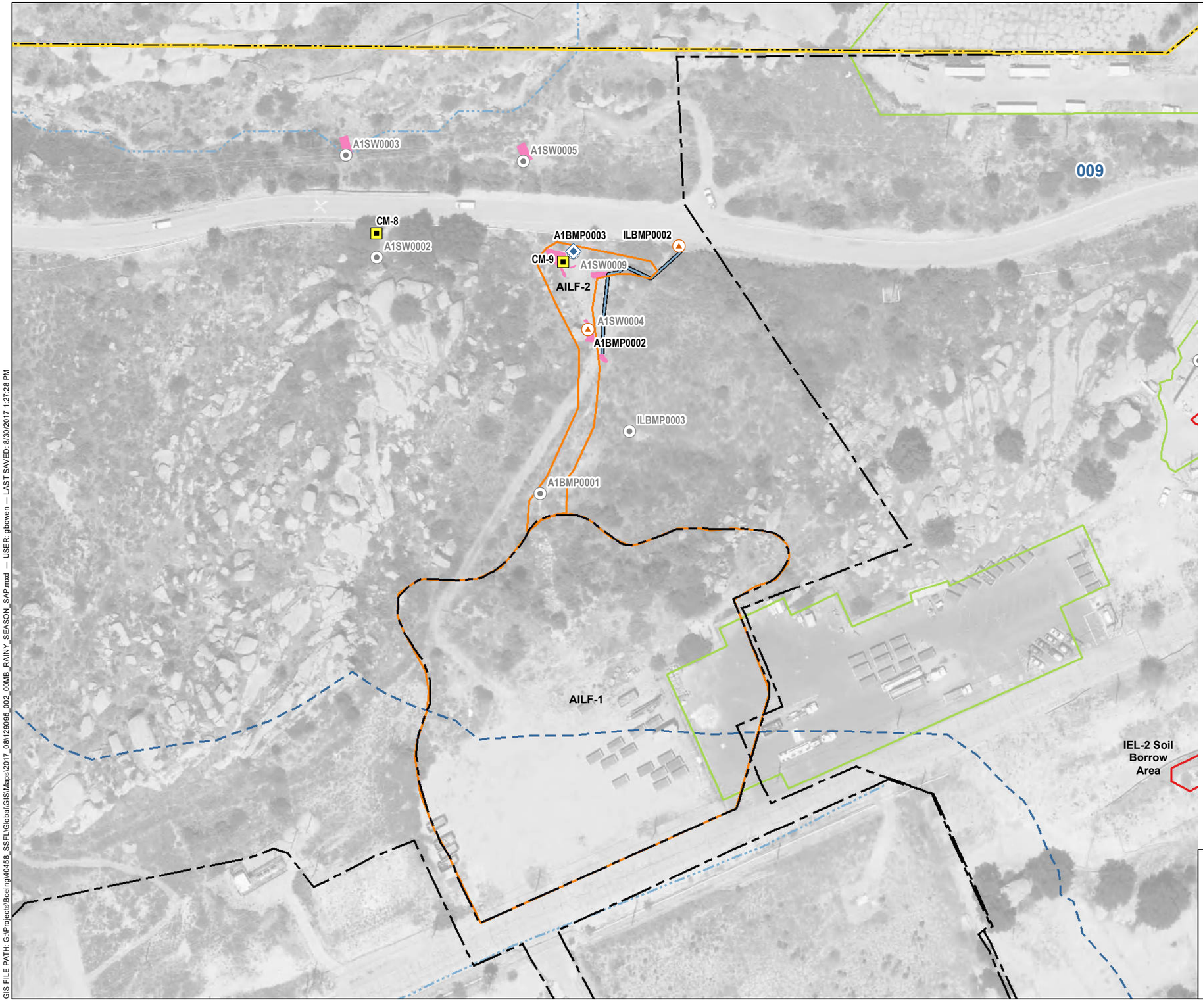

LEGEND

- CULVERT MODIFICATION (CM)
- UPSTREAM BMP PERFORMANCE MONITORING LOCATION
- DOWNSTREAM BMP PERFORMANCE MONITORING LOCATION
- PREVIOUS BMP PERFORMANCE MONITORING LOCATION
- DRAINAGE
- SURFACE WATER DIVIDE
- CONVEYANCE PIPELINE
- ASPHALT/CONCRETE REMOVAL AREA
- ROCK CRIB SWALE
- ADMINISTRATIVE AREA BOUNDARY
- STUDY AREA
- ISRA EXCAVATION BOUNDARY
- FORMER ISRA EXCAVATION BOUNDARY

NOTES

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2. SAP = SAMPLING AND ANALYSIS PLAN
3. BMP = BEST MANAGEMENT PRACTICE
4. AERIAL IMAGERY SOURCE: CIRGIS

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SCALE IN FEET

HALEY ALDRICH

2017/2018 RAINY SEASON SAP
GMP MONITORING PROGRAM
THE BOEING COMPANY
VENTURA COUNTY, CALIFORNIA

OUTFALL 009
AILF AREA - BOEING

OCTOBER 2017

FIGURE 4

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LEGEND

- CULVERT MODIFICATION (CM)
- UPSTREAM BMP PERFORMANCE MONITORING LOCATION
- DOWNSTREAM BMP PERFORMANCE MONITORING LOCATION
- PREVIOUS BMP PERFORMANCE MONITORING LOCATION
- SPECIAL STUDIES AND OTHER SAMPLING LOCATIONS
- DRAINAGE
- SANDBAG
- ROCK CRIB SWALE
- ADMINISTRATIVE AREA BOUNDARY
- STUDY AREA
- ISRA EXCAVATION BOUNDARY
- FORMER ISRA EXCAVATION BOUNDARY

NOTES

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3. BMP = BEST MANAGEMENT PRACTICE
4. AERIAL IMAGERY SOURCE: CIRGIS

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SCALE IN FEET

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2017/2018 RAINY SEASON SAP
GMP MONITORING PROGRAM
THE BOEING COMPANY
VENTURA COUNTY, CALIFORNIA

OUTFALL 009
CMS SOUTH OF LOX AREA - NASA

OCTOBER 2017

FIGURE 5

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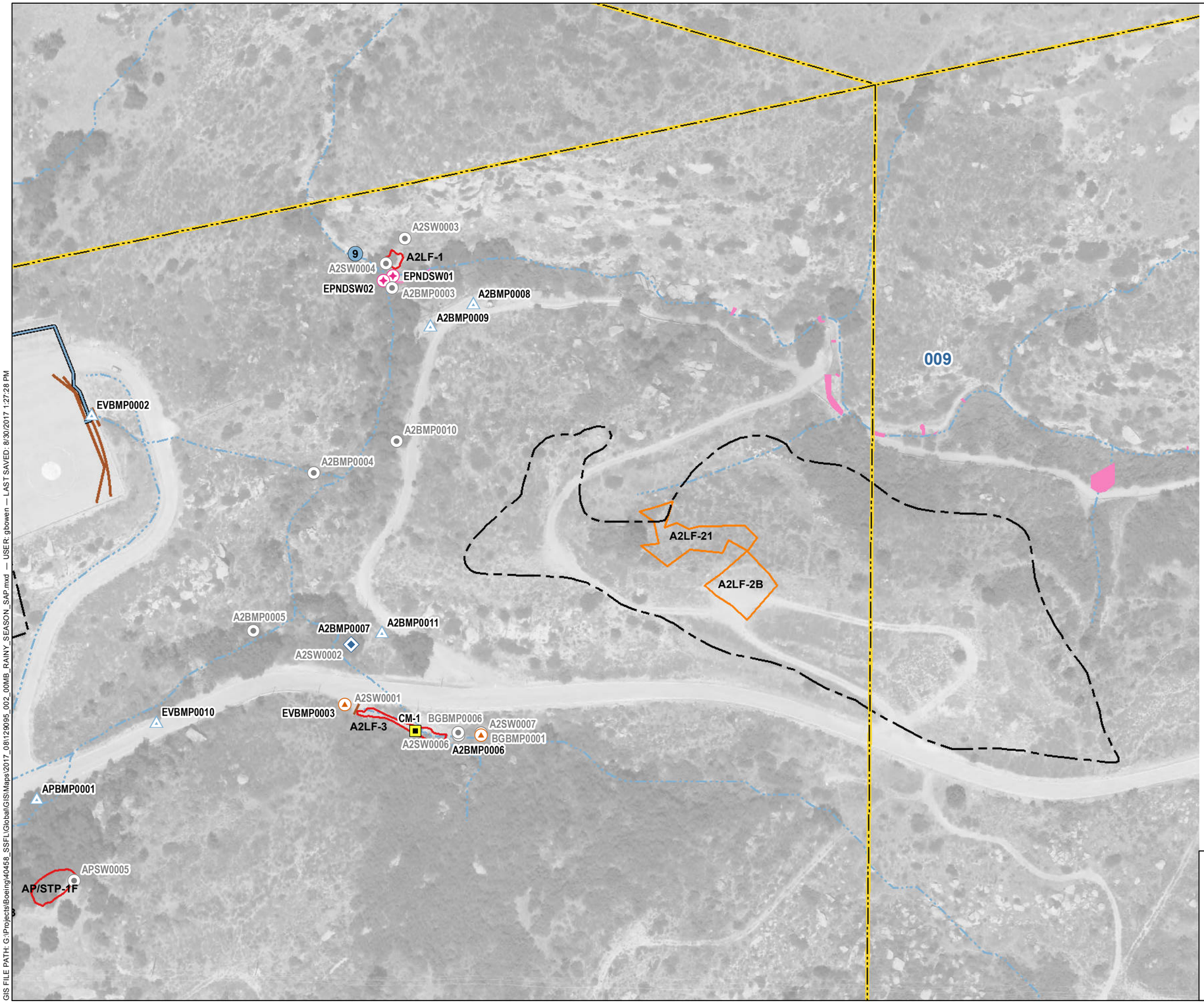

LEGEND

- CULVERT MODIFICATION (CM)
- UPSTREAM BMP PERFORMANCE MONITORING LOCATION
- DOWNSTREAM BMP PERFORMANCE MONITORING LOCATION
- PREVIOUS BMP PERFORMANCE MONITORING LOCATION
- POTENTIAL BMP PERFORMANCE MONITORING LOCATION
- ACTIVE NPDES OUTFALL
- SPECIAL STUDIES AND OTHER SAMPLING LOCATIONS
- DRAINAGE
- CONVEYANCE PIPELINE
- SANDBAG
- ROCK CRIB SWALE
- ADMINISTRATIVE AREA BOUNDARY
- STUDY AREA
- ISRA EXCAVATION BOUNDARY
- FORMER ISRA EXCAVATION BOUNDARY

NOTES

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3. BMP = BEST MANAGEMENT PRACTICE
4. AERIAL IMAGERY SOURCE: CIRGIS

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SCALE IN FEET

HALEY ALDRICH

2017/2018 RAINY SEASON SAP
GMP MONITORING PROGRAM
THE BOEING COMPANY
VENTURA COUNTY, CALIFORNIA

OUTFALL 009
A2LF, CM-1, AND HELIPAD AREAS - NASA

OCTOBER 2017

FIGURE 6

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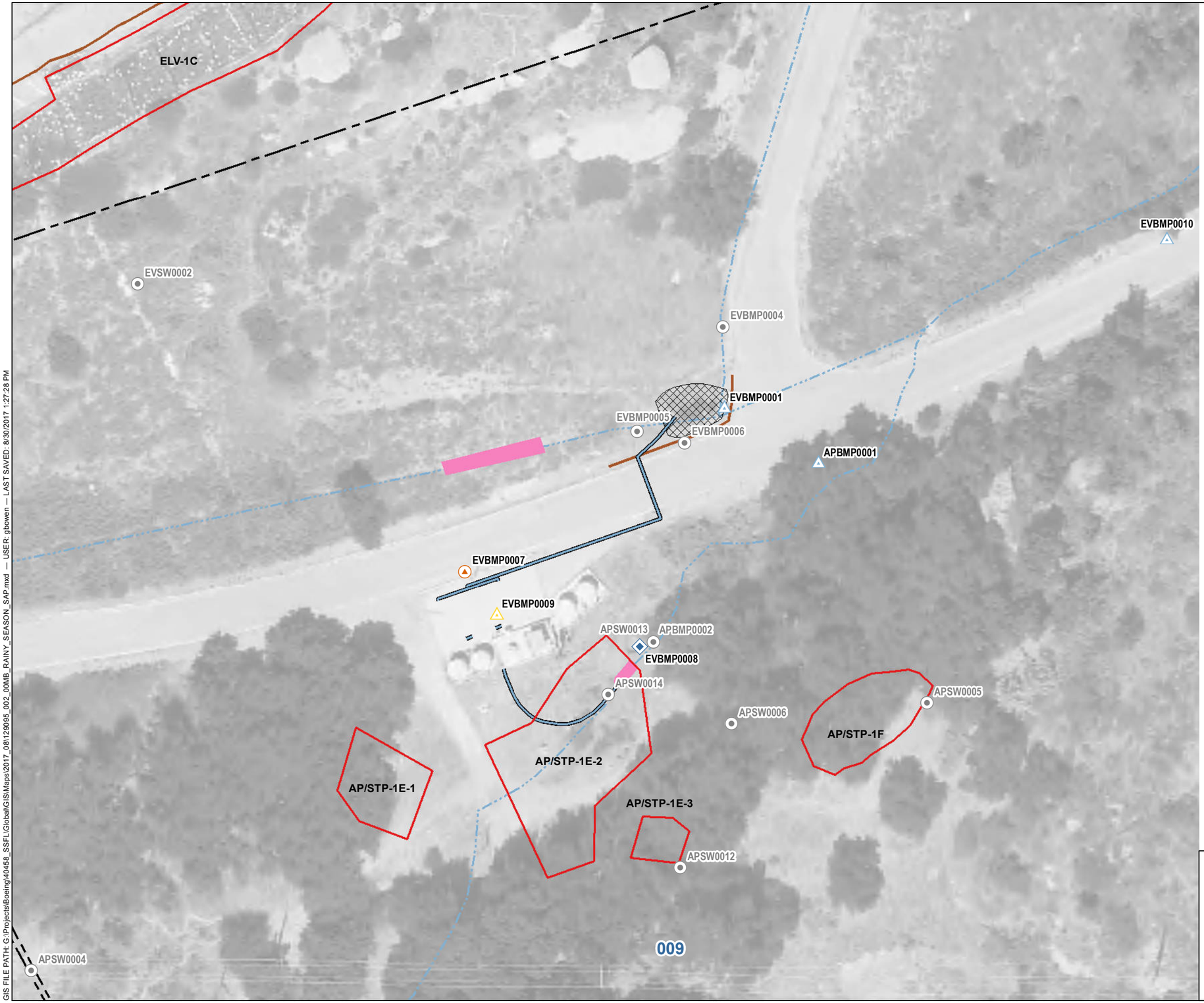

LEGEND

- UPSTREAM BMP PERFORMANCE MONITORING LOCATION
- DOWNSTREAM BMP PERFORMANCE MONITORING LOCATION
- MIDPOINT BMP PERFORMANCE MONITORING LOCATION
- PREVIOUS BMP PERFORMANCE MONITORING LOCATION
- POTENTIAL BMP PERFORMANCE MONITORING LOCATION
- DRAINAGE
- CONVEYANCE PIPELINE
- SANDBAG
- ROCK CRIB SWALE
- SEDIMENTAION BASIN
- ADMINISTRATIVE AREA BOUNDARY
- STUDY
- ISRA EXCAVATION BOUNDARY

NOTES

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2. SAP = SAMPLING AND ANALYSIS PLAN
3. BMP = BEST MANAGEMENT PRACTICE
4. AERIAL IMAGERY SOURCE: CIRGIS

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SCALE IN FEET

HALEY ALDRICH

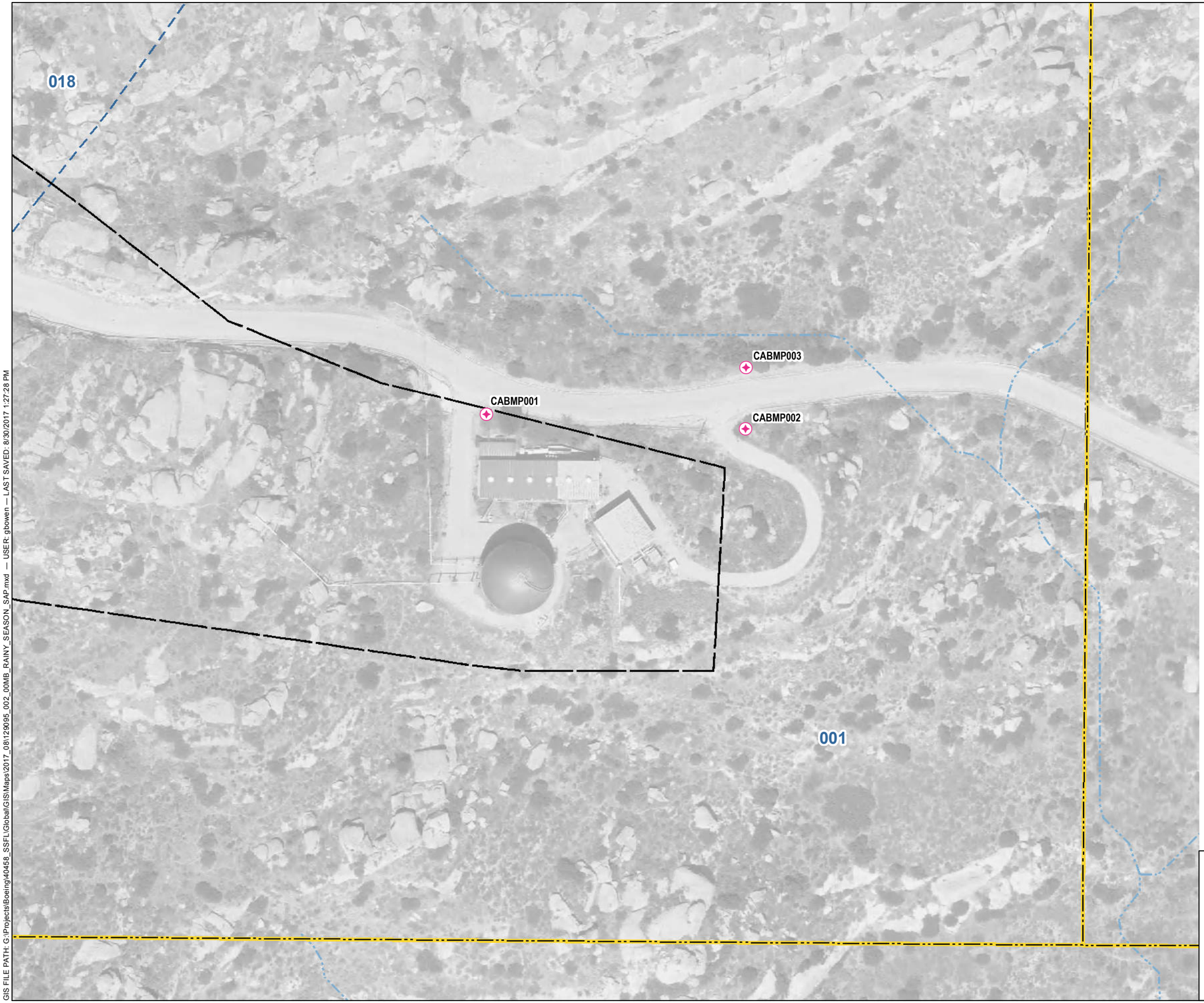
2017/2018 RAINY SEASON SAP
GMP MONITORING PROGRAM
THE BOEING COMPANY
VENTURA COUNTY, CALIFORNIA

OUTFALL 009
ELV AREA - NASA

OCTOBER 2017

FIGURE 7

GIS FILE PATH: G:\Projects\Boeing\40458_SSFL\Global\GIS\Maps\2017_08\129095_002_00MB_RAINY_SEASON_SAP.mxd — USER: gbowen — LAST SAVED: 8/30/2017 1:27:28 PM



LEGEND

- SPECIAL STUDIES AND OTHER SAMPLING LOCATIONS
- DRAINAGE
- SURFACE WATER DIVIDE
- ADMINISTRATIVE AREA BOUNDARY
- STUDY AREA

NOTES

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3. BMP = BEST MANAGEMENT PRACTICE
4. AERIAL IMAGERY SOURCE: CIRGIS

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SCALE IN FEET

HALEY ALDRICH

2017/2018 RAINY SEASON SAP
GMP MONITORING PROGRAM
THE BOEING COMPANY
VENTURA COUNTY, CALIFORNIA

OUTFALL 001 HYDROGEN GAS TANK AREA - NASA

OCTOBER 2017

FIGURE 8

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Company Name

Happy Valley - Road Leading Down to Lower BMP Area

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Happy Valley - Road Leading Down to Lower BMP Area

Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Is the road leading down to BMP area free of erosion?	No/Yes/NA with comment
Are rip rap berms free of sediment/debris?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Is the road leading down to BMP area free of erosion?	No/Yes/NA with comment
Are rip rap berms free of sediment/debris?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Comments:

Signature

Company Name

Happy Valley - Road Leading Down to Lower BMP Area

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo LBMP-1: Overview of HVS Lower BMP Area (from top of road east)

Insert photo here

Photo LBMP-2: Overview of HVS Lower BMP Area (from top of road west)

Insert photo here

Photo LBMP-3: Rock Berm (up and downstream)

General Comments:

Signature

Company Name

OF008

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF008 Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comments

General Comments:

Signature

Company Name

OF008

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo OF008-1: HVS Drainage and Tributary Drainage Overview (looking north)

Insert photo here

Photo OF008-2: Outfall 008 Overview

Insert photo here

Photo OF008-3: Tributary Drainage Check Dams

General Comments:

Signature

Company Name

OF009 Lower Parking Lot
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 Lower Parking Lot Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Is the area near or along the cistern drain inlet clear of unwanted sediment/debris?	No/Yes/NA with comment
Is runoff along the 24-inch drain being diverted by the low flow diversion weir to the cistern?	No/Yes/NA with comment
Is the gravel area/gravel bag berm (north of fence) in good condition?	No/Yes/NA with comment
Is the wood retaining wall in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
What is the approximate depth of water present in the low flow diversion structure?	No/Yes/NA with comment
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Is the area near or along the cistern drain inlet clear of unwanted sediment/debris?	No/Yes/NA with comment
Is the gravel area/gravel bag berm (north of fence) in good condition?	No/Yes/NA with comment
Is the wood retaining wall in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Comments:

Signature

Company Name

OF009 Lower Parking Lot
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo LPL-1: Cistern area

Insert photo here

Photo LPL-2: Looking down into low flow diversion structure

Insert photo here

Photo LPL-3: Grated inlet and concrete curb

Insert photo here

Photo LPL-4: Wooden retaining wall

General Comments:

Signature

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo 15: ILBMP0001: Lower Lot Area, Culvert Discharge Under Spillway Chute

Insert photo here

Photo 16: ILBMP0001: Lower Lot Area, Culvert Discharge Under Spillway Chute

General Comments:

Signature

Company Name

OF009 Sediment Basin

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 Sediment Basin Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Is there overflow from the rip rap apron into the Biofilter?	No/Yes/NA with comment
If above is YES, please record a video.	N/A
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Is the outlet box clear of unwanted sediment/debris?	No/Yes/NA with comment
Is there ponded water in the Sediment Basin?	No/Yes/NA with comment
If above is YES, note approximate depth to water from top of outlet box	No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 Sediment Basin
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo SB-1: Sediment Basin Overview

Insert photo here

Photo SB-2: Inside Sediment Basin Riser Structure

General Notes:

Signature

Company Name

OF009 BIOFILTER

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 BIOFILTER Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is there flow overtopping the overflow structure?	No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?	No/Yes/NA with comment
If above is YES, please record a video.	N/A
Is there flow in the overflow spillway?	No/Yes/NA with comment
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?	No/Yes/NA with comment
Is there ponded water in the Biofilter?	No/Yes/NA with comment
If above is YES, record approximate depth from top of overflow structure under comments	Depth
Are percolation holes in the concrete apron (at the sediment basin effluent pipe) clear of unwanted sediment/debris?	No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

OF009 BIOFILTER

Signature

Company Name

OF009 BIOFILTER

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo BF-1: Sediment Basin Discharge Pipe

Insert photo here

Photo BF-2: Biofilter Overview

Insert photo here

Photo BF-3: Biofilter Discharge Pipe

Insert photo here

Photo BF-4: Biofilter Outlet Structure

General Notes:

OF009 BIOFILTER

Signature

Company Name

OF009 CM-9 AILF Area

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 CM-9 AILF Area	Inspection Status:	**Conducted/Not Conducted**
Inspection Checklist Questions:		*Inspection Answers:*
During Rain Event Inspection		
Any odors, suspended materials, floating material, etc. observed?		No/Yes/NA with comment
Are erosion/sediment controls in good condition?		No/Yes/NA with comment
Are upstream areas free of erosion or sediment?		No/Yes/NA with comment
Is there flow overtopping the weir board?		No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?		No/Yes/NA with comment
If above is YES, please record a video.		N/A
Is the upstream perforated pipeline draining properly?		No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?		No/Yes/NA with comment
If above is NO, note approximate depth		Depth
Is the inlet swale along Area II Road clear of unwanted sediment/debris?		No/Yes/NA with comment
Is rip rap berm clear of unwanted sediment/debris?		No/Yes/NA with comment
Is any water observed coming out of landfill slope?		No/Yes/NA with comment
Does the CM-9 discharge pipe (north of Area II Road) show any additional signs of erosion?		No/Yes/NA with comment
72 Hours After the End of the Rain Event Inspection		
Any odors, suspended materials, floating material, etc. observed?		No/Yes/NA with comment
Are erosion/sediment controls in good condition?		No/Yes/NA with comment
Are upstream areas free of erosion or sediment?		No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?		No/Yes/NA with comment
Is weir board filter fabric in good condition?		No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?		No/Yes/NA with comment
If above is NO, note approximate depth		Depth
Is a recent high-water mark visible on weir boards?		No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards		Depth
Is water ponded in front of weir boards?		No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards		Depth
Is the inlet swale along Area II Road clear of unwanted sediment/debris?		No/Yes/NA with comment
Is rip rap berm clear of unwanted sediment/debris?		No/Yes/NA with comment
Does the CM-9 discharge pipe (north of Area II Road) show any additional signs of erosion?		No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 CM-9 AILF Area

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM9-1: Asphalt Swale Inlet from Area 2 Road – ILBMP0002

Insert photo here

Photo CM9-2a: CM-9 Basin Overview (Upstream)

Insert photo here

Photo CM9-2b: CM-9 Basin Overview (Towards Weir Boards)

Insert photo here

Photo CM9-4: Up and Downstream Along Perforated Pipeline

General Notes:

Signature

Company Name

OF009 CM-9 AILF Area

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM9-5: Up- and Downstream of Rip Rap Berm

Insert photo here

Photo 17: A1BMP0002: CM-9 Area, Upstream (South), CM-9 BMPs

Insert photo here

Photo 18: A1BMP0002: CM-9 Area, Upstream (South), CM-9 BMPs

Insert photo here

Photo 19: A1BMP0003: CM-9 Area, Downstream, CM-9 BMPs; CM-9 Underdrains

General Notes:

Signature

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo 20: A1BMP0003: CM-9 Area, Downstream, CM-9 BMPs; CM-9 Underdrains

Insert photo here

Photo 21: A1BMP0004: CM-9 Area, Culvert Inlet on North Side of Area II Road Between CM8 and CM-9

Insert photo here

Photo 22: A1BMP0004: CM-9 Area, Culvert Inlet on North Side of Area II Road Between CM8 and CM-9

Insert photo here

Photo 23: ILBMP0002: CM-9 Area, Upstream (East), CM-9 BMPs; Culvert Inlet Off Area II Road

General Notes:

Signature

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo 24: ILBMP0002: CM-9 Area, Upstream (East), CM-9 BMPs; Culvert Inlet Off Area II Road

General Notes:

Signature

Company Name

OF009 B-1 Media Filter

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 B-1 Media Filter Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is there flow overtopping the box?	No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?	No/Yes/NA with comment
If above is YES, please record a video.	N/A
Are sandbags deployed at curb cuts?	No/Yes/NA with comment
Is flow being directed towards the curb cuts?	No/Yes/NA with comment
Is hillside free of erosion?	No/Yes/NA with comment
Is the asphalt/gunite swale going towards B-1 Media Filter clear of unwanted sediment/debris?	No/Yes/NA with comment
Note % flow from each underdrain	%
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?	No/Yes/NA with comment
Are the upstream pretreatment check dams clear of unwanted sediment/debris?	No/Yes/NA with comment
Is there ponded water present in media filter area?	No/Yes/NA with comment
If above is YES, record approximate depth from the top of overflow structure	Depth
Is hillside free of erosion?	No/Yes/NA with comment
Is the asphalt/gunite swale going towards B-1 Media Filter clear of unwanted sediment/debris?	No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 B-1 Media Filter

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo B1MF-1: B-1 Media Filter Overview

Insert photo here

Photo B1MF-3: Curb Cuts and Sandbags

Insert photo here

Photo B1MF-4: Check Dams upstream of B-1 Media Filter

Insert photo here

Photo B1MF-5: B-1 Retention Basin Discharge Pipe

General Notes:

Signature

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo 11: B1BMP0009: B-1 Area, Gunite Swale Conveying Road Runoff

Insert photo here

Photo 12: B1BMP0009: B-1 Area, Gunite Swale Conveying Road Runoff

General Notes:

Signature

Company Name

OF009 B-1 Retention Basin

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 B-1 Retention Basin Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is the retention basin clear of unwanted sediment/debris?	No/Yes/NA with comment
Is the perimeter of the basin free of erosion?	No/Yes/NA with comment
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is the retention basin clear of unwanted sediment/debris?	No/Yes/NA with comment
Is the perimeter of the basin free of erosion?	No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 B-1 Retention Basin

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo B1RB-1: B-1 Retention Overview

Insert photo here

Photo B1RB-2: Close-up of Riser Structure in Retention Basin

General Notes:

Signature

Company Name

OF009 Upper Lot Media Filter
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 Upper Lot Media Filter	Inspection Status:	**Conducted/Not Conducted**
Inspection Checklist Questions:		*Inspection Answers:*
During Rain Event Inspection		
Any odors, suspended materials, floating material, etc. observed?		No/Yes/NA with comment
Are erosion/sediment controls in good condition?		No/Yes/NA with comment
Are upstream areas free of erosion or sediment?		No/Yes/NA with comment
Is there flow overtopping the box?		No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?		No/Yes/NA with comment
If above is YES, please record a video.		N/A
Is hillside free of erosion?		No/Yes/NA with comment
Is the asphalt/gunite swale going towards Upper Lot Media Filter clear of unwanted sediment/debris?		No/Yes/NA with comment
Note % flow from each underdrain		%
72 Hours After the End of the Rain Event Inspection		
Any odors, suspended materials, floating material, etc. observed?		No/Yes/NA with comment
Are erosion/sediment controls in good condition?		No/Yes/NA with comment
Are upstream areas free of erosion or sediment?		No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?		No/Yes/NA with comment
Is hillside free of erosion?		No/Yes/NA with comment
Is the asphalt/gunite swale going towards Upper Lot Media Filter clear of unwanted sediment/debris?		No/Yes/NA with comment
Is there ponded water present in media filter area?		No/Yes/NA with comment
If above is YES, record approximate depth from the top of overflow structure		Depth
Is hillside free of erosion?		No/Yes/NA with comment
Is the asphalt/gunite swale going towards Upper Lot Media Filter clear of unwanted sediment/debris?		No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 Upper Lot Media Filter
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo ULMF-1: Upper Lot Media Filter Overview

Insert photo here

Photo UPMF-2: Upper Lot Retention Basin Discharge Pipe

Insert photo here

Photo ULMF-3: ULMF Area, Gunite Swale Conveying Road Runoff

General Notes:

Signature

Company Name

OF009 Detention Bioswales
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 Detention Bioswales Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is rip rap swale clear of unwanted sediment/debris?	No/Yes/NA with comment
Are vegetated swales in good condition?	No/Yes/NA with comment
Note % flow from northern underdrain	%
Note % flow from southern underdrain	%
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?	No/Yes/NA with comment
Is rip rap swale clear of unwanted sediment/debris?	No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 Detention Bioswales
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo B1DB-1: Northern B1436 Bioswale Overview (from the north end)

Insert photo here

Photo B1DB-2: Northern B1436 Bioswale Overview (from the south end)

Insert photo here

Photo B1DB-3: Southern B1436 Bioswale Overview (from the north end)

Insert photo here

Photo B1DB-4: Southern B1436 Bioswale Overview (from the south end)

General Notes:

Signature

Company Name

OF009 Detention Bioswales
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo B1DB-6: Western Swale Inlet to Southern B1436 Bioswale – ILBMP0004

Insert photo here

Photo B1DB-7: Eastern Swale Inlet to Southern B1436 Bioswale – ILBMP0008

Insert photo here

Photo 1: ILBMP0008: Upstream, B1436 Southern Detention Bioswale (Concrete Swale Diverting Sheet Flow into Rock Crib – East)

Insert photo here

Photo 2: ILBMP0008: Upstream, B1436 Southern Detention Bioswale (Concrete Swale Diverting Sheet Flow into Rock Crib – East)

General Notes:

Signature

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo 3: ILBMP0004: Upstream, B1436 Southern Detention Bioswale (Concrete Swale Diverting Sheet Flow into Rock Crib – West)

Insert photo here

Photo 4: ILBMP0004: Upstream, B1436 Southern Detention Bioswale (Concrete Swale Diverting Sheet Flow into Rock Crib – West)

Insert photo here

Photo 5: ILBMP0005: Downstream, B1436 Southern Detention Bioswale; 12-inch Underdrain

Insert photo here

Photo 6: ILBMP0005: Downstream, B1436 Southern Detention Bioswale; 12-inch Underdrain

General Notes:

Signature

Company Name

OF009 CM-8

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 CM-8 Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is there flow overtopping the weir boards?	No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?	No/Yes/NA with comment
If above is YES, please record a video.	N/A
72 Hour Storm Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?	No/Yes/NA with comment
Is weir board filter fabric in good condition?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is a recent high-water mark visible on weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth
Is water ponded in front of weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 CM-8

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM8-1a: CM-8 Basin Overview (Upstream)

Insert photo here

Photo CM8-1b:
CM-8 Basin Overview (Towards Weir Boards)

General Notes:

Signature

Company Name

OF009 CM-11
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 CM-11 Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is there flow overtopping the weir boards?	No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?	No/Yes/NA with comment
If above is YES, please record a video.	N/A
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?	No/Yes/NA with comment
Is weir board filter fabric in good condition?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is a recent high-water mark visible on weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth
Is water ponded in front of weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 CM-11

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM11-1a: CM-11 Basin Overview (Upstream)

Insert photo here

Photo CM11-1b: CM-11 Basin Overview (Towards Weir Boards)

General Notes:

Signature

Company Name

OF009 CM-7

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 CM-7 Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are the upstream swales clear of unwanted sediment/debris?	No/Yes/NA with comment
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are the upstream swales clear of unwanted sediment/debris?	No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 CM-7

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM7-1: Upstream West and East from CM-7

General Notes:

Signature

Company Name

OF009 CM-6

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 CM-6 Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is there flow overtopping the weir boards?	No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?	No/Yes/NA with comment
If above is YES, please record a video.	N/A
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?	No/Yes/NA with comment
Is weir board filter fabric in good condition?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is a recent high-water mark visible on weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth
Is water ponded in front of weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 CM-6

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM6-1a: CM-6 Basin Overview (Upstream)

Insert photo here

Photo CM6-1b: CM-6 Basin Overview (Towards Weir Boards)

General Notes:

Signature

Company Name

OF009 CM-5 Sage Ranch

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 CM-5 Sage Ranch Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is there flow overtopping the weir boards?	No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?	No/Yes/NA with comment
If above is YES, please record a video.	N/A
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?	No/Yes/NA with comment
Is weir board filter fabric in good condition?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is a recent high-water mark visible on weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth
Is water ponded in front of weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 CM-5 Sage Ranch
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM5-1a: CM-5 Basin Overview (Upstream)

Insert photo here

Photo CM5-1b: CM-5 Basin Overview (Towards Weir Boards)

General Notes:

Signature

Company Name

OF009 CM-12 Sage Ranch
BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 CM-12 Sage Ranch Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is there flow overtopping the weir boards?	No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?	No/Yes/NA with comment
If above is YES, please record a video.	N/A
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is weir board filter fabric in good condition?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is a recent high-water mark visible on weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth
Is water ponded in front of weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 CM-12 Sage Ranch

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM12-1a: CM-12 Basin Overview (Upstream)

Insert photo here

Photo CM12-1b: CM-12 Basin Overview (Towards Weir Boards)

General Notes:

Signature

Company Name

OF009 CM-4

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 CM-4 Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is there flow overtopping the weir boards?	No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?	No/Yes/NA with comment
If above is YES, please record a video.	N/A
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?	No/Yes/NA with comment
Is weir board filter fabric in good condition?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is a recent high-water mark visible on weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth
Is water ponded in front of weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 CM-4

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM4-1a: CM-4 Basin Overview (Upstream)

Insert photo here

Photo CM4-1b: CM-4 Basin Overview (Towards Weir Boards)

General Notes:

Signature

Company Name

OF009 CM-3

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

OF009 CM-3 Inspection Status: **Conducted/Not Conducted**

Inspection Checklist Questions:	*Inspection Answers:*
During Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is there flow overtopping the weir boards?	No/Yes/NA with comment
If above is YES, does the underdrain appear to be constricted?	No/Yes/NA with comment
If above is YES, please record a video.	N/A
Is the drop inlet on the north side of the road clogged or otherwise obstructed?	No/Yes/NA with comment
Is there erosion at the diversion pipe outlet?	No/Yes/NA with comment
72 Hours After the End of the Rain Event Inspection	
Any odors, suspended materials, floating material, etc. observed?	No/Yes/NA with comment
Are erosion/sediment controls in good condition?	No/Yes/NA with comment
Are upstream areas free of erosion or sediment?	No/Yes/NA with comment
Are underdrain(s) clear of unwanted sediment/debris?	No/Yes/NA with comment
Is weir board filter fabric in good condition?	No/Yes/NA with comment
Is the culvert basin clear of unwanted sediment/debris?	No/Yes/NA with comment
If above is NO, note approximate depth	Depth
Is a recent high-water mark visible on weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth
Is water ponded in front of weir boards?	No/Yes/NA with comment
If above is YES, note approximate depth from top of weir boards	Depth
Is the drop inlet on the north side of the road clogged or otherwise obstructed?	No/Yes/NA with comment
Is there erosion at the diversion pipe outlet?	No/Yes/NA with comment

Corrective action Identified during this inspection event: No/Yes/NA with comment

General Notes:

Signature

Company Name

OF009 CM-3

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM3-1a: CM-3 Basin Overview (Upstream)

Insert photo here

Photo CM3-1b: CM-3 Basin Overview (Towards Weir Boards)

Insert photo here

Photo 25: LXBMP0010: LOX, CM-3 Influent Sample Location

Insert photo here

Photo 25: LXBMP0010: LOX, CM-3 Influent Sample Location

General Notes:

Signature

Company Name

OF009 CM-3

BMP Performance Inspection Checklist

Client	**The Boeing Company**	Inspection Date	
Project Name	**Santa Susana**	Inspector Name	
County	**Ventura County**	Inspector Company	
State	**California**	Project Manager	
Inspection Type(s)	**Stormwater Inspection**	Precip. Present	

Insert photo here

Photo CM3: CM-3 Roadway Inlet

Insert photo here

Photo CM3: CM-3 Diversion Outlet

General Notes:

Signature

BMP Visual Inspection Form – OF009 NASA

Date/Time of Inspection _____

Inspector's Name/Title _____ **Signature** _____

Weather and Observations		
Precipitation present during inspection?	☐ Yes	☐ No

LOX Area BMPs

Photo #		Photo Location:	LOX Berm Overview (West End)
Photo #		Photo Location:	LOX Berm Overview (East End)
Photo #		Photo Location:	Northern Drainage Overview Where Slope Drains Discharge
Photo #		Additional Photo(s):	

During Rain Event Inspection	Yes	No	N/A	Comments/Corrective Action:
Any odors, suspended material, floating material, etc. observed?				
Are erosion/sediment controls in good condition?				
Are slope drains in good condition?				
Is the gravel bag berm in good condition?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				

72 Hours After the End of the Rain Event Inspection				
Any odors, suspended material, floating material, etc. observed?				
Are slope drains in good condition?				
Is the gravel bag berm in good condition?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
Other _____				

BMP Visual Inspection Form – OF009 NASA

Sandbag Berm – Near LOX Area

Photo # _____ Photo Location: _____

Photo # _____ Photo Location: _____

Photo # _____ Photo Location: _____

Photo # _____ Additional Photo(s): _____

	Yes	No	N/A	Comments/Corrective Action:
During Rain Event Inspection				
Any odors, suspended material, floating material, etc. observed?				
Are the sandbags in good condition?				
Is area behind sandbag berm free of debris/sediment buildup?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
72 Hours After the End of the Rain Event Inspection				
Any odors, suspended material, floating material, etc. observed?				
Are slope drains in good condition?				
Are the sandbags in good condition?				
Is area behind sandbag berm free of debris/sediment buildup?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
Other _____				

BMP Visual Inspection Form – OF009 NASA

CM-10

Photo #		Photo Location:	CM-10 Basin Overview (Upstream and Towards Weir Boards)
Photo #		Photo Location:	CM-10 Underdrains
Photo #		Photo Location:	Drop inlet on north side of road
Photo #		Photo Location:	Looking upstream from drop inlet along roadway
Photo #		Additional Photo(s):	

During Rain Event Inspection	Yes	No	N/A	Comments/Corrective Action:
Any odors, suspended material, floating material, etc. observed?				
Are erosion/sediment controls in good condition?				
Is there flow overtopping the weir boards? If yes, does the underdrain appear to be constricted? If yes, please record a video.				
Is there sediment accumulation in the culvert basin? If yes, record approximate depth under comments.				
Is there erosion at the diversion pipe outlet?				
Describe surface water runoff along the road and upstream from the CM-10 diversion, under comments.				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
72 Hours After the End of the Rain Event Inspection				
Any odors, suspended material, floating material, etc. observed?				
Are erosion/sediment controls in good condition?				
Is a recent high-water mark visible on weir boards? If yes, record depth from top of weir boards.				
Is water ponded in front of weir boards? If yes, record depth from top of weir boards.				
Are underdrain(s) clear of unwanted sediment/debris?				
Is weir board filter fabric in good condition?				
Is there sediment accumulation in the culvert basin? If yes, record approximate depth under comments.				
Is there erosion at the diversion pipe outlet?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				

BMP Visual Inspection Form – OF009 NASA

CM-10

	Yes	No	N/A	Comments/Corrective Action:
Other _____				

CM-2

Photo # _____ Photo Location: CM-2 Basin Overview (Upstream and Towards Weir Boards)

Photo # _____ Photo Location: CM-2 Underdrains

Photo # _____ Photo Location: _____

Photo # _____ Additional Photo(s): _____

During Rain Event Inspection	Yes	No	N/A	Comments/Corrective Action:
Are erosion/sediment controls in good condition?				
Is water ponded in front of weir boards? If yes, record depth from top of weir boards.				
Is there flow overtopping the weir boards? If yes, does the underdrain appear to be constricted? If yes, please record a video				
Is there sediment accumulation in the culvert basin? If yes, record approximate depth under comments.				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				

72 Hours After the End of the Rain Event Inspection				
Are erosion/sediment controls in good condition?				
Is a recent high-water mark visible on weir boards? If yes, record depth from top of weir boards.				
Are underdrain(s) clear of unwanted sediment/debris?				
Is weir board filter fabric in good condition?				
Is there sediment accumulation in the culvert basin? If yes, record approximate depth under comments.				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
Other _____				

BMP Visual Inspection Form – OF009 NASA

CM-1 Area

Photo #		Photo Location:	CM-1 Basin Overview (Upstream and Towards Weir Boards)
Photo #		Photo Location:	CM-1 Underdrains
Photo #		Photo Location:	CM-1 Discharge Pipe
Photo #		Photo Location:	Rip Rap Berm Northwest of CM-1
Photo #		Additional Photo(s):	

During Rain Event Inspection	Yes	No	N/A	Comments/Corrective Action:
Are erosion/sediment controls in good condition?				
Is there flow overtopping the weir boards? If yes, does the underdrain appear to be constricted? If yes, please record a video.				
Are underdrains in good condition? Note approximate % flow from each underdrain under comments.				
Is there sediment accumulation in the culvert basin? If yes, record approximate depth under comments.				
Any excessive ponding in front of sandbags at NW entrance?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				

72 Hours After the End of the Rain Event Inspection				
Are erosion/sediment controls in good condition?				
Is a recent high-water mark visible on weir boards? If yes, record depth from top of weir boards.				
Is water ponded in front of weir boards? If yes, record depth from top of weir boards.				
Is weir board filter fabric in good condition?				
Is there sediment accumulation in the culvert basin? If yes, record approximate depth under comments.				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
Other _____				

BMP Visual Inspection Form – OF009 NASA

ELV Treatment BMP & ELV Channel

Photo #		Photo Location:	ELV Channel (Up- and Downstream)
Photo #		Photo Location:	ELV Settling Basin (looking towards intake pipe)
Photo #		Photo Location:	ELV Settling Basin (looking towards overflow bypass and culvert inlet)
Photo #		Photo Location:	ELV Treatment BMP Discharge Pipe
Photo #		Photo Location:	ELV Treatment BMP Tank Array Overview
Photo #		Additional Photo(s):	

During Rain Event Inspection / 72 Hours After the End of the Rain Event Inspection	Yes	No	N/A	Comments/Corrective Action:
Are erosion/sediment controls in good condition?				
Is ELV channel rip rap in good condition?				
Are fiber rolls and jute matting in good condition?				
Is influent screen free of debris (no clogging)?				
Is basin intake pipe in good condition?				
Is the settling basin in good condition?				
Is tank array and associated piping in good condition?				
Is effluent pipe in good condition?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
Other _____				

BMP Visual Inspection Form – OF009 NASA

Sandbag Berm – Near ELV Treatment BMP

Photo # _____ Photo Location: _____

Photo # _____ Photo Location: _____

Photo # _____ Photo Location: _____

Photo # _____ Additional Photo(s): _____

	Yes	No	N/A	Comments/Corrective Action:
During Rain Event Inspection				
Are the sandbags in good condition?				
Is area behind sandbag berm free of debris/sediment buildup?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
72 Hours After the End of the Rain Event Inspection				
Are the sandbags in good condition?				
Is area behind sandbag berm free of debris/sediment buildup?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
Is water ponded in front of sandbags? If yes, record depth from top of weir boards.				
Other _____				

BMP Visual Inspection Form – OF009 NASA

Helipad Area BMPs

Photo #		Photo Location:	Helipad Berm Overview (Eastern Berm)
Photo #		Photo Location:	Helipad Berm Overview (Western Berm)
Photo #		Photo Location:	Spillway Below Helipad Berms
Photo #		Photo Location:	Culvert Inlet Passing Beneath Helipad Road
Photo #		Additional Photo(s):	

	Yes	No	N/A	Comments/Corrective Action:
During Rain Event Inspection				
Are the Helipad Berms in good condition?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
Is area behind Helipad Berms free of debris/sediment buildup?				
Is parking lot free of excessive debris/sediment?				
Is water overtopping the Helipad Berm? If yes, note which berm(s) are being overtopped. If yes, please record a video.				
72 Hours After the End of the Rain Event Inspection				
Are the Helipad Berms in good condition?				
Are upstream areas free of erosion or sediment? If no, note location and description under comments.				
Is area behind Helipad Berms free of debris/sediment buildup?				
Is parking lot free of excessive debris/sediment?				
Other _____				

BMP Visual Inspection Form – OF009 NASA

Additional Notes/Observations

Boeing 72 Hours After Rain Event Ponding Inspection Form

Date/Time of Inspection _____

Inspector's Name/Title _____ **Signature** _____

Culvert Modification	Ponding? Yes	Ponding? No	Depth (feet)
CM-2			
CM-3			
CM-4			
CM-5			
CM-6			
CM-7			
CM-8			
CM-9			
CM-10			
CM-11			
CM-12			
B-1 MEDIA FILTER			
SEDIMENT BASIN			
BIOFILTER			
UPPER LOT MEDIA FILTER			
NORTHERN DETENTION BIOSWALE			
SOUTHERN DETENTION BIOSWALE			

OF009 Lower Parking Lot - Cistern Inspection Checklist Questions:	**Inspection Answers:**
Amount of volume pumped from the cistern?	Volume
What time did the pumping occur?	Time
What was the resulting depth of the cistern?	Depth

NASA 72 Hours After Rain Event Ponding Inspection Form

Date/Time of Inspection _____

Inspector's Name/Title _____ **Signature** _____

Culvert Modification	Ponding? Yes	Ponding? No	Depth (feet)
CM-1			
LOX AREA			
HELIPAD			
ELV			

Printed on 9/29/2017

Surface Water Monitoring Inspection and Sample Collection Form
PERFORMANCE MONITORING and BMP MONITORING PROGRAMS

Sampling Responsibility: NASA Inspector/Sampler: _____
Date: _____
Outfall/Watershed: 009

Weather: _____
Rain Event Start Date/Time: _____

Field Blank ID: _____

	Sample Tracking Information						Sample Field Measurements				Leaf Test				Sample Observations
	ISRA Area(s) & Location	Qualitative Flow Observations*	Photo Number(s)	Object ID	Sample ID (Object ID_yyyymmdd)	Sample Time	Conductivity (mS or uS)	pH	Temperature (°C)	Turbidity (NTU)	Distance (ft)	Time (s)	Speed (ft/s)	Water Depth (in)	Notes (color, odor, sheen, foam, biological material, nearby erosion, etc.)
ELV TREATMENT BMP, HELIPAD, AND AP/STP	Culvert inlet; runoff will only be present when rain events exceed ELV BMP design storm			EVBMP0001	EVBMP0001_										
	Spillway inlet			EVBMP0002	EVBMP0002_										
	Sample port in BMP influent pipe prior to "T" connection			EVBMP0007	EVBMP0007_										
	Discharge from media filter tank pipe			EVBMP0008	EVBMP0008_										
	Composite of samples from eastern and western sample ports between settling tanks and media filter			EVBMP0009	EVBMP0009_										
	Storm drain inlet on north side of road			EVBMP0010	EVBMP0010_										
	Area II Road asphalt swale			APBMP0001	APBMP0001_										

Notes:

Additional Observations:

***Qualitative Flow Observations:**

No Flow
Low Flow: Trickle or minor amount of flow.
Moderate Flow: Water is flowing normally, no significant erosion or turbid water.
High Flow: Significant water flow/velocity, slope erosion.

NPDES Permit Limits:

Temperature < 86 °F

pH 6.5 - 8.5

ALL RECEIVING AND SAMPLE COLLECTION BOTTLES MUST BE PRE-RINSED 3 TIMES WITH SOURCE WATER, PRIOR TO COLLECTION OF THE SAMPLE.

EXCEPTION IS THE HNO3 (NITRIC) PRESERVED POLY BOTTLES - DO NOT PRE-RINSE THE HNO3 PRESERVED POLY'S

Printed on 9/29/2017

Surface Water Monitoring Inspection and Sample Collection Form
PERFORMANCE MONITORING and BMP MONITORING PROGRAMS

Sampling Responsibility: NASA
Inspector/Sampler:
Date:
Outfall/Watershed 009

Weather:
Rain Event Start Date/Time:

Field Blank ID:

Sample Tracking Information						Sample Field Measurements				Leaf Test				Sample Observations
ISRA Area(s) & Location	Qualitative Flow Observations*	Photo Number(s)	Object ID	Sample ID (Object ID_yyyymmdd)	Sample Time	Conductivity (mS or uS)	pH	Temperature (°C)	Turbidity (NTU)	Distance (ft)	Time (s)	Speed (ft/s)	Water Depth (in)	Notes (color, odor, sheen, foam, biological material, nearby erosion, etc.)
Sheetflow along Area II Road upstream of sandbag berm			EVBMP0003	EVBMP0003_										
CM-1 eastern tributary drainage			A2BMP0006	A2BMP0006_										
CM-1 culvert outlet			A2BMP0007	A2BMP0007_										
Culvert inlet on north side of Well 13 Road			A2BMP0008	A2BMP0008_										
Culvert outlet just above the Northern Drainage and east of autosamplers pad			A2BMP0009	A2BMP0009_										
Culvert outlet on west side of Well 13 Road, just north of Service Area Road			A2BMP0011	A2BMP0011_										

Notes:

Additional Observations:

***Qualitative Flow Observations:**

No Flow
Low Flow: Trickle or minor amount of flow.
Moderate Flow: Water is flowing normally, no significant erosion or turbid water.
High Flow: Significant water flow/velocity, slope erosion.

NPDES Permit Limits:

Temperature < 86 °F

pH 6.5 - 8.5

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Printed on 9/29/2017

Surface Water Monitoring Inspection and Sample Collection Form
PERFORMANCE MONITORING and BMP MONITORING PROGRAMS

Sampling Responsibility: NASA
Inspector/Sampler:
Date:
Outfall/Watershed 001

Weather:
Rain Event Start Date/Time:

Field Blank ID:

Sample Tracking Information						Sample Field Measurements				Leaf Test				Sample Observations
ISRA Area(s) & Location	Qualitative Flow Observations*	Photo Number(s)	Object ID	Sample ID (Object ID_yyyymmdd)	Sample Time	Conductivity (mS or uS)	pH	Temperature (°C)	Turbidity (NTU)	Distance (ft)	Time (s)	Speed (ft/s)	Water Depth (in)	Notes (color, odor, sheen, foam, biological material, nearby erosion, etc.)
Driveway downgradient of hydrogen gas storage tank			HGBMP001	HGBMP001_										
Driveway downgradient of hydrogen gas facility buildings			HGBMP002	HGBMP002_										
Road runoff downstream of hydrogen gas facility			HGBMP003	HGBMP003_										

Notes:

Additional Observations:

***Qualitative Flow Observations:**

No Flow
Low Flow: Trickle or minor amount of flow.
Moderate Flow: Water is flowing normally, no significant erosion or turbid water.
High Flow: Significant water flow/velocity, slope erosion.

NPDES Permit Limits:

Temperature < 86 °F

pH 6.5 - 8.5

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EXCEPTION IS THE HNO3 (NITRIC) PRESERVED POLY BOTTLES - DO NOT PRE-RINSE THE HNO3 PRESERVED POLY'S

Printed on 9/29/2017

Surface Water Monitoring Inspection and Sample Collection Form
PERFORMANCE MONITORING and BMP MONITORING PROGRAMS

Sampling Responsibility: Boeing
Inspector/Sampler:
Date:
Outfall/Watershed: 009

Weather:
Rain Event Start Date/Time:

Field Blank ID:

	Sample Tracking Information						Sample Field Measurements				Leaf Test				Sample Observations
	ISRA Area(s) & Location	Qualitative Flow Observations*	Photo Number(s)	Object ID	Sample ID (Object ID_yyyymmdd)	Sample Time	Conductivity (mS or uS)	pH	Temperature (°C)	Turbidity (NTU)	Distance (ft)	Time (s)	Speed (ft/s)	Water Depth (in)	Notes (color, odor, sheen, foam, biological material, nearby erosion, etc.)
CM-3 AREA	Upstream of Service Area Road BMP, drop inlet on north side of road			LXBMP0010	LXBMP0010_										
	Upstream of Service Area Road BMP, natural drainage upstream of CM-3			LXBMP0011	LXBMP0011_										
	Downstream of Service Area Road BMP, underdrains			LXBMP0012	LXBMP0012_										

Notes:

Additional Observations:

***Qualitative Flow Observations:**

No Flow
Low Flow: Trickle or minor amount of flow.
Moderate Flow: Water is flowing normally, no significant erosion or turbid water.
High Flow: Significant water flow/velocity, slope erosion.

NPDES Permit Limits:

Temperature < 86 °F

pH 6.5 - 8.5

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EXCEPTION IS THE HNO3 (NITRIC) PRESERVED POLY BOTTLES - DO NOT PRE-RINSE THE HNO3 PRESERVED POLY'S

Printed on 9/29/2017

Surface Water Monitoring Inspection and Sample Collection Form
PERFORMANCE MONITORING and BMP MONITORING PROGRAMS

Sampling Responsibility: Boeing
Inspector/Sampler:
Date:
Outfall/Watershed: 009

Weather:
Rain Event Start Date/Time:

Field Blank ID:

	Sample Tracking Information						Sample Field Measurements				Leaf Test				Sample Observations
	ISRA Area(s) & Location	Qualitative Flow Observations*	Photo Number(s)	Object ID	Sample ID (Object ID_yyyymmdd)	Sample Time	Conductivity (mS or uS)	pH	Temperature (°C)	Turbidity (NTU)	Distance (ft)	Time (s)	Speed (ft/s)	Water Depth (in)	Notes (color, odor, sheen, foam, biological material, nearby erosion, etc.)
B-1 AREA	Gunite swale conveying road runoff			B1BMP0009	B1BMP0009_										
	Culvert outlet from upper parking lot area			B1BMP0010	B1BMP0010_										
	Underdrains			B1BMP0011	B1BMP0011_										

Notes:

Additional Observations:

***Qualitative Flow Observations:**

No Flow
Low Flow: Trickle or minor amount of flow.
Moderate Flow: Water is flowing normally, no significant erosion or turbid water.
High Flow: Significant water flow/velocity, slope erosion.

NPDES Permit Limits:

Temperature < 86 °F

pH 6.5 - 8.5

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Printed on 9/29/2017

Surface Water Monitoring Inspection and Sample Collection Form
PERFORMANCE MONITORING and BMP MONITORING PROGRAMS

Sampling Responsibility: Boeing Inspector/Sampler: _____
Date: _____
Outfall/Watershed: 009

Weather: _____
Rain Event Start Date/Time: _____

Field Blank ID: _____

	Sample Tracking Information						Sample Field Measurements				Leaf Test				Sample Observations
	ISRA Area(s) & Location	Qualitative Flow Observations*	Photo Number(s)	Object ID	Sample ID (Object ID_yyyymmdd)	Sample Time	Conductivity (mS or uS)	pH	Temperature (°C)	Turbidity (NTU)	Distance (ft)	Time (s)	Speed (ft/s)	Water Depth (in)	Notes (color, odor, sheen, foam, biological material, nearby erosion, etc.)
LOWER LOT AREA	Culvert discharge under spillway chute			ILBMP0001	ILBMP0001_										
	Upstream Lower Lot Treatment BMP; sample port in cistern discharge pipeline			LPBMP0002	LPBMP0002_										
	Mid-Point Lower Lot BMP; Sediment Basin outlet box			LPBMP0003	LPBMP0003_										
	Downstream Lower Lot Treatment BMP; discharge from Biofilter effluent pipe			LPBMP0004	LPBMP0004_										
CM-9 Area	Upstream (South), CM-9 BMPs			A1BMP0002	A1BMP0002_										
	Downstream, CM-9 BMPs; CM-9 underdrains			A1BMP0003	A1BMP0003_										
	Upstream (East), CM-9 BMPs; culvert inlet off Area II Road			ILBMP0002	ILBMP0002_										

Notes:

Additional Observations:

***Qualitative Flow Observations:**

No Flow
Low Flow: Trickle or minor amount of flow.
Moderate Flow: Water is flowing normally, no significant erosion or turbid water.
High Flow: Significant water flow/velocity, slope erosion.

NPDES Permit Limits:

Temperature < 86 °F

pH 6.5 - 8.5

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Printed on 9/29/2017

Surface Water Monitoring Inspection and Sample Collection Form
PERFORMANCE MONITORING and BMP MONITORING PROGRAMS

Sampling Responsibility: Boeing
Inspector/Sampler:
Date:
Outfall/Watershed: 009

Weather:
Rain Event Start Date/Time:

Field Blank ID:

	Sample Tracking Information						Sample Field Measurements				Leaf Test				Sample Observations
	ISRA Area(s) & Location	Qualitative Flow Observations*	Photo Number(s)	Object ID	Sample ID (Object ID_yyyymmdd)	Sample Time	Conductivity (mS or uS)	pH	Temperature (°C)	Turbidity (NTU)	Distance (ft)	Time (s)	Speed (ft/s)	Water Depth (in)	Notes (color, odor, sheen, foam, biological material, nearby erosion, etc.)
B1436 DETENTION BIOSWALES	Upstream, B1436 southern detention bioswale (concrete swale diverting sheet flow into rock crib - west)			ILBMP0004	ILBMP0004_										
	Downstream, B1436 southern detention bioswale; 12-inch underdrain			ILBMP0005	ILBMP0005_										
	Upstream, B1436 southern detention bioswale (concrete swale diverting sheet flow into rock crib - east)			ILBMP0008	ILBMP0008_										

Notes:

Additional Observations:

***Qualitative Flow Observations:**

No Flow
Low Flow: Trickle or minor amount of flow.
Moderate Flow: Water is flowing normally, no significant erosion or turbid water.
High Flow: Significant water flow/velocity, slope erosion.

NPDES Permit Limits:

Temperature < 86 °F

pH 6.5 - 8.5

ALL RECEIVING AND SAMPLE COLLECTION BOTTLES MUST BE PRE-RINSED 3 TIMES WITH SOURCE WATER, PRIOR TO COLLECTION OF THE SAMPLE.

EXCEPTION IS THE HNO3 (NITRIC) PRESERVED POLY BOTTLES - DO NOT PRE-RINSE THE HNO3 PRESERVED POLY'S

Printed on: 9/29/2017

Surface Water Monitoring Inspection and Sample Collection Form
Special Monitoring Studies for the 009 Watershed

Sampling Responsibility: Boeing

Inspector/Sampler: _____

Date: _____

Weather: _____

Rain Event Start Date/Time: _____

	Sample Tracking Information						Sample Field Measurements				Leaf Test/Flow Meter				Sample Observations
	Special Studies Area(s) & Location	**Object ID**	**Sample ID**	**Qualitative Flow Observations ***	**Photo Number(s)**	**Sample Time**	**Conductivity (mS or uS)**	**pH**	**Temperature (C°)**	**Turbidity (NTU)**	**Distance (ft)**	**Time (s)**	**Speed (ft/s)**	**Water Depth (in)**	**Notes (color, odor, film, foam, biological material, nearby erosion, etc.)**
ELV_Swsampling	Stormwater and stream sediment site (sieved into 3 particle sizes and analyzed), Northern Drainage above confluence with Area II drainage	EPNDSW01	EPNDSW01_yyyymmdd												
ELV_Swsampling	Stormwater and stream sediment site (sieved into 3 particle sizes and analyzed), Area II drainage above confluence with Northern Drainage	EPNDSW02	EPNDSW02_yyyymmdd												
ELV_Swsampling	Stormwater and stream sediment site (sieved into 3 particle sizes and stored for possible later analyses), Dirt access road adjacent to Northern Drainage	EPNDSW03	EPNDSW03_yyyymmdd												
LOX_Swsampling	Stormwater and stream sediment site (sieved into 3 particle sizes and stored for possible later analyses), Dirt road crossing at box culvert	EPNDSW04	EPNDSW04_yyyymmdd												
LOX_Swsampling	Stormwater and stream sediment site (sieved into 3 particle sizes and stored for possible later analyses), ND special studies background site at BGBMP0004 sampling location (Sage Ranch near CM-5). Formerly EPNDSW05.	EPNDSW05	EPNDSW05_yyyymmdd												
B1_SWsampling	Stormwater and stream sediment site (sieved into 3 particle sizes and stored for possible later analyses), Downstream of 24" stormdrain outlet discharge	EPNDSW06	EPNDSW06_yyyymmdd												
B1_SWsampling	Stormwater and stream sediment site (sieved into 3 particle sizes and analyzed), ND special studies background site at BGBMP0005 sampling location (Sage Ranch near entrance). Formerly EPNDSW07	EPNDSW07	EPNDSW07_yyyymmdd												

Notes:

*Qualitative Flow Observations:

No Flow
Low Flow: Trickle or minor amount of flow.
Moderate Flow: Water is flowing normally, no significant erosion or turbid water.
High Flow: Significant water flow/velocity, slope erosion.

NPDES Permit Limits:

Temperature < 86° F
pH 6.5 - 8.5

Additional Observations:

Appendix B: 2017/18 BMP Program Laboratory Reports

APPENDIX - LABORATORY REPORTS

TABLE OF CONTENTS

Boeing

NASA

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-199995-1
Client Project/Site: BMP Performance OF 009 Watershed

For:
Haley & Aldrich, Inc.
400 E Van Buren St.
Suite 545
Phoenix, Arizona 85004

Attn: Katherine Miller

Authorized for release by:
1/23/2018 10:32:59 AM

Urvashi Patel, Manager of Project Management
(949)261-1022
urvashi.patel@testamericainc.com

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-199995-1	ILBMP0001_20180109	Water	01/09/18 09:10	01/09/18 18:08
440-199995-2	LPBMP0002_20180109	Water	01/09/18 09:02	01/09/18 18:08
440-199995-3	LPBMP0003_20180109	Water	01/09/18 09:12	01/09/18 18:08
440-199995-4	LPBMP0004_20180109	Water	01/09/18 09:15	01/09/18 18:08
440-199995-5	ILBMP0002_20180109	Water	01/09/18 07:11	01/09/18 18:08
440-199995-6	ILBMP0004_20180109	Water	01/09/18 08:40	01/09/18 18:08
440-199995-7	ILBMP0005_20180109	Water	01/09/18 08:45	01/09/18 18:08
440-199995-8	ILBMP0008_20180109	Water	01/09/18 08:23	01/09/18 18:08
440-199995-9	B1BMP0009_20180109	Water	01/09/18 07:40	01/09/18 18:08
440-199995-10	B1BMP0010_20180109	Water	01/09/18 07:50	01/09/18 18:08
440-199995-11	B1BMP0011_20180109	Water	01/09/18 07:41	01/09/18 18:08

Job ID: 440-199995-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-199995-1

Comments
See client email on corrections for sample ID and changes in analysis.

Receipt
The samples were received on 1/9/2018 6:08 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were -1.8º C, 0.6º C, 1.0º C, 1.1º C and 3.0º C.

Receipt Exceptions

The following samples were submitted for analysis; however, it was not listed on the Chain-of-Custody (COC): ILQW0007_20180109 (440-199995-12) and FBQW_20180109 (440-199995-13)- Samples on Hold.

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

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

Subcontract non-Sister
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample ID: ILBMP0001_20180109

Lab Sample ID: 440-199995-1
Matrix: Water
Date Collected: 01/09/18 09:10
Date Received: 01/09/18 18:08

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 05:10	01/14/18 15:47	1
Copper	**10**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:47	1
Lead	**4.0**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:47	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:36	1
Copper	**11**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:36	1
Lead	ND	QP	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:36	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:42	01/17/18 19:07	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	**10**		0.20	0.080	NTU			01/10/18 20:56	2
Total Suspended Solids	**21**		2.0	1.0	mg/L			01/11/18 12:04	1

Client Sample ID: LPBMP0002_20180109

Lab Sample ID: 440-199995-2
Matrix: Water
Date Collected: 01/09/18 09:02
Date Received: 01/09/18 18:08

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 05:10	01/14/18 15:52	1
Copper	**9.5**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:52	1
Lead	**1.7**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:52	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:41	1
Copper	**8.2**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:41	1
Lead	ND	QP	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:41	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:42	01/17/18 19:15	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**20**		2.5	1.3	mg/L			01/11/18 12:04	1

Client Sample ID: LPBMP0003_20180109

Lab Sample ID: 440-199995-3

Date Collected: 01/09/18 09:12

Matrix: Water

Date Received: 01/09/18 18:08

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 05:10	01/14/18 15:54	1
Copper	**9.6**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:54	1
Lead	**1.3**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:54	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:42	1
Copper	**8.9**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:42	1
Lead	**0.63**	**J,DX QP**	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:42	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:42	01/17/18 19:18	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**4.9**		1.1	0.53	mg/L			01/11/18 12:04	1

Client Sample ID: LPBMP0004_20180109

Lab Sample ID: 440-199995-4

Date Collected: 01/09/18 09:15

Matrix: Water

Date Received: 01/09/18 18:08

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 05:10	01/14/18 15:56	1
Copper	**8.2**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:56	1
Lead	**1.9**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:56	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:44	1
Copper	**6.1**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:44	1
Lead	ND	QP	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:44	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:43	01/17/18 19:20	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**22**		2.0	1.0	mg/L			01/11/18 12:04	1

Client Sample ID: ILBMP0002_20180109

Lab Sample ID: 440-199995-5
Matrix: Water
Date Collected: 01/09/18 07:11
Date Received: 01/09/18 18:08

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 05:10	01/14/18 15:58	1
Copper	**8.6**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:58	1
Lead	**3.0**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:58	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:46	1
Copper	**7.5**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:46	1
Lead	**0.86**	**J,DX QP**	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:46	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:43	01/17/18 19:23	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**25**		1.7	0.83	mg/L			01/11/18 12:04	1

Client Sample ID: ILBMP0004_20180109

Lab Sample ID: 440-199995-6
Matrix: Water
Date Collected: 01/09/18 08:40
Date Received: 01/09/18 18:08

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.39**	**J,DX**	1.0	0.25	ug/L		01/14/18 05:10	01/14/18 15:59	1
Copper	**18**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:59	1
Lead	**2.8**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:59	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:48	1
Copper	**12**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:48	1
Lead	ND	QP	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:48	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:43	01/17/18 19:26	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**170**		5.0	2.5	mg/L			01/11/18 12:31	1

Client Sample ID: ILBMP0005_20180109

Lab Sample ID: 440-199995-7

Date Collected: 01/09/18 08:45

Matrix: Water

Date Received: 01/09/18 18:08

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 05:10	01/14/18 16:04	1
Copper	**14**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 16:04	1
Lead	**1.5**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 16:04	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:53	1
Copper	**12**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:53	1
Lead	ND	QP	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:53	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:43	01/17/18 19:28	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**17**		2.0	1.0	mg/L			01/11/18 12:04	1

Client Sample ID: ILBMP0008_20180109

Lab Sample ID: 440-199995-8

Date Collected: 01/09/18 08:23

Matrix: Water

Date Received: 01/09/18 18:08

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.77**	**J,DX**	1.0	0.25	ug/L		01/14/18 05:10	01/14/18 16:06	1
Copper	**10**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 16:06	1
Lead	**2.8**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 16:06	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.46**	**J,DX QP**	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:55	1
Copper	**7.3**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:55	1
Lead	ND	QP	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:55	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:43	01/17/18 19:37	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**13**		2.5	1.3	mg/L			01/11/18 12:04	1

Client Sample ID: B1BMP0009_20180109

Lab Sample ID: 440-199995-9

Date Collected: 01/09/18 07:40

Matrix: Water

Date Received: 01/09/18 18:08

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 05:10	01/14/18 16:08	1
Copper	**11**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 16:08	1
Lead	**1.6**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 16:08	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:56	1
Copper	**8.6**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:56	1
Lead	ND	QP	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:56	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:43	01/17/18 19:39	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**23**		1.7	0.83	mg/L			01/11/18 12:04	1

Client Sample ID: B1BMP0010_20180109

Lab Sample ID: 440-199995-10

Date Collected: 01/09/18 07:50

Matrix: Water

Date Received: 01/09/18 18:08

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 05:10	01/14/18 16:10	1
Copper	**11**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 16:10	1
Lead	**1.3**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 16:10	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:58	1
Copper	**7.7**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:58	1
Lead	ND	QP	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:58	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:43	01/17/18 19:42	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**9.3**		2.5	1.3	mg/L			01/11/18 12:04	1

Client Sample ID: B1BMP0011_20180109
Date Collected: 01/09/18 07:41
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-11
Matrix: Water

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 05:10	01/14/18 16:11	1
Copper	**9.7**		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 16:11	1
Lead	**1.1**		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 16:11	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/14/18 07:33	01/14/18 17:00	1
Copper	**8.5**	**QP**	2.0	0.50	ug/L		01/14/18 07:33	01/14/18 17:00	1
Lead	ND	QP	1.0	0.50	ug/L		01/14/18 07:33	01/14/18 17:00	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:43	01/17/18 19:45	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 20:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**14**		2.2	1.1	mg/L			01/11/18 12:04	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-1

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
Particle Size	General Sub Contract Method	NONE	SC0028

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

SC0028 = PTS Laboratories, Inc, 5730 Central Crest Street, Houston, TX 77092, TEL (713)316-1800

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Client Sample ID: ILBMP0001_20180109

Date Collected: 01/09/18 09:10
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV
Dissolved	Analysis	200.8		1			451687	01/14/18 16:36	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 15:47	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:33	VS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:42	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:07	VS	TAL IRV
Total/NA	Analysis	180.1		2			450992	01/10/18 20:56	CMM	TAL IRV
Total/NA	Analysis	SM 2540D		1	500 mL	1000 mL	451156	01/11/18 12:04	HTL	TAL IRV

Client Sample ID: LPBMP0002_20180109

Date Collected: 01/09/18 09:02
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV
Dissolved	Analysis	200.8		1			451687	01/14/18 16:41	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 15:52	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:31	VS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:42	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:15	VS	TAL IRV
Total/NA	Analysis	SM 2540D		1	400 mL	1000 mL	451156	01/11/18 12:04	HTL	TAL IRV

Client Sample ID: LPBMP0003_20180109

Date Collected: 01/09/18 09:12
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV
Dissolved	Analysis	200.8		1			451687	01/14/18 16:42	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 15:54	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:28	VS	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-1

Client Sample ID: LPBMP0003_20180109

Lab Sample ID: 440-199995-3

Date Collected: 01/09/18 09:12
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:42	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:18	VS	TAL IRV
Total/NA	Analysis	SM 2540D		1	950 mL	1000 mL	451156	01/11/18 12:04	HTL	TAL IRV

Client Sample ID: LPBMP0004_20180109

Lab Sample ID: 440-199995-4

Date Collected: 01/09/18 09:15
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV
Dissolved	Analysis	200.8		1			451687	01/14/18 16:44	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 15:56	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:25	VS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:43	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:20	VS	TAL IRV
Total/NA	Analysis	SM 2540D		1	500 mL	1000 mL	451156	01/11/18 12:04	HTL	TAL IRV

Client Sample ID: ILBMP0002_20180109

Lab Sample ID: 440-199995-5

Date Collected: 01/09/18 07:11
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV
Dissolved	Analysis	200.8		1			451687	01/14/18 16:46	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 15:58	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:22	VS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:43	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:23	VS	TAL IRV
Total/NA	Analysis	SM 2540D		1	600 mL	1000 mL	451156	01/11/18 12:04	HTL	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-1

Client Sample ID: ILBMP0004_20180109

Lab Sample ID: 440-199995-6

Date Collected: 01/09/18 08:40
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV
Dissolved	Analysis	200.8		1			451687	01/14/18 16:48	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 15:59	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:20	VS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:43	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:26	VS	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	451169	01/11/18 12:31	HTL	TAL IRV

Client Sample ID: ILBMP0005_20180109

Lab Sample ID: 440-199995-7

Date Collected: 01/09/18 08:45
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV
Dissolved	Analysis	200.8		1			451687	01/14/18 16:53	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 16:04	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:17	VS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:43	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:28	VS	TAL IRV
Total/NA	Analysis	SM 2540D		1	500 mL	1000 mL	451156	01/11/18 12:04	HTL	TAL IRV

Client Sample ID: ILBMP0008_20180109

Lab Sample ID: 440-199995-8

Date Collected: 01/09/18 08:23
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV
Dissolved	Analysis	200.8		1			451687	01/14/18 16:55	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 16:06	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:14	VS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:43	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:37	VS	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-1

Client Sample ID: ILBMP0008_20180109

Date Collected: 01/09/18 08:23
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	400 mL	1000 mL	451156	01/11/18 12:04	HTL	TAL IRV

Client Sample ID: B1BMP0009_20180109

Date Collected: 01/09/18 07:40
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV
Dissolved	Analysis	200.8		1			451687	01/14/18 16:56	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 16:08	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:12	VS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:43	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:39	VS	TAL IRV
Total/NA	Analysis	SM 2540D		1	600 mL	1000 mL	451156	01/11/18 12:04	HTL	TAL IRV

Client Sample ID: B1BMP0010_20180109

Date Collected: 01/09/18 07:50
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV
Dissolved	Analysis	200.8		1			451687	01/14/18 16:58	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 16:10	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:09	VS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:43	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:42	VS	TAL IRV
Total/NA	Analysis	SM 2540D		1	400 mL	1000 mL	451156	01/11/18 12:04	HTL	TAL IRV

Client Sample ID: B1BMP0011_20180109

Date Collected: 01/09/18 07:41
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	451614	01/14/18 07:33	JL	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-1

Client Sample ID: B1BMP0011_20180109
Date Collected: 01/09/18 07:41
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	200.8		1			451687	01/14/18 17:00	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	451603	01/14/18 05:10	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			451636	01/14/18 16:11	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	450987	01/10/18 16:23	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	452205	01/17/18 10:44	Q1N	TAL IRV
Dissolved	Analysis	245.1		1			452399	01/17/18 20:01	VS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	452203	01/17/18 10:43	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			452399	01/17/18 19:45	VS	TAL IRV
Total/NA	Analysis	SM 2540D		1	450 mL	1000 mL	451156	01/11/18 12:04	HTL	TAL IRV

Laboratory References:

SC0028 = PTS Laboratories, Inc, 5730 Central Crest Street, Houston, TX 77092, TEL (713)316-1800

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-451603/1-A
Matrix: Water
Analysis Batch: 451636

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 451603

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 05:10	01/14/18 15:44	1
Copper	ND		2.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:44	1
Lead	ND		1.0	0.50	ug/L		01/14/18 05:10	01/14/18 15:44	1

Lab Sample ID: LCS 440-451603/2-A
Matrix: Water
Analysis Batch: 451636

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 451603

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	76.4		ug/L		95	85 - 115
Copper	80.0	77.7		ug/L		97	85 - 115
Lead	80.0	75.3		ug/L		94	85 - 115

Lab Sample ID: 440-199995-1 MS
Matrix: Water
Analysis Batch: 451636

Client Sample ID: ILBMP0001_20180109
Prep Type: Total Recoverable
Prep Batch: 451603

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	79.6		ug/L		100	70 - 130
Copper	10		80.0	90.9		ug/L		101	70 - 130
Lead	4.0		80.0	82.1		ug/L		98	70 - 130

Lab Sample ID: 440-199995-1 MSD
Matrix: Water
Analysis Batch: 451636

Client Sample ID: ILBMP0001_20180109
Prep Type: Total Recoverable
Prep Batch: 451603

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	79.2		ug/L		99	70 - 130	1	20
Copper	10		80.0	90.0		ug/L		100	70 - 130	1	20
Lead	4.0		80.0	82.4		ug/L		98	70 - 130	0	20

Lab Sample ID: 440-199995-11 MS
Matrix: Water
Analysis Batch: 451636

Client Sample ID: B1BMP0011_20180109
Prep Type: Total Recoverable
Prep Batch: 451603

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	80.2		ug/L		100	70 - 130
Copper	9.7		80.0	91.7		ug/L		103	70 - 130
Lead	1.1		80.0	80.3		ug/L		99	70 - 130

Lab Sample ID: 440-199995-11 MSD
Matrix: Water
Analysis Batch: 451636

Client Sample ID: B1BMP0011_20180109
Prep Type: Total Recoverable
Prep Batch: 451603

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	79.0		ug/L		99	70 - 130	2	20
Copper	9.7		80.0	90.1		ug/L		101	70 - 130	2	20
Lead	1.1		80.0	78.6		ug/L		97	70 - 130	2	20

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-450987/1-B
Matrix: Water
Analysis Batch: 451687

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 451614

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/14/18 07:33	01/14/18 16:31	1
Copper	ND		2.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:31	1
Lead	ND		1.0	0.50	ug/L		01/14/18 07:33	01/14/18 16:31	1

Lab Sample ID: LCS 440-450987/2-B
Matrix: Water
Analysis Batch: 451687

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 451614

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	78.9		ug/L		99	85 - 115
Copper	80.0	79.3		ug/L		99	85 - 115
Lead	80.0	78.8		ug/L		98	85 - 115

Lab Sample ID: 440-199995-1 MS
Matrix: Water
Analysis Batch: 451687

Client Sample ID: ILBMP0001_20180109
Prep Type: Dissolved
Prep Batch: 451614

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND	QP	80.0	76.3		ug/L		95	70 - 130
Copper	11	QP	80.0	86.5		ug/L		94	70 - 130
Lead	ND	QP	80.0	76.1		ug/L		95	70 - 130

Lab Sample ID: 440-199995-1 MSD
Matrix: Water
Analysis Batch: 451687

Client Sample ID: ILBMP0001_20180109
Prep Type: Dissolved
Prep Batch: 451614

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND	QP	80.0	76.4		ug/L		96	70 - 130	0	20
Copper	11	QP	80.0	88.3		ug/L		97	70 - 130	2	20
Lead	ND	QP	80.0	77.5		ug/L		97	70 - 130	2	20

Lab Sample ID: 440-199995-11 MS
Matrix: Water
Analysis Batch: 451687

Client Sample ID: B1BMP0011_20180109
Prep Type: Dissolved
Prep Batch: 451614

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND	QP	80.0	75.0		ug/L		94	70 - 130
Copper	8.5	QP	80.0	85.0		ug/L		96	70 - 130
Lead	ND	QP	80.0	73.7		ug/L		92	70 - 130

Lab Sample ID: 440-199995-11 MSD
Matrix: Water
Analysis Batch: 451687

Client Sample ID: B1BMP0011_20180109
Prep Type: Dissolved
Prep Batch: 451614

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND	QP	80.0	76.8		ug/L		96	70 - 130	2	20
Copper	8.5	QP	80.0	86.7		ug/L		98	70 - 130	2	20
Lead	ND	QP	80.0	75.9		ug/L		95	70 - 130	3	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-452203/1-A
Matrix: Water
Analysis Batch: 452399

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 452203

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:42	01/17/18 18:56	1

Lab Sample ID: LCS 440-452203/2-A
Matrix: Water
Analysis Batch: 452399

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452203

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	8.23		ug/L		103	85 - 115

Lab Sample ID: 440-199995-1 MS
Matrix: Water
Analysis Batch: 452399

Client Sample ID: ILBMP0001_20180109
Prep Type: Total/NA
Prep Batch: 452203

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	8.46		ug/L		106	70 - 130

Lab Sample ID: 440-199995-1 MSD
Matrix: Water
Analysis Batch: 452399

Client Sample ID: ILBMP0001_20180109
Prep Type: Total/NA
Prep Batch: 452203

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.30		ug/L		104	70 - 130	2	20

Lab Sample ID: MB 440-450987/1-D
Matrix: Water
Analysis Batch: 452399

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 452205

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/17/18 10:44	01/17/18 19:47	1

Lab Sample ID: LCS 440-450987/2-C
Matrix: Water
Analysis Batch: 452399

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 452205

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	8.34		ug/L		104	85 - 115

Lab Sample ID: 440-199995-A-12-G MS
Matrix: Water
Analysis Batch: 452399

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 452205

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	-0.0854		8.00	8.21		ug/L		103	70 - 130

Lab Sample ID: 440-199995-A-12-H MSD
Matrix: Water
Analysis Batch: 452399

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 452205

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	-0.0854		8.00	8.62		ug/L		108	70 - 130	5	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-450992/5
Matrix: Water
Analysis Batch: 450992

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			01/10/18 20:56	1

Lab Sample ID: 440-199995-1 DU
Matrix: Water
Analysis Batch: 450992

Client Sample ID: ILBMP0001_20180109
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Turbidity	10		10.3		NTU		0	20

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-451156/1
Matrix: Water
Analysis Batch: 451156

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/11/18 12:04	1

Lab Sample ID: LCS 440-451156/2
Matrix: Water
Analysis Batch: 451156

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	976		mg/L		98	85 - 115

Lab Sample ID: 440-199995-10 DU
Matrix: Water
Analysis Batch: 451156

Client Sample ID: B1BMP0010_20180109
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	9.3		9.50		mg/L		3	10

Lab Sample ID: MB 440-451169/1
Matrix: Water
Analysis Batch: 451169

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/11/18 12:31	1

Lab Sample ID: LCS 440-451169/2
Matrix: Water
Analysis Batch: 451169

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1010		mg/L		101	85 - 115

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: 440-199912-U-1 DU
Matrix: Water
Analysis Batch: 451169

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	110			112		mg/L				0.6	10

Metals

Filtration Batch: 450987

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Dissolved	Water	FILTRATION	
440-199995-2	LPBMP0002_20180109	Dissolved	Water	FILTRATION	
440-199995-3	LPBMP0003_20180109	Dissolved	Water	FILTRATION	
440-199995-4	LPBMP0004_20180109	Dissolved	Water	FILTRATION	
440-199995-5	ILBMP0002_20180109	Dissolved	Water	FILTRATION	
440-199995-6	ILBMP0004_20180109	Dissolved	Water	FILTRATION	
440-199995-7	ILBMP0005_20180109	Dissolved	Water	FILTRATION	
440-199995-8	ILBMP0008_20180109	Dissolved	Water	FILTRATION	
440-199995-9	B1BMP0009_20180109	Dissolved	Water	FILTRATION	
440-199995-10	B1BMP0010_20180109	Dissolved	Water	FILTRATION	
440-199995-11	B1BMP0011_20180109	Dissolved	Water	FILTRATION	
MB 440-450987/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-450987/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-450987/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-450987/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
440-199995-1 MS	ILBMP0001_20180109	Dissolved	Water	FILTRATION	
440-199995-1 MSD	ILBMP0001_20180109	Dissolved	Water	FILTRATION	
440-199995-11 MS	B1BMP0011_20180109	Dissolved	Water	FILTRATION	
440-199995-11 MSD	B1BMP0011_20180109	Dissolved	Water	FILTRATION	
440-199995-A-12-G MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-199995-A-12-H MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 451603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Total Recoverable	Water	200.2	
440-199995-2	LPBMP0002_20180109	Total Recoverable	Water	200.2	
440-199995-3	LPBMP0003_20180109	Total Recoverable	Water	200.2	
440-199995-4	LPBMP0004_20180109	Total Recoverable	Water	200.2	
440-199995-5	ILBMP0002_20180109	Total Recoverable	Water	200.2	
440-199995-6	ILBMP0004_20180109	Total Recoverable	Water	200.2	
440-199995-7	ILBMP0005_20180109	Total Recoverable	Water	200.2	
440-199995-8	ILBMP0008_20180109	Total Recoverable	Water	200.2	
440-199995-9	B1BMP0009_20180109	Total Recoverable	Water	200.2	
440-199995-10	B1BMP0010_20180109	Total Recoverable	Water	200.2	
440-199995-11	B1BMP0011_20180109	Total Recoverable	Water	200.2	
MB 440-451603/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-451603/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-199995-1 MS	ILBMP0001_20180109	Total Recoverable	Water	200.2	
440-199995-1 MSD	ILBMP0001_20180109	Total Recoverable	Water	200.2	
440-199995-11 MS	B1BMP0011_20180109	Total Recoverable	Water	200.2	
440-199995-11 MSD	B1BMP0011_20180109	Total Recoverable	Water	200.2	

Prep Batch: 451614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Dissolved	Water	200.2	450987
440-199995-2	LPBMP0002_20180109	Dissolved	Water	200.2	450987
440-199995-3	LPBMP0003_20180109	Dissolved	Water	200.2	450987
440-199995-4	LPBMP0004_20180109	Dissolved	Water	200.2	450987
440-199995-5	ILBMP0002_20180109	Dissolved	Water	200.2	450987
440-199995-6	ILBMP0004_20180109	Dissolved	Water	200.2	450987
440-199995-7	ILBMP0005_20180109	Dissolved	Water	200.2	450987

Metals (Continued)

Prep Batch: 451614 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-8	ILBMP0008_20180109	Dissolved	Water	200.2	450987
440-199995-9	B1BMP0009_20180109	Dissolved	Water	200.2	450987
440-199995-10	B1BMP0010_20180109	Dissolved	Water	200.2	450987
440-199995-11	B1BMP0011_20180109	Dissolved	Water	200.2	450987
MB 440-450987/1-B	Method Blank	Dissolved	Water	200.2	450987
LCS 440-450987/2-B	Lab Control Sample	Dissolved	Water	200.2	450987
440-199995-1 MS	ILBMP0001_20180109	Dissolved	Water	200.2	450987
440-199995-1 MSD	ILBMP0001_20180109	Dissolved	Water	200.2	450987
440-199995-11 MS	B1BMP0011_20180109	Dissolved	Water	200.2	450987
440-199995-11 MSD	B1BMP0011_20180109	Dissolved	Water	200.2	450987

Analysis Batch: 451636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Total Recoverable	Water	200.8	451603
440-199995-2	LPBMP0002_20180109	Total Recoverable	Water	200.8	451603
440-199995-3	LPBMP0003_20180109	Total Recoverable	Water	200.8	451603
440-199995-4	LPBMP0004_20180109	Total Recoverable	Water	200.8	451603
440-199995-5	ILBMP0002_20180109	Total Recoverable	Water	200.8	451603
440-199995-6	ILBMP0004_20180109	Total Recoverable	Water	200.8	451603
440-199995-7	ILBMP0005_20180109	Total Recoverable	Water	200.8	451603
440-199995-8	ILBMP0008_20180109	Total Recoverable	Water	200.8	451603
440-199995-9	B1BMP0009_20180109	Total Recoverable	Water	200.8	451603
440-199995-10	B1BMP0010_20180109	Total Recoverable	Water	200.8	451603
440-199995-11	B1BMP0011_20180109	Total Recoverable	Water	200.8	451603
MB 440-451603/1-A	Method Blank	Total Recoverable	Water	200.8	451603
LCS 440-451603/2-A	Lab Control Sample	Total Recoverable	Water	200.8	451603
440-199995-1 MS	ILBMP0001_20180109	Total Recoverable	Water	200.8	451603
440-199995-1 MSD	ILBMP0001_20180109	Total Recoverable	Water	200.8	451603
440-199995-11 MS	B1BMP0011_20180109	Total Recoverable	Water	200.8	451603
440-199995-11 MSD	B1BMP0011_20180109	Total Recoverable	Water	200.8	451603

Analysis Batch: 451687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Dissolved	Water	200.8	451614
440-199995-2	LPBMP0002_20180109	Dissolved	Water	200.8	451614
440-199995-3	LPBMP0003_20180109	Dissolved	Water	200.8	451614
440-199995-4	LPBMP0004_20180109	Dissolved	Water	200.8	451614
440-199995-5	ILBMP0002_20180109	Dissolved	Water	200.8	451614
440-199995-6	ILBMP0004_20180109	Dissolved	Water	200.8	451614
440-199995-7	ILBMP0005_20180109	Dissolved	Water	200.8	451614
440-199995-8	ILBMP0008_20180109	Dissolved	Water	200.8	451614
440-199995-9	B1BMP0009_20180109	Dissolved	Water	200.8	451614
440-199995-10	B1BMP0010_20180109	Dissolved	Water	200.8	451614
440-199995-11	B1BMP0011_20180109	Dissolved	Water	200.8	451614
MB 440-450987/1-B	Method Blank	Dissolved	Water	200.8	451614
LCS 440-450987/2-B	Lab Control Sample	Dissolved	Water	200.8	451614
440-199995-1 MS	ILBMP0001_20180109	Dissolved	Water	200.8	451614
440-199995-1 MSD	ILBMP0001_20180109	Dissolved	Water	200.8	451614
440-199995-11 MS	B1BMP0011_20180109	Dissolved	Water	200.8	451614
440-199995-11 MSD	B1BMP0011_20180109	Dissolved	Water	200.8	451614

Metals (Continued)

Prep Batch: 452203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Total/NA	Water	245.1	
440-199995-2	LPBMP0002_20180109	Total/NA	Water	245.1	
440-199995-3	LPBMP0003_20180109	Total/NA	Water	245.1	
440-199995-4	LPBMP0004_20180109	Total/NA	Water	245.1	
440-199995-5	ILBMP0002_20180109	Total/NA	Water	245.1	
440-199995-6	ILBMP0004_20180109	Total/NA	Water	245.1	
440-199995-7	ILBMP0005_20180109	Total/NA	Water	245.1	
440-199995-8	ILBMP0008_20180109	Total/NA	Water	245.1	
440-199995-9	B1BMP0009_20180109	Total/NA	Water	245.1	
440-199995-10	B1BMP0010_20180109	Total/NA	Water	245.1	
440-199995-11	B1BMP0011_20180109	Total/NA	Water	245.1	
MB 440-452203/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-452203/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-199995-1 MS	ILBMP0001_20180109	Total/NA	Water	245.1	
440-199995-1 MSD	ILBMP0001_20180109	Total/NA	Water	245.1	

Prep Batch: 452205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Dissolved	Water	245.1	450987
440-199995-2	LPBMP0002_20180109	Dissolved	Water	245.1	450987
440-199995-3	LPBMP0003_20180109	Dissolved	Water	245.1	450987
440-199995-4	LPBMP0004_20180109	Dissolved	Water	245.1	450987
440-199995-5	ILBMP0002_20180109	Dissolved	Water	245.1	450987
440-199995-6	ILBMP0004_20180109	Dissolved	Water	245.1	450987
440-199995-7	ILBMP0005_20180109	Dissolved	Water	245.1	450987
440-199995-8	ILBMP0008_20180109	Dissolved	Water	245.1	450987
440-199995-9	B1BMP0009_20180109	Dissolved	Water	245.1	450987
440-199995-10	B1BMP0010_20180109	Dissolved	Water	245.1	450987
440-199995-11	B1BMP0011_20180109	Dissolved	Water	245.1	450987
MB 440-450987/1-D	Method Blank	Dissolved	Water	245.1	450987
LCS 440-450987/2-C	Lab Control Sample	Dissolved	Water	245.1	450987
440-199995-A-12-G MS	Matrix Spike	Dissolved	Water	245.1	450987
440-199995-A-12-H MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	450987

Analysis Batch: 452399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Dissolved	Water	245.1	452205
440-199995-1	ILBMP0001_20180109	Total/NA	Water	245.1	452203
440-199995-2	LPBMP0002_20180109	Dissolved	Water	245.1	452205
440-199995-2	LPBMP0002_20180109	Total/NA	Water	245.1	452203
440-199995-3	LPBMP0003_20180109	Dissolved	Water	245.1	452205
440-199995-3	LPBMP0003_20180109	Total/NA	Water	245.1	452203
440-199995-4	LPBMP0004_20180109	Dissolved	Water	245.1	452205
440-199995-4	LPBMP0004_20180109	Total/NA	Water	245.1	452203
440-199995-5	ILBMP0002_20180109	Dissolved	Water	245.1	452205
440-199995-5	ILBMP0002_20180109	Total/NA	Water	245.1	452203
440-199995-6	ILBMP0004_20180109	Dissolved	Water	245.1	452205
440-199995-6	ILBMP0004_20180109	Total/NA	Water	245.1	452203
440-199995-7	ILBMP0005_20180109	Dissolved	Water	245.1	452205
440-199995-7	ILBMP0005_20180109	Total/NA	Water	245.1	452203
440-199995-8	ILBMP0008_20180109	Dissolved	Water	245.1	452205

Metals (Continued)

Analysis Batch: 452399 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-8	ILBMP0008_20180109	Total/NA	Water	245.1	452203
440-199995-9	B1BMP0009_20180109	Dissolved	Water	245.1	452205
440-199995-9	B1BMP0009_20180109	Total/NA	Water	245.1	452203
440-199995-10	B1BMP0010_20180109	Dissolved	Water	245.1	452205
440-199995-10	B1BMP0010_20180109	Total/NA	Water	245.1	452203
440-199995-11	B1BMP0011_20180109	Dissolved	Water	245.1	452205
440-199995-11	B1BMP0011_20180109	Total/NA	Water	245.1	452203
MB 440-450987/1-D	Method Blank	Dissolved	Water	245.1	452205
MB 440-452203/1-A	Method Blank	Total/NA	Water	245.1	452203
LCS 440-450987/2-C	Lab Control Sample	Dissolved	Water	245.1	452205
LCS 440-452203/2-A	Lab Control Sample	Total/NA	Water	245.1	452203
440-199995-1 MS	ILBMP0001_20180109	Total/NA	Water	245.1	452203
440-199995-1 MSD	ILBMP0001_20180109	Total/NA	Water	245.1	452203
440-199995-A-12-G MS	Matrix Spike	Dissolved	Water	245.1	452205
440-199995-A-12-H MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	452205

General Chemistry

Analysis Batch: 450992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Total/NA	Water	180.1	
MB 440-450992/5	Method Blank	Total/NA	Water	180.1	
440-199995-1 DU	ILBMP0001_20180109	Total/NA	Water	180.1	

Analysis Batch: 451156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Total/NA	Water	SM 2540D	
440-199995-2	LPBMP0002_20180109	Total/NA	Water	SM 2540D	
440-199995-3	LPBMP0003_20180109	Total/NA	Water	SM 2540D	
440-199995-4	LPBMP0004_20180109	Total/NA	Water	SM 2540D	
440-199995-5	ILBMP0002_20180109	Total/NA	Water	SM 2540D	
440-199995-7	ILBMP0005_20180109	Total/NA	Water	SM 2540D	
440-199995-8	ILBMP0008_20180109	Total/NA	Water	SM 2540D	
440-199995-9	B1BMP0009_20180109	Total/NA	Water	SM 2540D	
440-199995-10	B1BMP0010_20180109	Total/NA	Water	SM 2540D	
440-199995-11	B1BMP0011_20180109	Total/NA	Water	SM 2540D	
MB 440-451156/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-451156/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-199995-10 DU	B1BMP0010_20180109	Total/NA	Water	SM 2540D	

Analysis Batch: 451169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-6	ILBMP0004_20180109	Total/NA	Water	SM 2540D	
MB 440-451169/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-451169/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-199912-U-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Qualifiers

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

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)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-1

Laboratory: TestAmerica Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

5730 Centralcrest St. • Houston, TX 77092
Telephone (713) 316-1800 • Fax (877) 225-9953

January 18, 2018

Urvashi Patel,
Project Manager,
TestAmerica Irvine,
17461 Derian Ave Suite 100
Irvine, CA 92614-5817

Re: PTS File No: 48008
Project Name: Boeing SSFL ISRA and BMP
Job Number: 44009815
Laser Particle Size Analyses

Dear Urvashi Patel:

Please find enclosed report for Physical Properties analyses conducted upon samples received from the above referenced project.
All analyses were performed by ASTM D4464 methodology. The samples are currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact myself or Emeka Anazodo at (713) 316-1800.

Sincerely,
PTS Laboratories, Inc.

Rick Schweizer

Rick Schweizer
Laboratory Supervisor

Encl.

PTS Laboratories

Project Name: Boeing SSFL ISRA and BMP
Project Number: 44009815

PTS File No: 48008
Client: TestAmerica Irvine

TEST PROGRAM - 20180111

FLUID ID	Date	Time	Fluid Type	Particle Size: Microsize				Comments
			Method:	ASTM D4464				
Date Received: 20180111								
ILBMP001_20180109 (440-199995-1)	**01/09/18**	**0910**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
LBMP002_20180109 (440-199995-2)	**01/09/18**	**0902**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
LBMP003_20180109 (440-199995-3)	**01/09/18**	**0912**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
LBMP004_20180109 (440-199995-4)	**01/09/18**	**0915**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
ILBMP002_20180109 (440-199995-5)	**01/09/18**	**0711**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
ILBMP004_20180109 (440-199995-6)	**01/09/18**	**0840**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
ILBMP005_20180109 (440-199995-7)	**01/09/18**	**0845**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
TOTALS:				**7**				

Laboratory Test Program Notes
Standard TAT for basic analysis is 10-15 business days.
Water samples to be disposed 15 days after completion of analyses.

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D4464M)

PROJECT NAME: Boeing SSFL ISRA and BMP
PROJECT NO: 44009815

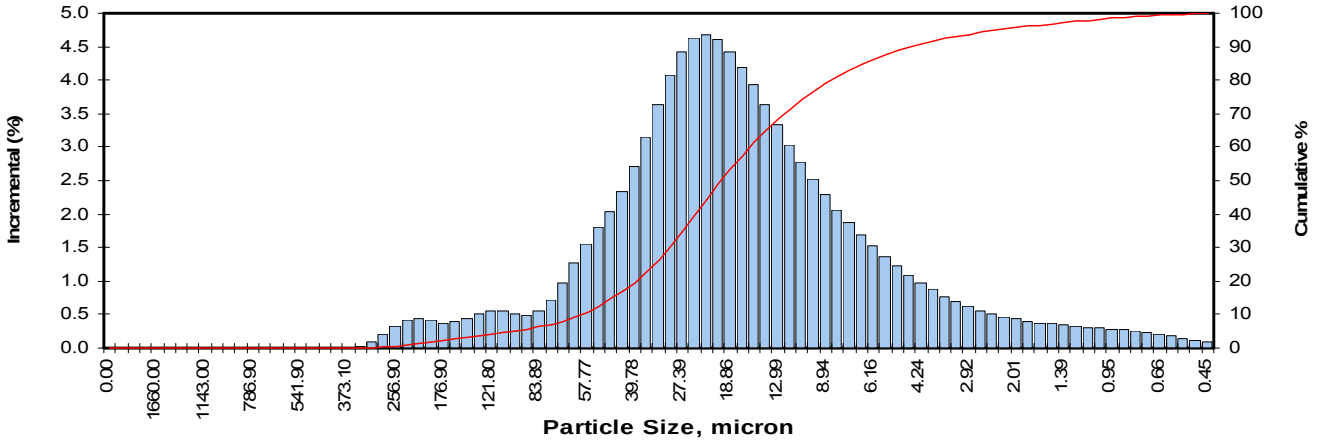
Sample ID	Matrix	Median Grain Size, micron (1)	CUMULATIVE PERCENT GREATER THAN Distribution percent, microns										
			5%	10%	16%	25%	40%	50%	60%	75%	84%	90%	95%
ILBMP001_20180109 (440-199995-1)	Aqueous	15.801	88.418	51.132	38.279	28.401	19.813	15.801	11.591	7.241	3.854	1.789	1.080
LBMP002_20180109 (440-199995-2)	Aqueous	14.139	44.259	35.193	29.168	23.366	17.637	14.139	10.823	6.980	3.755	1.781	1.078
LBMP003_20180109 (440-199995-3)	Aqueous	6.427	30.273	20.653	15.605	11.044	8.173	6.427	4.997	2.252	1.457	1.103	0.641
LBMP004_20180109 (440-199995-4)	Aqueous	9.592	46.868	30.544	23.001	17.897	12.055	9.592	7.776	4.148	1.933	1.283	0.808
ILBMP002_20180109 (440-199995-5)	Aqueous	17.745	138.871	87.660	58.712	42.353	25.023	17.745	11.145	5.610	2.690	1.658	1.192
ILBMP004_20180109 (440-199995-6)	Aqueous	51.319	896.187	692.923	411.371	162.013	74.140	51.319	36.908	20.695	12.211	7.608	2.172
ILBMP005_20180109 (440-199995-7)	Aqueous	20.491	85.915	54.541	43.510	35.039	24.973	20.491	15.694	8.479	5.115	2.294	1.264

(1) Based on Trask Median

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48008
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	ILBMP001_20180109 (440-199995-1)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	1.27	9.2	1.668	0.380	96.5
0.00	0.00	0.0	57.77	1.55	10.8	1.520	0.360	96.8
2000.00	0.00	0.0	52.62	1.80	12.6	1.385	0.340	97.2
1822.00	0.00	0.0	47.94	2.04	14.6	1.261	0.330	97.5
1660.00	0.00	0.0	43.67	2.33	16.9	1.149	0.310	97.8
1512.00	0.00	0.0	39.78	2.70	19.6	1.047	0.300	98.1
1377.00	0.00	0.0	36.24	3.15	22.8	0.953	0.280	98.4
1255.00	0.00	0.0	33.01	3.63	26.4	0.868	0.270	98.7
1143.00	0.00	0.0	30.07	4.08	30.5	0.791	0.250	98.9
1041.00	0.00	0.0	27.39	4.43	34.9	0.721	0.230	99.1
948.30	0.00	0.0	24.95	4.63	39.6	0.656	0.200	99.3
863.90	0.00	0.0	22.73	4.68	44.2	0.598	0.180	99.5
786.90	0.00	0.0	20.70	4.60	48.8	0.545	0.150	99.7
716.80	0.00	0.0	18.86	4.43	53.3	0.496	0.120	99.8
653.00	0.00	0.0	17.18	4.20	57.5	0.452	0.085	99.9
594.90	0.00	0.0	15.65	3.93	61.4	**TOTALS:**	**99.88**	**99.9**
541.90	0.00	0.0	14.26	3.63	65.0			
493.60	0.00	0.0	12.99	3.33	68.4			
449.70	0.00	0.0	11.83	3.04	71.4			
409.60	0.00	0.0	10.78	2.77	74.2			
373.10	0.00	0.0	9.82	2.52	76.7			
339.90	0.02	0.0	8.94	2.29	79.0			
309.60	0.08	0.1	8.15	2.07	81.1			
282.10	0.20	0.3	7.42	1.87	82.9			
256.90	0.32	0.6	6.76	1.69	84.6			
234.10	0.41	1.0	6.16	1.52	86.1			
213.20	0.43	1.5	5.61	1.36	87.5			
194.20	0.41	1.9	5.11	1.22	88.7			
176.90	0.38	2.3	4.66	1.09	89.8			
161.20	0.39	2.6	4.24	0.97	90.8			
146.80	0.44	3.1	3.86	0.87	91.6			
133.70	0.51	3.6	3.52	0.77	92.4			
121.80	0.56	4.2	3.21	0.69	93.1			
111.00	0.55	4.7	2.92	0.62	93.7			
101.10	0.51	5.2	2.66	0.56	94.3			
92.09	0.49	5.7	2.42	0.51	94.8			
83.89	0.55	6.3	2.21	0.47	95.3			
76.42	0.72	7.0	2.01	0.43	95.7			
69.61	0.98	8.0	1.83	0.40	96.1			

Measure	Trask	Inman
Median, mm	0.0158	0.0158
Median, micron	15.801	15.801
Mean, mm	0.0178	0.0121
Mean, micron	17.821	12.146
Sorting	1.9805	1.656
Skewness	0.9076	0.229
Kurtosis	0.2144	0.919

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	88.418	0.0884
10	51.132	0.0511
16	38.279	0.0383
25	28.401	0.0284
40	19.813	0.0198
50	15.801	0.0158
60	11.591	0.0116
75	7.241	0.0072
84	3.854	0.0039
90	1.789	0.0018
95	1.080	0.0011

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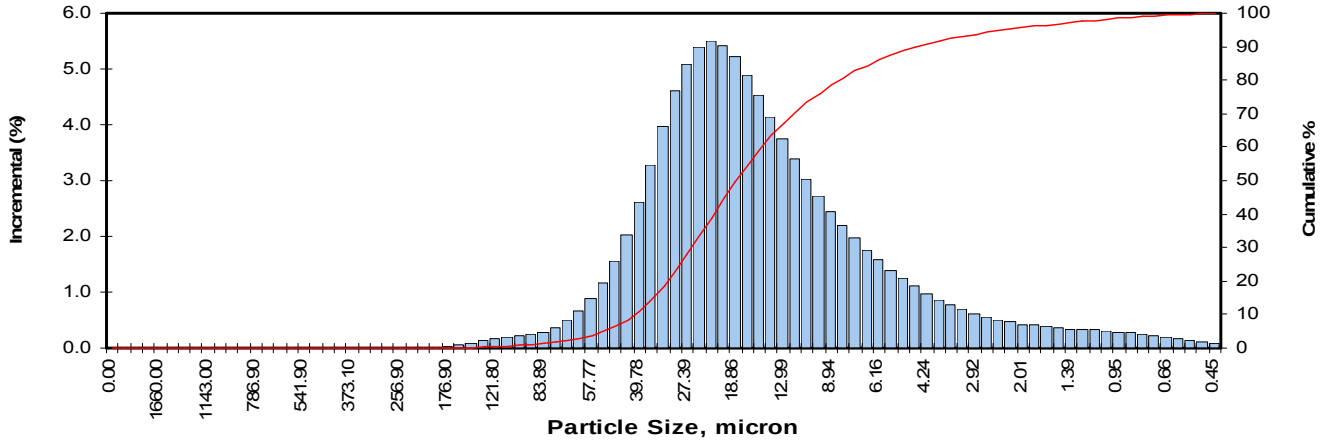
Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48008
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	LBMP002_20180109 (440-199995-2)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.00	0.0
256.90	0.00	0.0
234.10	0.00	0.0
213.20	0.00	0.0
194.20	0.01	0.0
176.90	0.03	0.0
161.20	0.06	0.1
146.80	0.09	0.2
133.70	0.13	0.3
121.80	0.16	0.5
111.00	0.19	0.7
101.10	0.21	0.9
92.09	0.24	1.1
83.89	0.29	1.4
76.42	0.37	1.8
69.61	0.49	2.3

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	0.66	2.9
57.77	0.88	3.8
52.62	1.17	5.0
47.94	1.55	6.5
43.67	2.03	8.6
39.78	2.62	11.2
36.24	3.29	14.5
33.01	3.97	18.4
30.07	4.60	23.0
27.39	5.09	28.1
24.95	5.39	33.5
22.73	5.50	39.0
20.70	5.42	44.4
18.86	5.21	49.6
17.18	4.90	54.5
15.65	4.53	59.1
14.26	4.14	63.2
12.99	3.76	67.0
11.83	3.38	70.4
10.78	3.04	73.4
9.82	2.73	76.1
8.94	2.44	78.6
8.15	2.19	80.8
7.42	1.96	82.7
6.76	1.75	84.5
6.16	1.57	86.0
5.61	1.40	87.4
5.11	1.24	88.7
4.66	1.10	89.8
4.24	0.98	90.8
3.86	0.87	91.6
3.52	0.78	92.4
3.21	0.69	93.1
2.92	0.62	93.7
2.66	0.56	94.3
2.42	0.51	94.8
2.21	0.47	95.3
2.01	0.43	95.7
1.83	0.41	96.1

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.380	96.5
1.520	0.360	96.8
1.385	0.340	97.2
1.261	0.330	97.5
1.149	0.320	97.8
1.047	0.300	98.1
0.953	0.290	98.4
0.868	0.270	98.7
0.791	0.250	98.9
0.721	0.230	99.2
0.656	0.200	99.4
0.598	0.180	99.5
0.545	0.150	99.7
0.496	0.120	99.8
0.452	0.085	99.9
TOTALS:	**99.90**	**99.9**

Measure	Trask	Inman
Median, mm	0.0141	0.0141
Median, micron	14.139	14.139
Mean, mm	0.0152	0.0105
Mean, micron	15.173	10.466
Sorting	1.8296	1.479
Skewness	0.9033	0.293
Kurtosis	0.2452	0.812

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	44.259	0.0443
10	35.193	0.0352
16	29.168	0.0292
25	23.366	0.0234
40	17.637	0.0176
50	14.139	0.0141
60	10.823	0.0108
75	6.980	0.0070
84	3.755	0.0038
90	1.781	0.0018
95	1.078	0.0011

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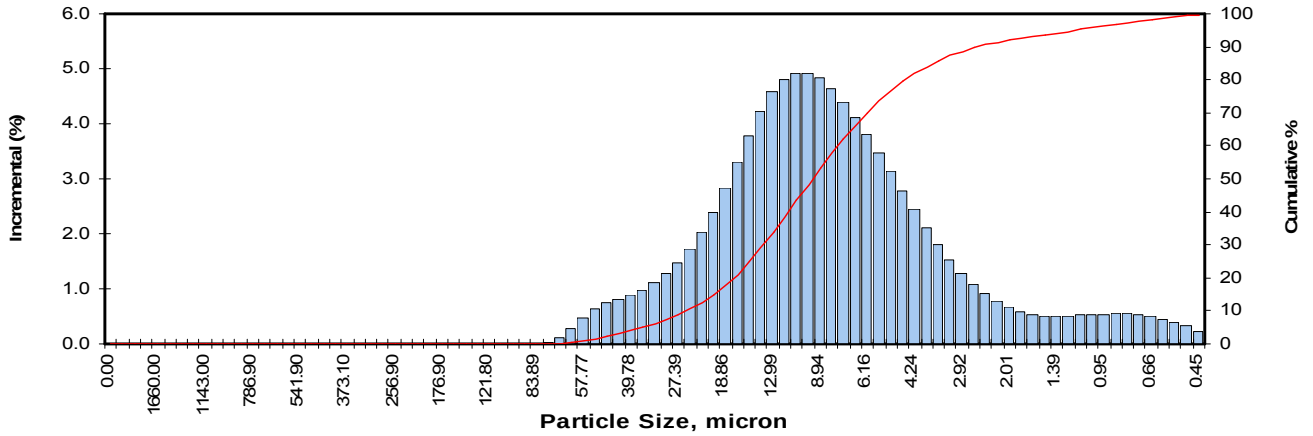
Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48008
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	LBMP003_20180109 (440-199995-3)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.00	0.0
256.90	0.00	0.0
234.10	0.00	0.0
213.20	0.00	0.0
194.20	0.00	0.0
176.90	0.00	0.0
161.20	0.00	0.0
146.80	0.00	0.0
133.70	0.00	0.0
121.80	0.00	0.0
111.00	0.00	0.0
101.10	0.00	0.0
92.09	0.00	0.0
83.89	0.00	0.0
76.42	0.02	0.0
69.61	0.11	0.1

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	0.28	0.4
57.77	0.48	0.9
52.62	0.64	1.5
47.94	0.74	2.3
43.67	0.81	3.1
39.78	0.88	4.0
36.24	0.97	4.9
33.01	1.11	6.0
30.07	1.27	7.3
27.39	1.48	8.8
24.95	1.72	10.5
22.73	2.02	12.5
20.70	2.39	14.9
18.86	2.82	17.7
17.18	3.31	21.1
15.65	3.79	24.8
14.26	4.22	29.1
12.99	4.57	33.6
11.83	4.80	38.4
10.78	4.91	43.3
9.82	4.91	48.3
8.94	4.82	53.1
8.15	4.64	57.7
7.42	4.40	62.1
6.76	4.12	66.2
6.16	3.81	70.0
5.61	3.47	73.5
5.11	3.13	76.6
4.66	2.78	79.4
4.24	2.44	81.9
3.86	2.11	84.0
3.52	1.81	85.8
3.21	1.54	87.3
2.92	1.29	88.6
2.66	1.08	89.7
2.42	0.91	90.6
2.21	0.77	91.4
2.01	0.66	92.0
1.83	0.58	92.6

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.530	93.1
1.520	0.500	93.6
1.385	0.500	94.1
1.261	0.500	94.6
1.149	0.520	95.2
1.047	0.530	95.7
0.953	0.540	96.2
0.868	0.550	96.8
0.791	0.550	97.3
0.721	0.530	97.9
0.656	0.490	98.4
0.598	0.450	98.8
0.545	0.390	99.2
0.496	0.320	99.5
0.452	0.230	99.7
TOTALS:	**99.74**	**99.7**

Measure	Trask	Inman
Median, mm	0.0064	0.0064
Median, micron	6.427	6.427
Mean, mm	0.0066	0.0048
Mean, micron	6.648	4.768
Sorting	2.2146	1.710
Skewness	0.7759	0.252
Kurtosis	0.2249	0.626

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	30.273	0.0303
10	20.653	0.0207
16	15.605	0.0156
25	11.044	0.0110
40	8.173	0.0082
50	6.427	0.0064
60	4.997	0.0050
75	2.252	0.0023
84	1.457	0.0015
90	1.103	0.0011
95	0.641	0.0006

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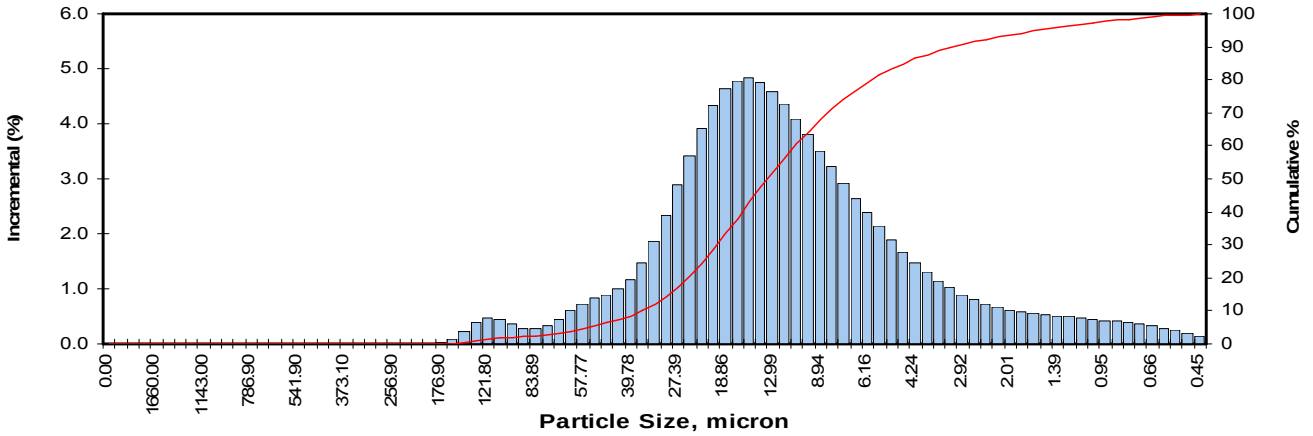
Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48008
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	LBMP004_20180109 (440-199995-4)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.00	0.0
256.90	0.00	0.0
234.10	0.00	0.0
213.20	0.00	0.0
194.20	0.00	0.0
176.90	0.02	0.0
161.20	0.09	0.1
146.80	0.23	0.3
133.70	0.38	0.7
121.80	0.46	1.2
111.00	0.44	1.6
101.10	0.36	2.0
92.09	0.28	2.3
83.89	0.27	2.5
76.42	0.33	2.9
69.61	0.45	3.3

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	0.60	3.9
57.77	0.73	4.6
52.62	0.82	5.5
47.94	0.89	6.4
43.67	0.99	7.3
39.78	1.17	8.5
36.24	1.46	10.0
33.01	1.85	11.8
30.07	2.34	14.2
27.39	2.88	17.0
24.95	3.42	20.5
22.73	3.93	24.4
20.70	4.34	28.7
18.86	4.63	33.4
17.18	4.79	38.2
15.65	4.82	43.0
14.26	4.74	47.7
12.99	4.57	52.3
11.83	4.35	56.6
10.78	4.08	60.7
9.82	3.80	64.5
8.94	3.50	68.0
8.15	3.21	71.2
7.42	2.92	74.1
6.76	2.65	76.8
6.16	2.38	79.2
5.61	2.13	81.3
5.11	1.90	83.2
4.66	1.68	84.9
4.24	1.48	86.4
3.86	1.31	87.7
3.52	1.15	88.8
3.21	1.02	89.8
2.92	0.90	90.7
2.66	0.81	91.6
2.42	0.73	92.3
2.21	0.67	93.0
2.01	0.62	93.6
1.83	0.58	94.2

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.550	94.7
1.520	0.520	95.2
1.385	0.500	95.7
1.261	0.490	96.2
1.149	0.470	96.7
1.047	0.450	97.1
0.953	0.430	97.6
0.868	0.410	98.0
0.791	0.390	98.4
0.721	0.350	98.7
0.656	0.320	99.0
0.598	0.280	99.3
0.545	0.240	99.6
0.496	0.190	99.7
0.452	0.130	99.9
TOTALS:	**99.87**	**99.9**

Measure	Trask	Inman
Median, mm	0.0096	0.0096
Median, micron	9.592	9.592
Mean, mm	0.0110	0.0067
Mean, micron	11.022	6.669
Sorting	2.0773	1.786
Skewness	0.8982	0.294
Kurtosis	0.2349	0.640

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	46.868	0.0469
10	30.544	0.0305
16	23.001	0.0230
25	17.897	0.0179
40	12.055	0.0121
50	9.592	0.0096
60	7.776	0.0078
75	4.148	0.0041
84	1.933	0.0019
90	1.283	0.0013
95	0.808	0.0008

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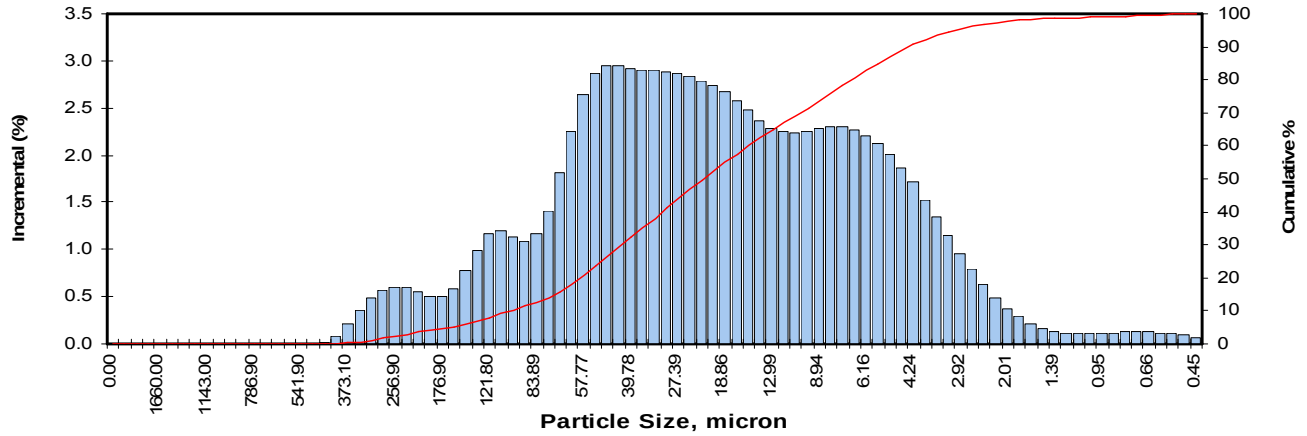
PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48008
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	ILBMP002_20180109 (440-199995-5)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	2.26	18.1	1.668	0.210	98.3
0.00	0.00	0.0	57.77	2.64	20.7	1.520	0.160	98.5
2000.00	0.00	0.0	52.62	2.87	23.6	1.385	0.130	98.6
1822.00	0.00	0.0	47.94	2.95	26.5	1.261	0.110	98.7
1660.00	0.00	0.0	43.67	2.95	29.5	1.149	0.110	98.8
1512.00	0.00	0.0	39.78	2.92	32.4	1.047	0.110	98.9
1377.00	0.00	0.0	36.24	2.90	35.3	0.953	0.110	99.0
1255.00	0.00	0.0	33.01	2.90	38.2	0.868	0.120	99.2
1143.00	0.00	0.0	30.07	2.89	41.1	0.791	0.130	99.3
1041.00	0.00	0.0	27.39	2.87	44.0	0.721	0.130	99.4
948.30	0.00	0.0	24.95	2.84	46.8	0.656	0.130	99.6
863.90	0.00	0.0	22.73	2.79	49.6	0.598	0.120	99.7
786.90	0.00	0.0	20.70	2.74	52.3	0.545	0.110	99.8
716.80	0.00	0.0	18.86	2.67	55.0	0.496	0.092	99.9
653.00	0.00	0.0	17.18	2.58	57.6	0.452	0.067	99.9
594.90	0.00	0.0	15.65	2.48	60.1	**TOTALS:**	**99.94**	**99.9**
541.90	0.00	0.0	14.26	2.37	62.4			
493.60	0.00	0.0	12.99	2.29	64.7			
449.70	0.02	0.0	11.83	2.25	67.0			
409.60	0.08	0.1	10.78	2.24	69.2			
373.10	0.21	0.3	9.82	2.26	71.5			
339.90	0.36	0.7	8.94	2.28	73.7			
309.60	0.48	1.2	8.15	2.30	76.0			
282.10	0.57	1.7	7.42	2.30	78.3			
256.90	0.60	2.3	6.76	2.27	80.6			
234.10	0.60	2.9	6.16	2.21	82.8			
213.20	0.55	3.5	5.61	2.13	85.0			
194.20	0.51	4.0	5.11	2.01	87.0			
176.90	0.51	4.5	4.66	1.87	88.8			
161.20	0.59	5.1	4.24	1.71	90.5			
146.80	0.77	5.9	3.86	1.53	92.1			
133.70	0.99	6.8	3.52	1.34	93.4			
121.80	1.16	8.0	3.21	1.15	94.6			
111.00	1.20	9.2	2.92	0.96	95.5			
101.10	1.13	10.3	2.66	0.79	96.3			
92.09	1.09	11.4	2.42	0.63	96.9			
83.89	1.16	12.6	2.21	0.49	97.4			
76.42	1.41	14.0	2.01	0.38	97.8			
69.61	1.81	15.8	1.83	0.29	98.1			

Measure	Trask	Inman
Median, mm	0.0177	0.0177
Median, micron	17.745	17.745
Mean, mm	0.0240	0.0126
Mean, micron	23.982	12.567
Sorting	2.7475	2.224
Skewness	0.8687	0.224
Kurtosis	0.2136	0.543

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	138.871	0.1389
10	87.660	0.0877
16	58.712	0.0587
25	42.353	0.0424
40	25.023	0.0250
50	17.745	0.0177
60	11.145	0.0111
75	5.610	0.0056
84	2.690	0.0027
90	1.658	0.0017
95	1.192	0.0012

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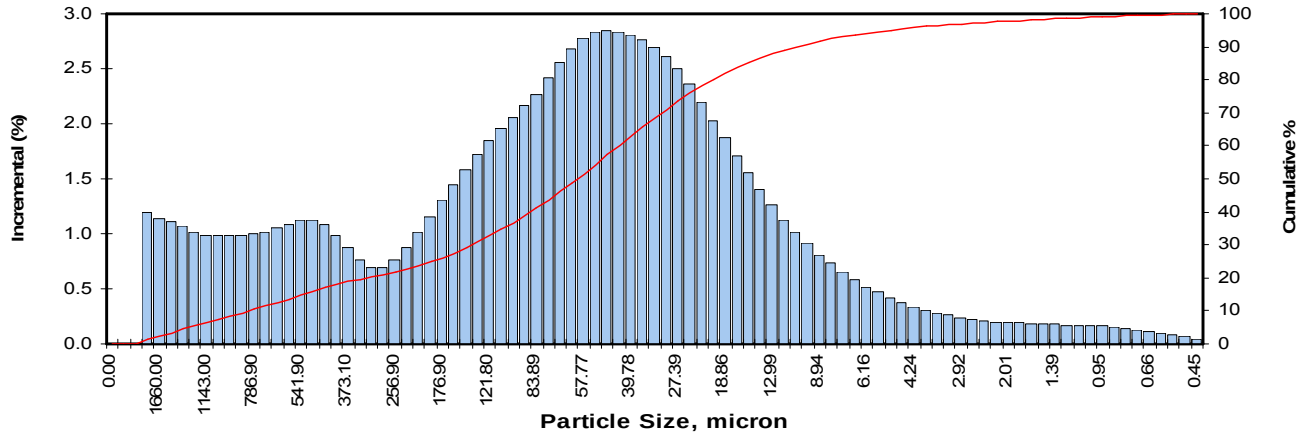
PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48008
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	ILBMP004_20180109 (440-199995-6)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	1.19	1.2
1660.00	1.14	2.3
1512.00	1.11	3.4
1377.00	1.07	4.5
1255.00	1.02	5.5
1143.00	0.99	6.5
1041.00	0.98	7.5
948.30	0.98	8.5
863.90	0.99	9.5
786.90	1.00	10.5
716.80	1.02	11.5
653.00	1.06	12.6
594.90	1.09	13.6
541.90	1.12	14.8
493.60	1.13	15.9
449.70	1.08	17.0
409.60	0.99	18.0
373.10	0.87	18.8
339.90	0.76	19.6
309.60	0.70	20.3
282.10	0.70	21.0
256.90	0.77	21.8
234.10	0.88	22.6
213.20	1.01	23.7
194.20	1.15	24.8
176.90	1.30	26.1
161.20	1.44	27.5
146.80	1.58	29.1
133.70	1.72	30.8
121.80	1.85	32.7
111.00	1.96	34.7
101.10	2.06	36.7
92.09	2.16	38.9
83.89	2.27	41.1
76.42	2.41	43.6
69.61	2.55	46.1

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	2.68	48.8
57.77	2.78	51.6
52.62	2.83	54.4
47.94	2.85	57.2
43.67	2.84	60.1
39.78	2.81	62.9
36.24	2.76	65.7
33.01	2.70	68.4
30.07	2.61	71.0
27.39	2.50	73.5
24.95	2.36	75.8
22.73	2.20	78.0
20.70	2.03	80.1
18.86	1.87	81.9
17.18	1.71	83.6
15.65	1.55	85.2
14.26	1.40	86.6
12.99	1.26	87.8
11.83	1.13	89.0
10.78	1.01	90.0
9.82	0.91	90.9
8.94	0.81	91.7
8.15	0.73	92.4
7.42	0.65	93.1
6.76	0.58	93.7
6.16	0.52	94.2
5.61	0.47	94.7
5.11	0.42	95.1
4.66	0.38	95.5
4.24	0.34	95.8
3.86	0.31	96.1
3.52	0.28	96.4
3.21	0.26	96.6
2.92	0.24	96.9
2.66	0.22	97.1
2.42	0.21	97.3
2.21	0.20	97.5
2.01	0.19	97.7
1.83	0.19	97.9

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.180	98.1
1.520	0.180	98.3
1.385	0.180	98.4
1.261	0.170	98.6
1.149	0.170	98.8
1.047	0.160	98.9
0.953	0.160	99.1
0.868	0.150	99.2
0.791	0.140	99.4
0.721	0.130	99.5
0.656	0.110	99.6
0.598	0.100	99.7
0.545	0.085	99.8
0.496	0.068	99.9
0.452	0.048	99.9
TOTALS:	**99.92**	**99.9**

Measure	Trask	Inman
Median, mm	0.0513	0.0513
Median, micron	51.319	51.319
Mean, mm	0.0914	0.0709
Mean, micron	91.354	70.874
Sorting	2.7980	2.537
Skewness	1.1283	-0.184
Kurtosis	0.1031	0.712

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	896.187	0.8962
10	692.923	0.6929
16	411.371	0.4114
25	162.013	0.1620
40	74.140	0.0741
50	51.319	0.0513
60	36.908	0.0369
75	20.695	0.0207
84	12.211	0.0122
90	7.608	0.0076
95	2.172	0.0022

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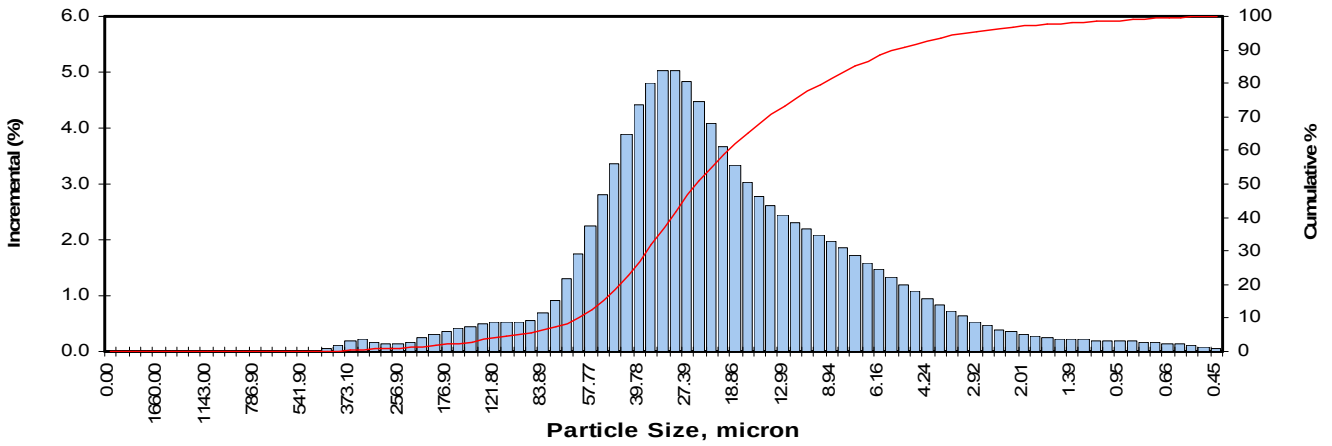
PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48008
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	ILBMP005_20180109 (440-199995-7)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.01	0.0
449.70	0.05	0.1
409.60	0.12	0.2
373.10	0.19	0.4
339.90	0.21	0.6
309.60	0.18	0.8
282.10	0.14	0.9
256.90	0.14	1.0
234.10	0.17	1.2
213.20	0.24	1.4
194.20	0.31	1.8
176.90	0.37	2.1
161.20	0.41	2.5
146.80	0.45	3.0
133.70	0.49	3.5
121.80	0.52	4.0
111.00	0.52	4.5
101.10	0.52	5.0
92.09	0.56	5.6
83.89	0.69	6.3
76.42	0.93	7.2
69.61	1.30	8.5

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	1.76	10.3
57.77	2.26	12.5
52.62	2.80	15.3
47.94	3.35	18.7
43.67	3.90	22.6
39.78	4.41	27.0
36.24	4.81	31.8
33.01	5.02	36.8
30.07	5.03	41.9
27.39	4.82	46.7
24.95	4.48	51.2
22.73	4.07	55.2
20.70	3.67	58.9
18.86	3.32	62.2
17.18	3.03	65.2
15.65	2.79	68.0
14.26	2.60	70.6
12.99	2.44	73.1
11.83	2.31	75.4
10.78	2.20	77.6
9.82	2.08	79.7
8.94	1.97	81.6
8.15	1.85	83.5
7.42	1.72	85.2
6.76	1.59	86.8
6.16	1.46	88.3
5.61	1.33	89.6
5.11	1.20	90.8
4.66	1.07	91.9
4.24	0.95	92.8
3.86	0.83	93.6
3.52	0.73	94.4
3.21	0.63	95.0
2.92	0.54	95.5
2.66	0.47	96.0
2.42	0.40	96.4
2.21	0.35	96.8
2.01	0.31	97.1
1.83	0.27	97.3

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.250	97.6
1.520	0.230	97.8
1.385	0.220	98.0
1.261	0.210	98.2
1.149	0.200	98.4
1.047	0.200	98.6
0.953	0.190	98.8
0.868	0.190	99.0
0.791	0.180	99.2
0.721	0.170	99.4
0.656	0.150	99.5
0.598	0.140	99.7
0.545	0.120	99.8
0.496	0.095	99.9
0.452	0.067	99.9
TOTALS:	**99.95**	**99.9**

Measure	Trask	Inman
Median, mm	0.0205	0.0205
Median, micron	20.491	20.491
Mean, mm	0.0218	0.0149
Mean, micron	21.759	14.919
Sorting	2.0328	1.544
Skewness	0.8412	0.296
Kurtosis	0.2542	0.971

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	85.915	0.0859
10	54.541	0.0545
16	43.510	0.0435
25	35.039	0.0350
40	24.973	0.0250
50	20.491	0.0205
60	15.694	0.0157
75	8.479	0.0085
84	5.115	0.0051
90	2.294	0.0023
95	1.264	0.0013

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17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-117964.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: PTS laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 440-199995-1
Address: 5730 Central Crest Street,	Due Date Requested: 1/19/2018			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77092				
Phone: 713-316-1800(Tel)	PO #:			
Email:	WO #:			
Project Name: Boeing SSFL ISRA and BMP	Project #: 44009815			
Site:	SSOW#:			

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:

48008

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)	SUB (Particle Size)/ Particle Size	Total Number of containers	Special Instructions/Note:
Preservation Code:									
ILBMP001_20180109 (440-199995-1)	1/9/18	09:10 Pacific		Water			X	1	
LPBMP002_20180109 (440-199995-2)	1/9/18	09:02 Pacific		Water			X	1	
LPBMP003_20180109 (440-199995-3)	1/9/18	09:12 Pacific		Water			X	1	
LPBMP004_20180109 (440-199995-4)	1/9/18	09:15 Pacific		Water			X	1	
ILBMP0002_20180109 (440-199995-5)	1/9/18	07:11 Pacific		Water			X	1	
ILBMP0004_20180109 (440-199995-6)	1/9/18	08:40 Pacific		Water			X	1	
ILBMP0005_20180109 (440-199995-7)	1/9/18	08:45 Pacific		Water			X	1	

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 complicance 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: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	01/10/18 0700	PTS		1/11/18 9:30	PTS LABS. INC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact:	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
Δ Yes ☒ No		1.5°C

Ver: 09/20/2016

1/23/2018

5730 Centralcrest St. • Houston, TX 77092
Telephone (713) 316-1800 • Fax (877) 225-9953

January 18, 2018

Urvashi Patel,
Project Manager,
TestAmerica Irvine,
17461 Derian Ave Suite 100
Irvine, CA 92614-5817

Re: PTS File No: 48010
Project Name: Boeing SSFL ISRA and BMP
Job Number: 44009815
Laser Particle Size Analyses

Dear Urvashi Patel:

Please find enclosed report for Physical Properties analyses conducted upon samples received from the above referenced project.
All analyses were performed by ASTM D4464 methodology. The samples are currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact myself or Emeka Anazodo at (713) 316-1800.

Sincerely,
PTS Laboratories, Inc.

Rick Schweizer

Rick Schweizer
Laboratory Supervisor

Encl.

PTS Laboratories

Project Name: Boeing SSFL ISRA and BMP
Project Number: 44009815

PTS File No: 48010
Client: TestAmerica Irvine

TEST PROGRAM - 20180111

FLUID ID	Date	Time	Fluid Type	Particle Size: Microsize				Comments
			Method:	ASTM D4464				
Date Received: 20180111								
ILBMP0008_20180109 (440-199995-8)	**01/09/18**	**0823**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
B1BMP0009_20180109 (440-199995-9)	**01/09/18**	**0740**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
B1BMP0010_20180109 (440-199995-10)	**01/09/18**	**0750**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
B1BMP0010_20180109 (440-199995-11)	**01/09/18**	**0741**	**Water**	**1**				2 LITRE PLASTIC BOTTLE
TOTALS:				**4**				

Laboratory Test Program Notes
Standard TAT for basic analysis is 10-15 business days.
Water samples to be disposed 15 days after completion of analyses.

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D4464M)

PROJECT NAME: Boeing SSFL ISRA and BMP
PROJECT NO: 44009815

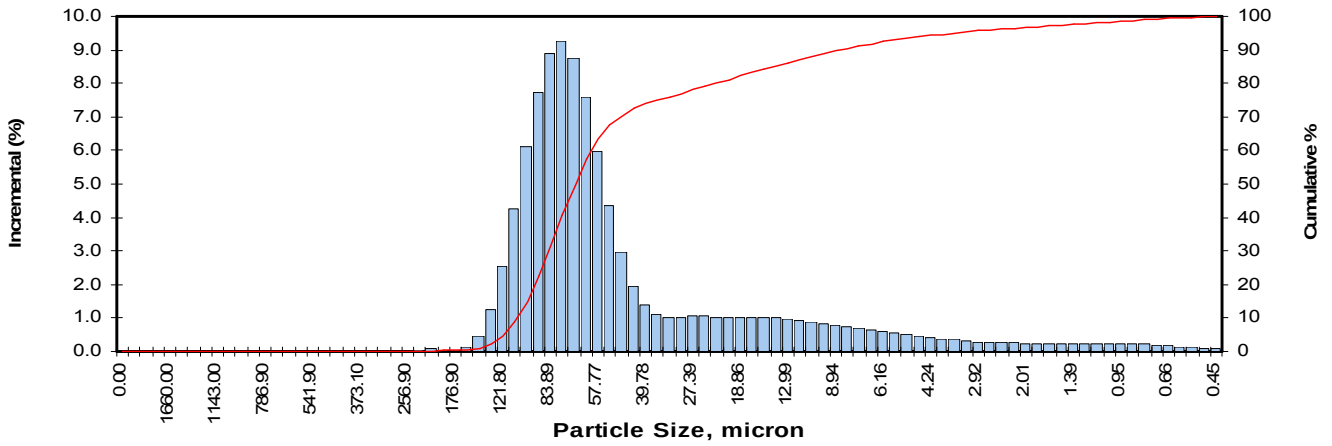
Sample ID	Matrix	Median Grain Size, micron (1)	CUMULATIVE PERCENT GREATER THAN Distribution percent, microns										
			5%	10%	16%	25%	40%	50%	60%	75%	84%	90%	95%
ILBMP008_20180109 (440-199995-8)	Aqueous	57.967	103.046	93.133	84.787	75.984	64.889	57.967	50.912	30.522	11.651	5.779	1.480
B1BMP009_20180109 (440-199995-9)	Aqueous	64.972	111.727	99.331	89.982	81.844	71.031	64.972	58.453	46.046	27.977	10.819	3.225
B1BMP0010_20180109 (440199995-10)	Aqueous	65.887	128.235	111.012	98.814	86.505	73.119	65.887	58.806	46.293	28.262	8.825	2.263
B1BMP0010_20180109 (440199995-11)	Aqueous	18.870	99.259	82.085	65.501	41.472	24.644	18.870	13.010	6.846	3.285	1.720	1.151

(1) Based on Trask Median

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48010
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	ILBMP008_20180109 (440-199995-8)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.00	0.0
256.90	0.02	0.0
234.10	0.06	0.1
213.20	0.08	0.2
194.20	0.07	0.2
176.90	0.07	0.3
161.20	0.14	0.4
146.80	0.46	0.9
133.70	1.23	2.1
121.80	2.55	4.7
111.00	4.25	8.9
101.10	6.09	15.0
92.09	7.75	22.8
83.89	8.88	31.7
76.42	9.24	40.9
69.61	8.76	49.7

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	7.58	57.2
57.77	5.99	63.2
52.62	4.35	67.6
47.94	2.95	70.5
43.67	1.96	72.5
39.78	1.38	73.9
36.24	1.11	75.0
33.01	1.03	76.0
30.07	1.04	77.0
27.39	1.05	78.1
24.95	1.05	79.1
22.73	1.03	80.2
20.70	1.01	81.2
18.86	1.02	82.2
17.18	1.03	83.2
15.65	1.03	84.3
14.26	1.02	85.3
12.99	0.99	86.3
11.83	0.94	87.2
10.78	0.89	88.1
9.82	0.85	89.0
8.94	0.79	89.7
8.15	0.74	90.5
7.42	0.68	91.2
6.76	0.63	91.8
6.16	0.58	92.4
5.61	0.54	92.9
5.11	0.49	93.4
4.66	0.45	93.9
4.24	0.41	94.3
3.86	0.38	94.6
3.52	0.35	95.0
3.21	0.33	95.3
2.92	0.30	95.6
2.66	0.29	95.9
2.42	0.27	96.2
2.21	0.26	96.4
2.01	0.25	96.7
1.83	0.25	96.9

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.240	97.2
1.520	0.240	97.4
1.385	0.240	97.7
1.261	0.240	97.9
1.149	0.240	98.1
1.047	0.230	98.4
0.953	0.230	98.6
0.868	0.220	98.8
0.791	0.210	99.0
0.721	0.190	99.2
0.656	0.180	99.4
0.598	0.160	99.6
0.545	0.130	99.7
0.496	0.110	99.8
0.452	0.076	99.9
TOTALS:	**99.88**	**99.9**

Measure	Trask	Inman
Median, mm	0.0580	0.0580
Median, micron	57.967	57.967
Mean, mm	0.0533	0.0314
Mean, micron	53.253	31.430
Sorting	1.5778	1.432
Skewness	0.8308	0.617
Kurtosis	0.2602	1.138

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	103.046	0.1030
10	93.133	0.0931
16	84.787	0.0848
25	75.984	0.0760
40	64.889	0.0649
50	57.967	0.0580
60	50.912	0.0509
75	30.522	0.0305
84	11.651	0.0117
90	5.779	0.0058
95	1.480	0.0015

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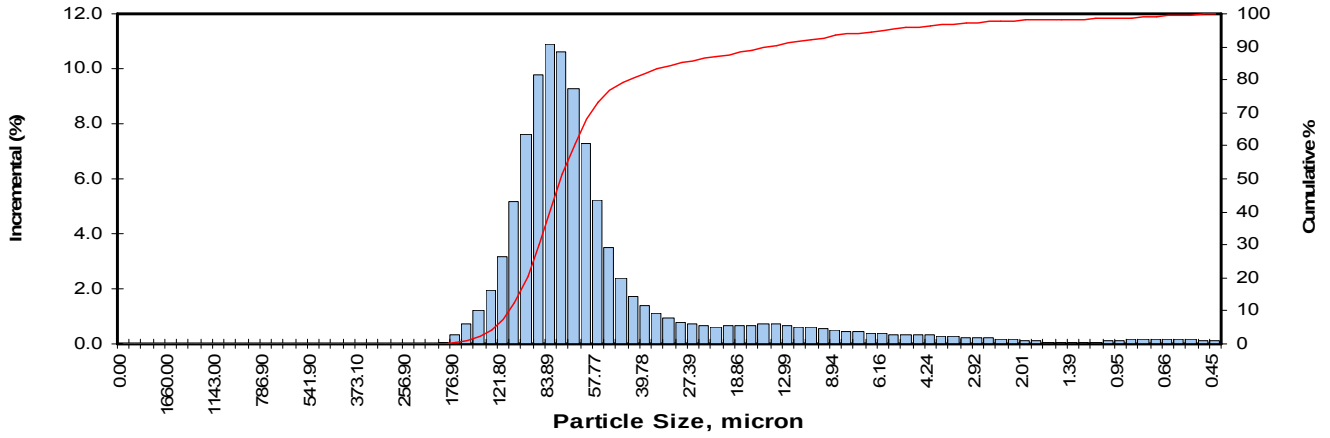
PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48010
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	B1BMP009_20180109 (440-199995-9)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	7.28	68.0	1.668	0.076	98.2
0.00	0.00	0.0	57.77	5.20	73.2	1.520	0.064	98.2
2000.00	0.00	0.0	52.62	3.49	76.7	1.385	0.061	98.3
1822.00	0.00	0.0	47.94	2.37	79.1	1.261	0.067	98.4
1660.00	0.00	0.0	43.67	1.73	80.8	1.149	0.080	98.4
1512.00	0.00	0.0	39.78	1.37	82.2	1.047	0.098	98.5
1377.00	0.00	0.0	36.24	1.13	83.3	0.953	0.120	98.7
1255.00	0.00	0.0	33.01	0.93	84.2	0.868	0.140	98.8
1143.00	0.00	0.0	30.07	0.79	85.0	0.791	0.160	99.0
1041.00	0.00	0.0	27.39	0.70	85.7	0.721	0.170	99.1
948.30	0.00	0.0	24.95	0.65	86.4	0.656	0.180	99.3
863.90	0.00	0.0	22.73	0.63	87.0	0.598	0.170	99.5
786.90	0.00	0.0	20.70	0.64	87.6	0.545	0.160	99.6
716.80	0.00	0.0	18.86	0.66	88.3	0.496	0.130	99.8
653.00	0.00	0.0	17.18	0.68	89.0	0.452	0.100	99.9
594.90	0.00	0.0	15.65	0.70	89.7	**TOTALS:**	**99.87**	**99.9**
541.90	0.00	0.0	14.26	0.70	90.4			
493.60	0.00	0.0	12.99	0.67	91.0			
449.70	0.00	0.0	11.83	0.63	91.7			
409.60	0.00	0.0	10.78	0.59	92.3			
373.10	0.00	0.0	9.82	0.55	92.8			
339.90	0.00	0.0	8.94	0.50	93.3			
309.60	0.00	0.0	8.15	0.47	93.8			
282.10	0.00	0.0	7.42	0.43	94.2			
256.90	0.00	0.0	6.76	0.40	94.6			
234.10	0.00	0.0	6.16	0.38	95.0			
213.20	0.00	0.0	5.61	0.36	95.3			
194.20	0.07	0.1	5.11	0.34	95.7			
176.90	0.31	0.4	4.66	0.32	96.0			
161.20	0.70	1.1	4.24	0.31	96.3			
146.80	1.20	2.3	3.86	0.29	96.6			
133.70	1.94	4.2	3.52	0.27	96.9			
121.80	3.19	7.4	3.21	0.25	97.1			
111.00	5.14	12.6	2.92	0.23	97.4			
101.10	7.60	20.2	2.66	0.20	97.6			
92.09	9.79	29.9	2.42	0.18	97.7			
83.89	10.90	40.8	2.21	0.15	97.9			
76.42	10.60	51.4	2.01	0.12	98.0			
69.61	9.27	60.7	1.83	0.10	98.1			

Measure	Trask	Inman
Median, mm	0.0650	0.0650
Median, micron	64.972	64.972
Mean, mm	0.0639	0.0502
Mean, micron	63.945	50.174
Sorting	1.3332	0.843
Skewness	0.9449	0.442
Kurtosis	0.2022	2.035

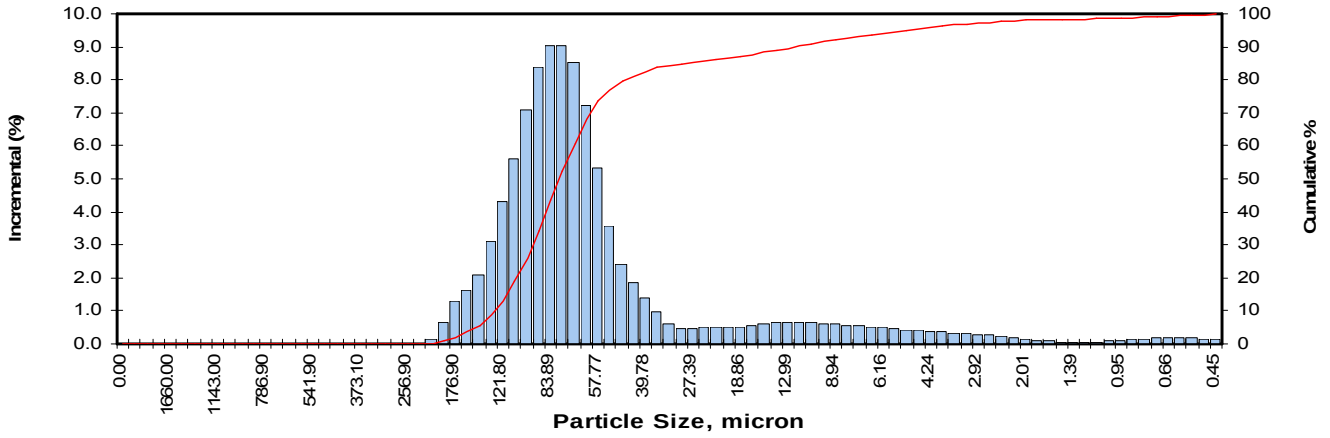
Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	111.727	0.1117
10	99.331	0.0993
16	89.982	0.0900
25	81.844	0.0818
40	71.031	0.0710
50	64.972	0.0650
60	58.453	0.0585
75	46.046	0.0460
84	27.977	0.0280
90	10.819	0.0108
95	3.225	0.0032

Phone: (562) 907-3607 Fax: (562) 907-3611

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48010
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	B1BMP0010_20180109 (440-199995-10)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	7.24	68.1	1.668	0.078	98.2
0.00	0.00	0.0	57.77	5.32	73.4	1.520	0.054	98.2
2000.00	0.00	0.0	52.62	3.55	77.0	1.385	0.041	98.3
1822.00	0.00	0.0	47.94	2.43	79.4	1.261	0.041	98.3
1660.00	0.00	0.0	43.67	1.83	81.2	1.149	0.052	98.4
1512.00	0.00	0.0	39.78	1.38	82.6	1.047	0.074	98.5
1377.00	0.00	0.0	36.24	0.95	83.6	0.953	0.100	98.6
1255.00	0.00	0.0	33.01	0.61	84.2	0.868	0.130	98.7
1143.00	0.00	0.0	30.07	0.46	84.6	0.791	0.160	98.8
1041.00	0.00	0.0	27.39	0.45	85.1	0.721	0.180	99.0
948.30	0.00	0.0	24.95	0.49	85.6	0.656	0.200	99.2
863.90	0.00	0.0	22.73	0.50	86.1	0.598	0.200	99.4
786.90	0.00	0.0	20.70	0.50	86.6	0.545	0.180	99.6
716.80	0.00	0.0	18.86	0.51	87.1	0.496	0.160	99.8
653.00	0.00	0.0	17.18	0.55	87.6	0.452	0.120	99.9
594.90	0.00	0.0	15.65	0.61	88.3	**TOTALS:**	**99.88**	**99.9**
541.90	0.00	0.0	14.26	0.64	88.9			
493.60	0.00	0.0	12.99	0.66	89.6			
449.70	0.00	0.0	11.83	0.65	90.2			
409.60	0.00	0.0	10.78	0.64	90.8			
373.10	0.00	0.0	9.82	0.62	91.5			
339.90	0.00	0.0	8.94	0.60	92.1			
309.60	0.00	0.0	8.15	0.57	92.6			
282.10	0.00	0.0	7.42	0.55	93.2			
256.90	0.00	0.0	6.76	0.52	93.7			
234.10	0.00	0.0	6.16	0.49	94.2			
213.20	0.12	0.1	5.61	0.46	94.7			
194.20	0.65	0.8	5.11	0.43	95.1			
176.90	1.28	2.1	4.66	0.41	95.5			
161.20	1.60	3.7	4.24	0.38	95.9			
146.80	2.10	5.8	3.86	0.36	96.2			
133.70	3.11	8.9	3.52	0.34	96.6			
121.80	4.31	13.2	3.21	0.31	96.9			
111.00	5.61	18.8	2.92	0.29	97.2			
101.10	7.10	25.9	2.66	0.26	97.4			
92.09	8.39	34.3	2.42	0.23	97.7			
83.89	9.02	43.3	2.21	0.19	97.9			
76.42	9.05	52.3	2.01	0.15	98.0			
69.61	8.53	60.9	1.83	0.11	98.1			

Measure	Trask	Inman
Median, mm	0.0659	0.0659
Median, micron	65.887	65.887
Mean, mm	0.0664	0.0528
Mean, micron	66.399	52.846
Sorting	1.3670	0.903
Skewness	0.9605	0.352
Kurtosis	0.1968	2.225

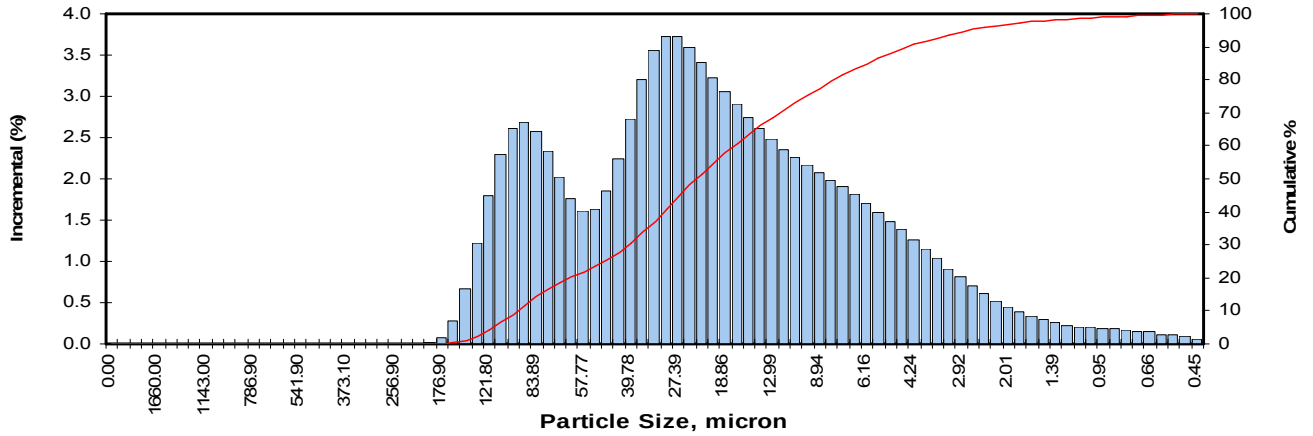
Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	128.235	0.1282
10	111.012	0.1110
16	98.814	0.0988
25	86.505	0.0865
40	73.119	0.0731
50	65.887	0.0659
60	58.806	0.0588
75	46.293	0.0463
84	28.262	0.0283
90	8.825	0.0088
95	2.263	0.0023

Phone: (562) 907-3607 Fax: (562) 907-3611

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48010
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	B1BMP0010_20180109 (440-199995-11)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	1.76	20.3	1.668	0.340	97.5
0.00	0.00	0.0	57.77	1.61	21.9	1.520	0.290	97.8
2000.00	0.00	0.0	52.62	1.63	23.6	1.385	0.260	98.1
1822.00	0.00	0.0	47.94	1.85	25.4	1.261	0.230	98.3
1660.00	0.00	0.0	43.67	2.24	27.7	1.149	0.210	98.5
1512.00	0.00	0.0	39.78	2.73	30.4	1.047	0.200	98.7
1377.00	0.00	0.0	36.24	3.20	33.6	0.953	0.190	98.9
1255.00	0.00	0.0	33.01	3.55	37.1	0.868	0.180	99.1
1143.00	0.00	0.0	30.07	3.72	40.9	0.791	0.170	99.3
1041.00	0.00	0.0	27.39	3.72	44.6	0.721	0.150	99.4
948.30	0.00	0.0	24.95	3.59	48.2	0.656	0.140	99.6
863.90	0.00	0.0	22.73	3.41	51.6	0.598	0.120	99.7
786.90	0.00	0.0	20.70	3.23	54.8	0.545	0.110	99.8
716.80	0.00	0.0	18.86	3.06	57.9	0.496	0.087	99.9
653.00	0.00	0.0	17.18	2.90	60.8	0.452	0.062	99.9
594.90	0.00	0.0	15.65	2.75	63.5	**TOTALS:**	**99.93**	**99.9**
541.90	0.00	0.0	14.26	2.61	66.1			
493.60	0.00	0.0	12.99	2.48	68.6			
449.70	0.00	0.0	11.83	2.36	71.0			
409.60	0.00	0.0	10.78	2.26	73.2			
373.10	0.00	0.0	9.82	2.17	75.4			
339.90	0.00	0.0	8.94	2.08	77.5			
309.60	0.00	0.0	8.15	1.99	79.5			
282.10	0.00	0.0	7.42	1.90	81.4			
256.90	0.00	0.0	6.76	1.81	83.2			
234.10	0.00	0.0	6.16	1.71	84.9			
213.20	0.00	0.0	5.61	1.60	86.5			
194.20	0.01	0.0	5.11	1.49	88.0			
176.90	0.07	0.1	4.66	1.38	89.4			
161.20	0.27	0.4	4.24	1.26	90.6			
146.80	0.67	1.0	3.86	1.15	91.8			
133.70	1.22	2.2	3.52	1.03	92.8			
121.80	1.80	4.0	3.21	0.91	93.7			
111.00	2.30	6.3	2.92	0.81	94.5			
101.10	2.61	9.0	2.66	0.70	95.2			
92.09	2.69	11.6	2.42	0.61	95.8			
83.89	2.58	14.2	2.21	0.52	96.4			
76.42	2.33	16.6	2.01	0.45	96.8			
69.61	2.02	18.6	1.83	0.39	97.2			

Measure	Trask	Inman
Median, mm	0.0189	0.0189
Median, micron	18.870	18.870
Mean, mm	0.0242	0.0147
Mean, micron	24.159	14.669
Sorting	2.4612	2.159
Skewness	0.8930	0.168
Kurtosis	0.2154	0.489

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	99.259	0.0993
10	82.085	0.0821
16	65.501	0.0655
25	41.472	0.0415
40	24.644	0.0246
50	18.870	0.0189
60	13.010	0.0130
75	6.846	0.0068
84	3.285	0.0033
90	1.720	0.0017
95	1.151	0.0012

Phone: (562) 907-3607 Fax: (562) 907-3611

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-118006.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: PTS laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 440-199995-1
Address: 5730 Central Crest Street,	Due Date Requested: 1/19/2018			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77092				
Phone: 713-316-1800(Tel)	PO #:			
Email:	WO #:			
Project Name: Boeing SSFL ISRA and BMP	Project #: 44009815			
Site:	SSOW#:			

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:

48010

Special Instructions/Note:

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)	SUB (Particle Size)/ Particle Size	Total Number of containers
			Preservation Code:					
LBMP0008_20180109 (440-199995-8)	1/9/18	08:23 Pacific		Water			X	1
B1BMP0009_20180109 (440-199995-9)	1/9/18	07:40 Pacific		Water			X	1
B1BMP0010_20180109 (440-199995-10)	1/9/18	07:50 Pacific		Water			X	1
B1BMP0011_20180109 (440-199995-11)	1/9/18	07:41 Pacific		Water			X	1

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 complicance 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: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 1/11/18 @ 1700	Company: TAL	Received by: PTS LABS INC	Date/Time: 1/12/18 1220	Company: PTS LABS. INC
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: 5.4°C

Ver: 09/20/2016

1/23/2018

Patel, Urvashi

From: Baluran, Dwayne <DBaluran@haleyaldrich.com>
Sent: Wednesday, January 10, 2018 3:22 PM
To: Patel, Urvashi
Cc: Miller, Katherine
Subject: RE: TestAmerica Sample Login Confirmation files from 440-199995 BMP Performance OF 009 Watershed

-External Email-

Urvashi,

In addition, on the COC there is a note (4) that the Total Dissolved specific metals is what has the HN03 preservative but it's supposed to be Total Recoverable specific metals that has the preservative.

Thanks,
Dwayne

From: Baluran, Dwayne
Sent: Wednesday, January 10, 2018 3:15 PM
To: 'Patel, Urvashi' <Urvashi.Patel@testamericainc.com>
Cc: Miller, Katherine <KMiller@haleyaldrich.com>
Subject: FW: TestAmerica Sample Login Confirmation files from 440-199995 BMP Performance OF 009 Watershed

Hi Urvashi,

Hope all is well. We recently had samples go out yesterday. Could you please make the following updates:

- Sample location IDs missing a "zero": ILBMP0001, LPBMP0002, LPBMP0003, LPBMP0004.
- ILBMP0001 needs turbidity tested
- LPBMP0002 only needs specific metals tested like the rest and it does not need turbidity tested.
- ILBMP0008, B1BMP0009, B1BMP0010, and B1BMP0011 all need particle size to be tested

Feel free to contact me to discuss if you have any questions/comments.

Thank you!
Dwayne Baluran, EIT, QSP
Staff Engineer

Haley & Aldrich, Inc.
5850 Canoga Avenue | Suite 400
Woodland Hills, CA 91367

T: (978) 234.5022
C: (818) 224.0704

www.haleyaldrich.com

From: Nguyen, Jocelyn [mailto:jocelyn.nguyen@testamericainc.com]
Sent: Wednesday, January 10, 2018 1:36 PM
To: Hernandez, Elysse <EHernandez@haleyaldrich.com>; Kim Schultz <kim.schultz@mecx.net>; Miller, Katherine <KMiller@haleyaldrich.com>
Subject: TestAmerica Sample Login Confirmation files from 440-199995 BMP Performance OF 009 Watershed

Hello,

Attached, please find the Sample Confirmation files for job 440-199995; BMP Performance OF 009 Watershed

Please feel free to contact me or your PM, Urvashi Patel, if you have any questions.

Thank you.

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback

JOCELYN NGUYEN
Project Manager Assistant

TestAmerica Irvine
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 949.261,1022

Reference: [421172]
Attachments: 8

Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614
phone (949) 261-1022 fax (949) 260-3299

Chain of Custody Record for
Haley & Aldrich, Inc. Blanket Service Agreement #2015-18-TestAmerica

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc..

Client Contact	H&A Project Manager: Katherine Miller	H&A Site Contact: Matt Birney (818) 466-8782	Date:1/9/2017	COC No:
Haley & Aldrich, Inc.	Tel/Fax: (520) 289-8606	Lab Contact: Urvashi Patel (949) 333-9055	Carrier:	1 of 1 COCs
5333 Mission Center Road, Suite 300	Analysis Turnaround Time			Sampler:
San Diego, California 92108	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(619) 280-9210 Phone	TAT if different from Below _____			Walk-in Client:
(619) 280-9415 FAX	☑ 2 weeks			Lab Sampling:
H&A Project Number : 129095-002 SID 5.2	☐ 1 week			Job / SDG No.:
Site: BMP Performance OF 009 Watershed	☐ 2 days			
H&A P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Metals (Total Recoverable) (Method 200.7/200.8/245.1)*	Metals (Total Dissolved) (Method 200.7/200.8/245.1)*	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Dissolved)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Recoverable)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)	Sample Specific Notes:
								1-250mL P	1-250mL P	1-250mL P	1-250mL P	2-1L A	1-1L P	1-1L P	1-250mL P	Field Staff Notes: Lab may substitute 250mL Poly for 500mL for metals. Only need to fill half of 500mL. Must fill TSS to the top.
ILBMP001_20180109	1/9/2018	0910	G	WM	7		N			X	X	X	X	X		
LPBMP002_20180109	1/9/2018	0902	G	WM	7		N	X	X			X	X	X	X	
LPBMP003_20180109	1/9/2018	0912	G	WM	7		N			X	X	X	X	X		
LPBMP004_20180109	1/9/2018	0915	G	WM	7		N			X	X	X	X	X		
ILBMP0002_20180109	1/9/2018	0711	G	WM	7		N			X	X	X	X	X		
ILBMP0004_20180109	1/9/2018	0840	G	WM	7		N			X	X	X	X	X		
ILBMP0005_20180109	1/9/2018	0845	G	WM	7		N			X	X	X	X	X		
ILBMP0008_20180109	1/9/2018	0823	G	WM	7		N			X	X	X	X			
B1BMP0009_20180109	1/9/2018	0740	G	WM	7		N			X	X	X	X			
B1BMP0010_20180109	1/9/2018	0750	G	WM	7		N			X	X	X	X			
B1BMP0011_20180109	1/9/2018	0741	G	WM	7		N			X	X	X	X			
ILQW0007_20180109	1/9/2018	0847	G	WM	4		N			H	H	H				
FBQW__20180109	1/9/2018	1000	G	WM	2		N				H	H				
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other								4	1	4	1	1	1	1	1	

440-199995 Chain of Custody

Hold

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☑ Archive for 6 Months

Special Instructions/QC Requirements & Comments:
Please email data to kmiller@haleyaldrich.com and post to Total Access
Bill to Haley & Aldrich, San Diego at AP@haleyaldrich.com
Report Level II Data Package and provide EDD
All dissolved metal samples are to be filtered within 24 hours of receipt, even those placed on hold. (excl = excluding)
* = analyze metals by either 200.7or 200.8 as communicated to Urvashi on 02/01/2017

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: 13:25 | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

	Company	Date/Time		Company	Date/Time
Relinquished by:	JHA ENV	1/9/17	Received by:	TA	1-9-18 13:25
Relinquished by:	TA	1/9/18 1808	Received by:		
Relinquished by:			Received in Laboratory by:	TA-IRV	1/9/18 1808

Form No. CA-C-WI-045, Rev. 1.2, dated 1/8/2016

IR - SL6

Temp. 3.7 / 3.0
Temp. 0.1 / -0.6
Temp 1.8 / 1.1

Temp 1.7 / 1.0
Temp -1.1 / -1.8

1/23/2018

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1/9/17

Irvine
17461 Derian Avenue, Suite 100
rvine, CA 92614
hone (949) 261-1022 fax (949) 260-3299

Chain of Custody Record for
Haley & Aldrich, Inc. Blanket Service Agreement #2015-18-TestAmerica

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

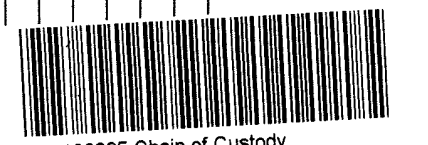
Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc..

Client Contact	H&A Project Manager: Katherine Miller	H&A Site Contact: Matt Birney (818) 466-8782	Date:1/9/2017	COC No:
Haley & Aldrich, Inc.	Tel/Fax: (520) 289-8606	Lab Contact: Urvashi Patel (949) 333-9055	Carrier:	1 of 1 COCs
5333 Mission Center Road, Suite 300	Analysis Turnaround Time			Sampler:
San Diego, California 92108	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(619) 280-9210 Phone	TAT if different from Below _____			Walk-in Client:
(619) 280-9415 FAX	☑ 2 weeks			Lab Sampling:
H&A Project Number : 129095-002 SID 5.2	☐ 1 week			Job / SDG No.:
Site: BMP Performance OF 009 Watershed	☐ 2 days			
H&A P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Metals (Total Recoverable) (Method 200.7/200.8/245.1)*	Metals (Total Dissolved) (Method 200.7/200.8/245.1)*	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Dissolved)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Recoverable)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)	Sample Specific Notes:
								1-250mL P	1-250mL P	1-250mL P	1-250mL P	2-1L A	1-1L P	1-1L P	1-250mL P	Field Staff Notes: Lab may substitute 250mL Poly for 500mL for metals. Only need to fill half of 500mL. Must fill TSS to the top.
ILBMP001_20180109	1/9/2018	0910	G	WM	7		N			X	X	X	X	X		
LPBMP002_20180109	1/9/2018	0902	G	WM	7		N	X	X			X	X	X	X	
LPBMP003_20180109	1/9/2018	0912	G	WM	7		N			X	X	X	X	X		
LPBMP004_20180109	1/9/2018	0915	G	WM	7		N			X	X	X	X	X		
ILBMP0002_20180109	1/9/2018	0711	G	WM	7		N			X	X	X	X	X		
ILBMP0004_20180109	1/9/2018	0840	G	WM	7		N			X	X	X	X	X		
ILBMP0005_20180109	1/9/2018	0845	G	WM	7		N			X	X	X	X	X		
ILBMP0008_20180109	1/9/2018	0823	G	WM	7		N			X	X	X	X			
B1BMP0009_20180109	1/9/2018	0740	G	WM	7		N			X	X	X	X			
B1BMP0010_20180109	1/9/2018	0750	G	WM	7		N			X	X	X	X			
B1BMP0011_20180109	1/9/2018	0741	G	WM	7		N			X	X	X	X			
ILQW0007_20180109	1/9/2018	0847	G	WM	4		N			H	H	H				
FBQW__20180109	1/9/2018	1000	G	WM	2		N				H	H				
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other								4	1	4	1	1	1	1	1	



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Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☑ Archive for 6 Months

Special Instructions/QC Requirements & Comments:
Please email data to kmiller@haleyaldrich.com and post to Total Access
Bill to Haley & Aldrich, San Diego at AP@haleyaldrich.com
Report Level II Data Package and provide EDD
All dissolved metal samples are to be filtered within 24 hours of receipt, even those placed on hold. (excl = excluding)
* = analyze metals by either 200.7or 200.8 as communicated to Urvashi on 02/01/2017

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	13:25	Cooler Temp. (°C): Obs'd: _____ Corr'd: _____	Therm ID No.:	
Relinquished by:	Company: SHAENV	Date/Time: 1/9/17	Received by:	Company: TA	Date/Time: 1-9-18 13:25
Relinquished by:	Company: TA	Date/Time: 1/9/18 18:08	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: TA-IRV	Date/Time: 1/9/18 1808

Form No. CA-C-WI-045, Rev. 1.2, dated 1/8/2016

1/23/2018

IR-SL6

Temp. 3.7 / 3.0
Temp. 0.1 / -0.6
Temp 1.8 / 1.1

Temp 1.7 / 1.0
Temp -1.1 / -1.8

2/15/18

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-199995-1

Login Number: 199995
List Number: 1
Creator: Soderblom, Tim

List Source: TestAmerica Irvine

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Tracking # 4176 2737 6193

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes:

Received 1/12/13
Not listed on COC.

Therm. ID: ~~AK-2~~ / AK-3 / HACCP /Other_____

Ice X Wet X Dry_____ Other_____

Cooler Custody Seal: Seal

Sample Custody Seal: _____

Cooler ID: 1 of 3

Temp: Observed ~~1 of 3 pkt~~ 1.2

Corrected: _____

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☒ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☒
CoC is complete w/o discrepancies?	☒	☐	☐
Samples received within holding time?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Cooler compromised/tampered with?	☐	☒	☐
Samples compromised/tampered with?	☐	☒	☐
COC and Samples w/o discrepancies?	☒	☐	☐
Sample containers have legible labels?	☒	☐	☐
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided.	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐

Initials: DH Date: 1/14/13

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

WSE

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Sample Receiving Notes

Job: _____

Tracking # 4176 2737 6208

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes: _____

Therm. ID: AK-2 / AK-3 / HACCP /Other _____

Ice X Wet X Dry _____ Other _____

Cooler Custody Seal: Seal

Sample Custody Seal: -

Cooler ID: 2 of 3

Temp: Observed 0.7

Corrected: -

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☒
CoC is complete w/o discrepancies?	☒	☐	☐
Samples received within holding time?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Cooler compromised/tampered with?	☐	☒	☐
Samples compromised/tampered with?	☐	☒	☐
COC and Samples w/o discrepancies?	☒	☐	☐
Sample containers have legible labels?	☒	☐	☐
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided.	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐

Initials: PH Date: 1/11/18

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Sample Receiving Notes

Job: _____

Tracking # 4176 2737 6249

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes: _____

Therm. ID: ~~AK-2~~ / **AK-3** / **HACCP** /Other _____

Ice X Wet X Dry _____ Other _____

Cooler Custody Seal: Sun

Sample Custody Seal: —

Cooler ID: 3 of 3

Temp: Observed ~~2.1~~ 2.1

Corrected: —

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☒
CoC is complete w/o discrepancies?	☒	☐	☐
Samples received within holding time?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Cooler compromised/tampered with?	☐	☒	☐
Samples compromised/tampered with?	☐	☒	☐
COC and Samples w/o discrepancies?	☒	☐	☐
Sample containers have legible labels?	☒	☐	☐
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided.	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐

Initials: DH Date: 1/4/18

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-199995-2
Client Project/Site: BMP Performance OF 009 Watershed

For:
Haley & Aldrich, Inc.
400 E Van Buren St.
Suite 545
Phoenix, Arizona 85004

Attn: Katherine Miller

Authorized for release by:
1/30/2018 6:23:34 PM

Urvashi Patel, Manager of Project Management
(949)261-1022
urvashi.patel@testamericainc.com

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-199995-1	ILBMP0001_20180109	Water	01/09/18 09:10	01/09/18 18:08
440-199995-2	LPBMP0002_20180109	Water	01/09/18 09:02	01/09/18 18:08
440-199995-3	LPBMP0003_20180109	Water	01/09/18 09:12	01/09/18 18:08
440-199995-4	LPBMP0004_20180109	Water	01/09/18 09:15	01/09/18 18:08
440-199995-5	ILBMP0002_20180109	Water	01/09/18 07:11	01/09/18 18:08
440-199995-6	ILBMP0004_20180109	Water	01/09/18 08:40	01/09/18 18:08
440-199995-7	ILBMP0005_20180109	Water	01/09/18 08:45	01/09/18 18:08
440-199995-8	ILBMP0008_20180109	Water	01/09/18 08:23	01/09/18 18:08
440-199995-9	B1BMP0009_20180109	Water	01/09/18 07:40	01/09/18 18:08
440-199995-10	B1BMP0010_20180109	Water	01/09/18 07:50	01/09/18 18:08
440-199995-11	B1BMP0011_20180109	Water	01/09/18 07:41	01/09/18 18:08

Job ID: 440-199995-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-199995-2

Comments
No additional comments.

Receipt
The samples were received on 1/9/2018 6:08 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were -1.8º C, 0.6º C, 1.0º C, 1.1º C and 3.0º C.

Receipt Exceptions

The following samples were submitted for analysis; however, it was not listed on the Chain-of-Custody (COC): ILQW0007_20180109 (440-199995-12) and FBQW_20180109 (440-199995-13)- Samples on Hold

Dioxin
Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 3D5 exceeded this criteria: ILBMP0001_20180109 (440-199995-1), LPBMP0002_20180109 (440-199995-2), LPBMP0003_20180109 (440-199995-3), LPBMP0004_20180109 (440-199995-4), ILBMP0002_20180109 (440-199995-5), ILBMP0004_20180109 (440-199995-6), ILBMP0005_20180109 (440-199995-7), (CCV 320-205219/2), (LCS 320-204865/2-A), (LCSD 320-204865/3-A) and (MB 320-204865/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Method(s) 1613B: The concentration of one or more analytes associated with the following sample exceeded the instrument calibration range: ILBMP0004_20180109 (440-199995-6). These analytes have been qualified; however, the peak(s) did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

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

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

Client Sample ID: ILBMP0001_20180109

Date Collected: 01/09/18 09:10
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-1

Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	**0.0000016**	**J,DX**	0.0000095	0.00000022	ug/L		01/22/18 07:08	01/23/18 20:32	1
2,3,7,8-TCDF	ND		0.0000095	0.00000039	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,7,8-PeCDD	**0.0000088**	**J,DX**	0.000048	0.00000053	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,7,8-PeCDF	**0.0000015**	**J,DX**	0.000048	0.00000058	ug/L		01/22/18 07:08	01/23/18 20:32	1
2,3,4,7,8-PeCDF	**0.00000089**	**J,DX q**	0.000048	0.00000066	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,4,7,8-HxCDD	**0.000012**	**J,DX MB**	0.000048	0.00000074	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,6,7,8-HxCDD	**0.000027**	**J,DX MB**	0.000048	0.00000072	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,7,8,9-HxCDD	**0.000023**	**J,DX MB**	0.000048	0.00000065	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,4,7,8-HxCDF	**0.0000045**	**J,DX MB**	0.000048	0.0000021	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,6,7,8-HxCDF	**0.0000080**	**J,DX MB**	0.000048	0.0000021	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,7,8,9-HxCDF	ND		0.000048	0.0000012	ug/L		01/22/18 07:08	01/23/18 20:32	1
2,3,4,6,7,8-HxCDF	**0.0000022**	**J,DX MB**	0.000048	0.0000014	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,4,6,7,8-HpCDD	**0.00037**	**MB**	0.000048	0.0000043	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,4,6,7,8-HpCDF	**0.000083**	**MB**	0.000048	0.00000099	ug/L		01/22/18 07:08	01/23/18 20:32	1
1,2,3,4,7,8,9-HpCDF	**0.0000022**	**J,DX MB**	0.000048	0.0000012	ug/L		01/22/18 07:08	01/23/18 20:32	1
OCDD	**0.0027**	**MB**	0.000095	0.0000072	ug/L		01/22/18 07:08	01/23/18 20:32	1
OCDF	**0.000098**	**MB**	0.000095	0.00000022	ug/L		01/22/18 07:08	01/23/18 20:32	1
Total TCDD	**0.0000022**	**J,DX q**	0.0000095	0.00000022	ug/L		01/22/18 07:08	01/23/18 20:32	1
Total TCDF	**0.0000013**	**J,DX q**	0.0000095	0.00000039	ug/L		01/22/18 07:08	01/23/18 20:32	1
Total PeCDD	**0.000019**	**J,DX q**	0.000048	0.00000053	ug/L		01/22/18 07:08	01/23/18 20:32	1
Total PeCDF	**0.000027**	**J,DX q**	0.000048	0.00000062	ug/L		01/22/18 07:08	01/23/18 20:32	1
Total HxCDD	**0.00014**	**J,DX MB**	0.000048	0.00000070	ug/L		01/22/18 07:08	01/23/18 20:32	1
Total HxCDF	**0.000084**	**J,DX MB**	0.000048	0.0000017	ug/L		01/22/18 07:08	01/23/18 20:32	1
Total HpCDD	**0.00076**	**MB**	0.000048	0.0000043	ug/L		01/22/18 07:08	01/23/18 20:32	1
Total HpCDF	**0.00015**	**J,DX MB**	0.000048	0.0000011	ug/L		01/22/18 07:08	01/23/18 20:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*86*		*25 - 164*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-2,3,7,8-TCDF	*79*		*24 - 169*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-1,2,3,7,8-PeCDD	*94*		*25 - 181*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-1,2,3,7,8-PeCDF	*82*		*24 - 185*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-2,3,4,7,8-PeCDF	*83*		*21 - 178*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-1,2,3,4,7,8-HxCDD	*95*		*32 - 141*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-1,2,3,6,7,8-HxCDD	*89*		*28 - 130*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-1,2,3,4,7,8-HxCDF	*92*		*26 - 152*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-1,2,3,6,7,8-HxCDF	*86*		*26 - 123*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-1,2,3,7,8,9-HxCDF	*91*		*29 - 147*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-2,3,4,6,7,8-HxCDF	*90*		*28 - 136*	*01/22/18 07:08*	*01/23/18 20:32*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*104*		*23 - 140*	*01/22/18 07:08*	*01/23/18 20:32*	*1*

Client Sample ID: ILBMP0001_20180109

Lab Sample ID: 440-199995-1

Date Collected: 01/09/18 09:10

Matrix: Water

Date Received: 01/09/18 18:08

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDF	94		28 - 143	01/22/18 07:08	01/23/18 20:32	1
13C-1,2,3,4,7,8,9-HpCDF	102		26 - 138	01/22/18 07:08	01/23/18 20:32	1
13C-OCDD	123		17 - 157	01/22/18 07:08	01/23/18 20:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	01/22/18 07:08	01/23/18 20:32	1

Client Sample ID: LPBMP0002_20180109

Lab Sample ID: 440-199995-2

Date Collected: 01/09/18 09:02

Matrix: Water

Date Received: 01/09/18 18:08

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.00000084	J,DX q	0.000010	0.00000025	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,7,8-PeCDD	0.0000039	J,DX	0.000052	0.00000040	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,7,8-PeCDF	0.0000022	J,DX	0.000052	0.00000034	ug/L		01/22/18 07:08	01/23/18 21:21	1
2,3,4,7,8-PeCDF	0.0000019	J,DX	0.000052	0.00000040	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,4,7,8-HxCDD	0.0000067	J,DX MB	0.000052	0.00000050	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,6,7,8-HxCDD	0.0000094	J,DX MB	0.000052	0.00000049	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,7,8,9-HxCDD	0.0000098	J,DX MB	0.000052	0.00000044	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,4,7,8-HxCDF	0.0000030	J,DX q MB	0.000052	0.0000011	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,6,7,8-HxCDF	0.0000060	J,DX MB	0.000052	0.0000011	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,7,8,9-HxCDF	0.0000017	J,DX q MB	0.000052	0.00000059	ug/L		01/22/18 07:08	01/23/18 21:21	1
2,3,4,6,7,8-HxCDF	0.0000029	J,DX MB	0.000052	0.00000073	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,4,6,7,8-HpCDD	0.00015	MB	0.000052	0.0000019	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,4,6,7,8-HpCDF	0.000055	MB	0.000052	0.00000077	ug/L		01/22/18 07:08	01/23/18 21:21	1
1,2,3,4,7,8,9-HpCDF	0.0000027	J,DX MB	0.000052	0.0000010	ug/L		01/22/18 07:08	01/23/18 21:21	1
OCDD	0.0015	MB	0.00010	0.00000079	ug/L		01/22/18 07:08	01/23/18 21:21	1
OCDF	0.000060	J,DX MB	0.00010	0.00000024	ug/L		01/22/18 07:08	01/23/18 21:21	1
Total TCDD	0.00000084	J,DX q	0.000010	0.00000025	ug/L		01/22/18 07:08	01/23/18 21:21	1
Total TCDF	0.0000011	J,DX q	0.000010	0.00000025	ug/L		01/22/18 07:08	01/23/18 21:21	1
Total PeCDD	0.0000067	J,DX q	0.000052	0.00000040	ug/L		01/22/18 07:08	01/23/18 21:21	1
Total PeCDF	0.000016	J,DX q	0.000052	0.00000037	ug/L		01/22/18 07:08	01/23/18 21:21	1
Total HxCDD	0.000057	J,DX MB q	0.000052	0.00000048	ug/L		01/22/18 07:08	01/23/18 21:21	1
Total HxCDF	0.000050	J,DX q MB	0.000052	0.00000089	ug/L		01/22/18 07:08	01/23/18 21:21	1
Total HpCDD	0.00039	MB	0.000052	0.0000019	ug/L		01/22/18 07:08	01/23/18 21:21	1

Client Sample ID: LPBMP0002_20180109

Date Collected: 01/09/18 09:02
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-2

Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDF	**0.000097**	**J,DX MB**	0.000052	0.00000089	ug/L		01/22/18 07:08	01/23/18 21:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*74*		*25 - 164*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-2,3,7,8-TCDF	*70*		*24 - 169*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-1,2,3,7,8-PeCDD	*82*		*25 - 181*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-1,2,3,7,8-PeCDF	*74*		*24 - 185*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-2,3,4,7,8-PeCDF	*73*		*21 - 178*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-1,2,3,4,7,8-HxCDD	*85*		*32 - 141*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-1,2,3,6,7,8-HxCDD	*79*		*28 - 130*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-1,2,3,4,7,8-HxCDF	*80*		*26 - 152*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-1,2,3,6,7,8-HxCDF	*76*		*26 - 123*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-1,2,3,7,8,9-HxCDF	*83*		*29 - 147*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-2,3,4,6,7,8-HxCDF	*82*		*28 - 136*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*95*		*23 - 140*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*85*		*28 - 143*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*88*		*26 - 138*	*01/22/18 07:08*	*01/23/18 21:21*	*1*
13C-OCDD	*115*		*17 - 157*	*01/22/18 07:08*	*01/23/18 21:21*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*93*		*35 - 197*	*01/22/18 07:08*	*01/23/18 21:21*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000020	ug/L		01/22/18 07:08	01/29/18 14:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*77*		*24 - 169*	*01/22/18 07:08*	*01/29/18 14:31*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*86*		*35 - 197*	*01/22/18 07:08*	*01/29/18 14:31*	*1*

Client Sample ID: LPBMP0003_20180109

Date Collected: 01/09/18 09:12
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-3

Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000025	ug/L		01/22/18 07:08	01/23/18 22:09	1
2,3,7,8-TCDF	ND		0.000011	0.00000018	ug/L		01/22/18 07:08	01/23/18 22:09	1
1,2,3,7,8-PeCDD	ND		0.000054	0.00000038	ug/L		01/22/18 07:08	01/23/18 22:09	1
1,2,3,7,8-PeCDF	ND		0.000054	0.00000026	ug/L		01/22/18 07:08	01/23/18 22:09	1
2,3,4,7,8-PeCDF	ND		0.000054	0.00000029	ug/L		01/22/18 07:08	01/23/18 22:09	1
1,2,3,4,7,8-HxCDD	**0.0000018**	**J,DX q MB**	0.000054	0.00000032	ug/L		01/22/18 07:08	01/23/18 22:09	1
1,2,3,6,7,8-HxCDD	**0.0000016**	**J,DX MB**	0.000054	0.00000032	ug/L		01/22/18 07:08	01/23/18 22:09	1

Client Sample ID: LPBMP0003_20180109
Date Collected: 01/09/18 09:12
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-3
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDD	**0.0000019**	**J,DX MB**	0.000054	0.00000029	ug/L		01/22/18 07:08	01/23/18 22:09	1
1,2,3,4,7,8-HxCDF	ND		0.000054	0.00000054	ug/L		01/22/18 07:08	01/23/18 22:09	1
1,2,3,6,7,8-HxCDF	**0.00000097**	**J,DX MB**	0.000054	0.00000055	ug/L		01/22/18 07:08	01/23/18 22:09	1
1,2,3,7,8,9-HxCDF	**0.00000071**	**J,DX q MB**	0.000054	0.00000032	ug/L		01/22/18 07:08	01/23/18 22:09	1
2,3,4,6,7,8-HxCDF	**0.00000037**	**J,DX q MB**	0.000054	0.00000036	ug/L		01/22/18 07:08	01/23/18 22:09	1
1,2,3,4,6,7,8-HpCDD	**0.000026**	**J,DX MB**	0.000054	0.00000055	ug/L		01/22/18 07:08	01/23/18 22:09	1
1,2,3,4,6,7,8-HpCDF	**0.0000094**	**J,DX MB**	0.000054	0.00000046	ug/L		01/22/18 07:08	01/23/18 22:09	1
1,2,3,4,7,8,9-HpCDF	ND		0.000054	0.00000057	ug/L		01/22/18 07:08	01/23/18 22:09	1
OCDD	**0.00029**	**MB**	0.00011	0.00000063	ug/L		01/22/18 07:08	01/23/18 22:09	1
OCDF	**0.000011**	**J,DX MB**	0.00011	0.00000023	ug/L		01/22/18 07:08	01/23/18 22:09	1
Total TCDD	ND		0.000011	0.00000025	ug/L		01/22/18 07:08	01/23/18 22:09	1
Total TCDF	ND		0.000011	0.00000018	ug/L		01/22/18 07:08	01/23/18 22:09	1
Total PeCDD	ND		0.000054	0.00000038	ug/L		01/22/18 07:08	01/23/18 22:09	1
Total PeCDF	ND		0.000054	0.00000026	ug/L		01/22/18 07:08	01/23/18 22:09	1
Total HxCDD	**0.000010**	**J,DX q MB**	0.000054	0.00000031	ug/L		01/22/18 07:08	01/23/18 22:09	1
Total HxCDF	**0.0000051**	**J,DX q MB**	0.000054	0.00000044	ug/L		01/22/18 07:08	01/23/18 22:09	1
Total HpCDD	**0.000060**	**J,DX MB**	0.000054	0.00000055	ug/L		01/22/18 07:08	01/23/18 22:09	1
Total HpCDF	**0.000016**	**J,DX q MB**	0.000054	0.00000052	ug/L		01/22/18 07:08	01/23/18 22:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*73*		*25 - 164*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-2,3,7,8-TCDF	*66*		*24 - 169*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-1,2,3,7,8-PeCDD	*75*		*25 - 181*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-1,2,3,7,8-PeCDF	*67*		*24 - 185*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-2,3,4,7,8-PeCDF	*68*		*21 - 178*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-1,2,3,4,7,8-HxCDD	*79*		*32 - 141*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-1,2,3,6,7,8-HxCDD	*75*		*28 - 130*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-1,2,3,4,7,8-HxCDF	*79*		*26 - 152*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-1,2,3,6,7,8-HxCDF	*74*		*26 - 123*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-1,2,3,7,8,9-HxCDF	*73*		*29 - 147*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-2,3,4,6,7,8-HxCDF	*77*		*28 - 136*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*89*		*23 - 140*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*82*		*28 - 143*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*85*		*26 - 138*	*01/22/18 07:08*	*01/23/18 22:09*	*1*
13C-OCDD	*105*		*17 - 157*	*01/22/18 07:08*	*01/23/18 22:09*	*1*

Client Sample ID: LPBMP0003_20180109

Date Collected: 01/09/18 09:12
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-3

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	*95*		*35 - 197*	*01/22/18 07:08*	*01/23/18 22:09*	*1*

Client Sample ID: LPBMP0004_20180109

Date Collected: 01/09/18 09:15
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-4

Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000025	ug/L		01/22/18 07:08	01/23/18 22:57	1
2,3,7,8-TCDF	ND		0.000010	0.00000029	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,7,8-PeCDD	**0.0000040**	**J,DX**	0.000052	0.00000047	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,7,8-PeCDF	ND		0.000052	0.00000050	ug/L		01/22/18 07:08	01/23/18 22:57	1
2,3,4,7,8-PeCDF	ND		0.000052	0.00000055	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,4,7,8-HxCDD	**0.0000077**	**J,DX MB**	0.000052	0.00000062	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,6,7,8-HxCDD	**0.000013**	**J,DX MB**	0.000052	0.00000064	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,7,8,9-HxCDD	**0.000013**	**J,DX MB**	0.000052	0.00000057	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,4,7,8-HxCDF	**0.0000038**	**J,DX MB**	0.000052	0.0000012	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,6,7,8-HxCDF	**0.0000083**	**J,DX MB**	0.000052	0.0000013	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,7,8,9-HxCDF	ND		0.000052	0.00000068	ug/L		01/22/18 07:08	01/23/18 22:57	1
2,3,4,6,7,8-HxCDF	**0.0000031**	**J,DX MB**	0.000052	0.00000085	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,4,6,7,8-HpCDD	**0.00027**	**MB**	0.000052	0.0000036	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,4,6,7,8-HpCDF	**0.000082**	**MB**	0.000052	0.0000015	ug/L		01/22/18 07:08	01/23/18 22:57	1
1,2,3,4,7,8,9-HpCDF	**0.0000023**	**J,DX MB**	0.000052	0.0000019	ug/L		01/22/18 07:08	01/23/18 22:57	1
OCDD	**0.0025**	**MB**	0.00010	0.000011	ug/L		01/22/18 07:08	01/23/18 22:57	1
OCDF	**0.000070**	**J,DX MB**	0.00010	0.00000021	ug/L		01/22/18 07:08	01/23/18 22:57	1
Total TCDD	ND		0.000010	0.00000025	ug/L		01/22/18 07:08	01/23/18 22:57	1
Total TCDF	**0.0000016**	**J,DX q**	0.000010	0.00000029	ug/L		01/22/18 07:08	01/23/18 22:57	1
Total PeCDD	**0.0000082**	**J,DX q**	0.000052	0.00000047	ug/L		01/22/18 07:08	01/23/18 22:57	1
Total PeCDF	**0.000018**	**J,DX q**	0.000052	0.00000053	ug/L		01/22/18 07:08	01/23/18 22:57	1
Total HxCDD	**0.000083**	**J,DX MB q**	0.000052	0.00000061	ug/L		01/22/18 07:08	01/23/18 22:57	1
Total HxCDF	**0.000070**	**J,DX MB q**	0.000052	0.0000010	ug/L		01/22/18 07:08	01/23/18 22:57	1
Total HpCDD	**0.00060**	**MB**	0.000052	0.0000036	ug/L		01/22/18 07:08	01/23/18 22:57	1
Total HpCDF	**0.00013**	**MB**	0.000052	0.0000017	ug/L		01/22/18 07:08	01/23/18 22:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	*81*		*25 - 164*	*01/22/18 07:08*	*01/23/18 22:57*	*1*
13C-2,3,7,8-TCDF	*76*		*24 - 169*	*01/22/18 07:08*	*01/23/18 22:57*	*1*
13C-1,2,3,7,8-PeCDD	*89*		*25 - 181*	*01/22/18 07:08*	*01/23/18 22:57*	*1*
13C-1,2,3,7,8-PeCDF	*78*		*24 - 185*	*01/22/18 07:08*	*01/23/18 22:57*	*1*

Client Sample ID: LPBMP0004_20180109

Date Collected: 01/09/18 09:15
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-4

Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	79		21 - 178	01/22/18 07:08	01/23/18 22:57	1
13C-1,2,3,4,7,8-HxCDD	90		32 - 141	01/22/18 07:08	01/23/18 22:57	1
13C-1,2,3,6,7,8-HxCDD	84		28 - 130	01/22/18 07:08	01/23/18 22:57	1
13C-1,2,3,4,7,8-HxCDF	89		26 - 152	01/22/18 07:08	01/23/18 22:57	1
13C-1,2,3,6,7,8-HxCDF	84		26 - 123	01/22/18 07:08	01/23/18 22:57	1
13C-1,2,3,7,8,9-HxCDF	90		29 - 147	01/22/18 07:08	01/23/18 22:57	1
13C-2,3,4,6,7,8-HxCDF	86		28 - 136	01/22/18 07:08	01/23/18 22:57	1
13C-1,2,3,4,6,7,8-HpCDD	99		23 - 140	01/22/18 07:08	01/23/18 22:57	1
13C-1,2,3,4,6,7,8-HpCDF	89		28 - 143	01/22/18 07:08	01/23/18 22:57	1
13C-1,2,3,4,7,8,9-HpCDF	93		26 - 138	01/22/18 07:08	01/23/18 22:57	1
13C-OCDD	121		17 - 157	01/22/18 07:08	01/23/18 22:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	01/22/18 07:08	01/23/18 22:57	1

Client Sample ID: ILBMP0002_20180109

Date Collected: 01/09/18 07:11
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-5

Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000023	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,7,8-PeCDD	**0.0000016**	**J,DX**	0.000052	0.00000040	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,7,8-PeCDF	ND		0.000052	0.00000034	ug/L		01/22/18 07:08	01/23/18 23:46	1
2,3,4,7,8-PeCDF	ND		0.000052	0.00000035	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,4,7,8-HxCDD	**0.0000039**	**J,DX MB**	0.000052	0.00000037	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,6,7,8-HxCDD	**0.0000052**	**J,DX MB**	0.000052	0.00000036	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,7,8,9-HxCDD	**0.0000053**	**J,DX MB**	0.000052	0.00000033	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,4,7,8-HxCDF	**0.0000012**	**J,DX MB**	0.000052	0.00000078	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,6,7,8-HxCDF	**0.0000030**	**J,DX MB**	0.000052	0.00000081	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,7,8,9-HxCDF	**0.00000084**	**J,DX MB**	0.000052	0.00000042	ug/L		01/22/18 07:08	01/23/18 23:46	1
2,3,4,6,7,8-HxCDF	**0.0000011**	**J,DX MB**	0.000052	0.00000052	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,4,6,7,8-HpCDD	**0.000096**	**MB**	0.000052	0.0000011	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,4,6,7,8-HpCDF	**0.000024**	**J,DX MB**	0.000052	0.00000059	ug/L		01/22/18 07:08	01/23/18 23:46	1
1,2,3,4,7,8,9-HpCDF	**0.0000018**	**J,DX MB**	0.000052	0.00000072	ug/L		01/22/18 07:08	01/23/18 23:46	1
OCDD	**0.0011**	**MB**	0.00010	0.0000026	ug/L		01/22/18 07:08	01/23/18 23:46	1
OCDF	**0.000077**	**J,DX MB**	0.00010	0.00000029	ug/L		01/22/18 07:08	01/23/18 23:46	1
Total TCDD	ND		0.000010	0.00000023	ug/L		01/22/18 07:08	01/23/18 23:46	1

Client Sample ID: ILBMP0002_20180109

Lab Sample ID: 440-199995-5

Date Collected: 01/09/18 07:11

Matrix: Water

Date Received: 01/09/18 18:08

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TCDF	0.00000056	J,DX q	0.000010	0.00000019	ug/L		01/22/18 07:08	01/23/18 23:46	1
Total PeCDD	0.0000023	J,DX q	0.000052	0.00000040	ug/L		01/22/18 07:08	01/23/18 23:46	1
Total PeCDF	0.0000048	J,DX q	0.000052	0.00000034	ug/L		01/22/18 07:08	01/23/18 23:46	1
Total HxCDD	0.000029	J,DX MB	0.000052	0.00000035	ug/L		01/22/18 07:08	01/23/18 23:46	1
Total HxCDF	0.000021	J,DX MB	0.000052	0.00000063	ug/L		01/22/18 07:08	01/23/18 23:46	1
Total HpCDD	0.00021	MB	0.000052	0.0000011	ug/L		01/22/18 07:08	01/23/18 23:46	1
Total HpCDF	0.000058	J,DX MB	0.000052	0.00000065	ug/L		01/22/18 07:08	01/23/18 23:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*85*		*25 - 164*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-2,3,7,8-TCDF	*75*		*24 - 169*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-1,2,3,7,8-PeCDD	*90*		*25 - 181*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-1,2,3,7,8-PeCDF	*79*		*24 - 185*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-2,3,4,7,8-PeCDF	*80*		*21 - 178*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-1,2,3,4,7,8-HxCDD	*90*		*32 - 141*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-1,2,3,6,7,8-HxCDD	*86*		*28 - 130*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-1,2,3,4,7,8-HxCDF	*92*		*26 - 152*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-1,2,3,6,7,8-HxCDF	*84*		*26 - 123*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-1,2,3,7,8,9-HxCDF	*90*		*29 - 147*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-2,3,4,6,7,8-HxCDF	*89*		*28 - 136*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*101*		*23 - 140*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*94*		*28 - 143*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*101*		*26 - 138*	*01/22/18 07:08*	*01/23/18 23:46*	*1*
13C-OCDD	*122*		*17 - 157*	*01/22/18 07:08*	*01/23/18 23:46*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*99*		*35 - 197*	*01/22/18 07:08*	*01/23/18 23:46*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000012	ug/L		01/22/18 07:08	01/29/18 15:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*86*		*24 - 169*	*01/22/18 07:08*	*01/29/18 15:09*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*91*		*35 - 197*	*01/22/18 07:08*	*01/29/18 15:09*	*1*

Client Sample ID: ILBMP0004_20180109

Lab Sample ID: 440-199995-6

Date Collected: 01/09/18 08:40

Matrix: Water

Date Received: 01/09/18 18:08

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.0000037	J,DX q	0.000010	0.00000027	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,7,8-PeCDD	0.000027	J,DX q	0.000052	0.0000016	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,7,8-PeCDF	0.0000043	J,DX	0.000052	0.0000012	ug/L		01/22/18 07:08	01/24/18 00:34	1

Client Sample ID: ILBMP0004_20180109
Date Collected: 01/09/18 08:40
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-6
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,7,8-PeCDF	0.0000019	J,DX q	0.000052	0.0000013	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,4,7,8-HxCDD	0.000062	MB	0.000052	0.0000023	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,6,7,8-HxCDD	0.00010	MB	0.000052	0.0000023	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,7,8,9-HxCDD	0.00013	MB	0.000052	0.0000020	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,4,7,8-HxCDF	0.000013	J,DX MB	0.000052	0.0000037	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,6,7,8-HxCDF	0.000027	J,DX MB q	0.000052	0.0000039	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,7,8,9-HxCDF	ND		0.000052	0.0000021	ug/L		01/22/18 07:08	01/24/18 00:34	1
2,3,4,6,7,8-HxCDF	0.0000079	J,DX MB	0.000052	0.0000025	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,4,6,7,8-HpCDD	0.0026	MB	0.000052	0.000031	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,4,6,7,8-HpCDF	0.00035	MB	0.000052	0.0000032	ug/L		01/22/18 07:08	01/24/18 00:34	1
1,2,3,4,7,8,9-HpCDF	0.000013	J,DX MB	0.000052	0.0000040	ug/L		01/22/18 07:08	01/24/18 00:34	1
OCDD	0.048	EY MB	0.00010	0.000016	ug/L		01/22/18 07:08	01/24/18 00:34	1
OCDF	0.00080	MB	0.00010	0.00000049	ug/L		01/22/18 07:08	01/24/18 00:34	1
Total TCDD	0.0000071	J,DX q	0.000010	0.00000027	ug/L		01/22/18 07:08	01/24/18 00:34	1
Total TCDF	0.0000042	J,DX q	0.000010	0.00000049	ug/L		01/22/18 07:08	01/24/18 00:34	1
Total PeCDD	0.000061	J,DX q	0.000052	0.0000016	ug/L		01/22/18 07:08	01/24/18 00:34	1
Total PeCDF	0.000062	J,DX q	0.000052	0.0000013	ug/L		01/22/18 07:08	01/24/18 00:34	1
Total HxCDD	0.00071	q MB	0.000052	0.0000022	ug/L		01/22/18 07:08	01/24/18 00:34	1
Total HxCDF	0.00027	J,DX MB q	0.000052	0.0000030	ug/L		01/22/18 07:08	01/24/18 00:34	1
Total HpCDD	0.0073	MB	0.000052	0.000031	ug/L		01/22/18 07:08	01/24/18 00:34	1
Total HpCDF	0.00077	J,DX MB	0.000052	0.0000036	ug/L		01/22/18 07:08	01/24/18 00:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*79*		*25 - 164*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-2,3,7,8-TCDF	*75*		*24 - 169*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-1,2,3,7,8-PeCDD	*87*		*25 - 181*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-1,2,3,7,8-PeCDF	*78*		*24 - 185*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-2,3,4,7,8-PeCDF	*78*		*21 - 178*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-1,2,3,4,7,8-HxCDD	*86*		*32 - 141*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-1,2,3,6,7,8-HxCDD	*82*		*28 - 130*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-1,2,3,4,7,8-HxCDF	*87*		*26 - 152*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-1,2,3,6,7,8-HxCDF	*78*		*26 - 123*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-1,2,3,7,8,9-HxCDF	*85*		*29 - 147*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-2,3,4,6,7,8-HxCDF	*84*		*28 - 136*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*95*		*23 - 140*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*87*		*28 - 143*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*90*		*26 - 138*	*01/22/18 07:08*	*01/24/18 00:34*	*1*
13C-OCDD	*118*		*17 - 157*	*01/22/18 07:08*	*01/24/18 00:34*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*92*		*35 - 197*	*01/22/18 07:08*	*01/24/18 00:34*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000016	ug/L		01/22/18 07:08	01/29/18 15:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*83*		*24 - 169*	*01/22/18 07:08*	*01/29/18 15:47*	*1*

Client Sample ID: ILBMP0004_20180109

Date Collected: 01/09/18 08:40
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-6
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	01/22/18 07:08	01/29/18 15:47	1

Client Sample ID: ILBMP0005_20180109

Date Collected: 01/09/18 08:45
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-7
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000021	ug/L		01/22/18 07:08	01/24/18 01:23	1
2,3,7,8-TCDF	ND		0.000011	0.00000018	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,7,8-PeCDD	**0.0000010**	**J,DX**	0.000053	0.00000030	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,7,8-PeCDF	ND		0.000053	0.00000031	ug/L		01/22/18 07:08	01/24/18 01:23	1
2,3,4,7,8-PeCDF	ND		0.000053	0.00000035	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,4,7,8-HxCDD	**0.0000033**	**J,DX MB**	0.000053	0.00000036	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,6,7,8-HxCDD	**0.0000034**	**J,DX MB**	0.000053	0.00000035	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,7,8,9-HxCDD	**0.0000035**	**J,DX MB**	0.000053	0.00000032	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,4,7,8-HxCDF	**0.00000092**	**J,DX q MB**	0.000053	0.00000068	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,6,7,8-HxCDF	**0.0000027**	**J,DX MB**	0.000053	0.00000069	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,7,8,9-HxCDF	**0.0000015**	**J,DX q MB**	0.000053	0.00000035	ug/L		01/22/18 07:08	01/24/18 01:23	1
2,3,4,6,7,8-HxCDF	**0.0000017**	**J,DX MB**	0.000053	0.00000043	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,4,6,7,8-HpCDD	**0.000047**	**J,DX MB**	0.000053	0.00000010	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,4,6,7,8-HpCDF	**0.000023**	**J,DX MB**	0.000053	0.00000056	ug/L		01/22/18 07:08	01/24/18 01:23	1
1,2,3,4,7,8,9-HpCDF	**0.0000033**	**J,DX MB**	0.000053	0.00000066	ug/L		01/22/18 07:08	01/24/18 01:23	1
OCDD	**0.00046**	**MB**	0.00011	0.00000063	ug/L		01/22/18 07:08	01/24/18 01:23	1
OCDF	**0.000037**	**J,DX MB**	0.00011	0.00000019	ug/L		01/22/18 07:08	01/24/18 01:23	1
Total TCDD	**0.00000054**	**J,DX q**	0.000011	0.00000021	ug/L		01/22/18 07:08	01/24/18 01:23	1
Total TCDF	**0.0000012**	**J,DX q**	0.000011	0.00000018	ug/L		01/22/18 07:08	01/24/18 01:23	1
Total PeCDD	**0.0000020**	**J,DX q**	0.000053	0.00000030	ug/L		01/22/18 07:08	01/24/18 01:23	1
Total PeCDF	**0.0000042**	**J,DX q**	0.000053	0.00000033	ug/L		01/22/18 07:08	01/24/18 01:23	1
Total HxCDD	**0.000020**	**J,DX q MB**	0.000053	0.00000034	ug/L		01/22/18 07:08	01/24/18 01:23	1
Total HxCDF	**0.000021**	**J,DX q MB**	0.000053	0.00000054	ug/L		01/22/18 07:08	01/24/18 01:23	1
Total HpCDD	**0.00014**	**J,DX MB**	0.000053	0.00000010	ug/L		01/22/18 07:08	01/24/18 01:23	1
Total HpCDF	**0.000042**	**J,DX MB**	0.000053	0.00000061	ug/L		01/22/18 07:08	01/24/18 01:23	1

Client Sample ID: ILBMP0005_20180109

Lab Sample ID: 440-199995-7

Date Collected: 01/09/18 08:45
Matrix: Water
Date Received: 01/09/18 18:08

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	82		25 - 164	01/22/18 07:08	01/24/18 01:23	1
13C-2,3,7,8-TCDF	74		24 - 169	01/22/18 07:08	01/24/18 01:23	1
13C-1,2,3,7,8-PeCDD	88		25 - 181	01/22/18 07:08	01/24/18 01:23	1
13C-1,2,3,7,8-PeCDF	77		24 - 185	01/22/18 07:08	01/24/18 01:23	1
13C-2,3,4,7,8-PeCDF	77		21 - 178	01/22/18 07:08	01/24/18 01:23	1
13C-1,2,3,4,7,8-HxCDD	88		32 - 141	01/22/18 07:08	01/24/18 01:23	1
13C-1,2,3,6,7,8-HxCDD	83		28 - 130	01/22/18 07:08	01/24/18 01:23	1
13C-1,2,3,4,7,8-HxCDF	86		26 - 152	01/22/18 07:08	01/24/18 01:23	1
13C-1,2,3,6,7,8-HxCDF	82		26 - 123	01/22/18 07:08	01/24/18 01:23	1
13C-1,2,3,7,8,9-HxCDF	89		29 - 147	01/22/18 07:08	01/24/18 01:23	1
13C-2,3,4,6,7,8-HxCDF	86		28 - 136	01/22/18 07:08	01/24/18 01:23	1
13C-1,2,3,4,6,7,8-HpCDD	102		23 - 140	01/22/18 07:08	01/24/18 01:23	1
13C-1,2,3,4,6,7,8-HpCDF	94		28 - 143	01/22/18 07:08	01/24/18 01:23	1
13C-1,2,3,4,7,8,9-HpCDF	99		26 - 138	01/22/18 07:08	01/24/18 01:23	1
13C-OCDD	121		17 - 157	01/22/18 07:08	01/24/18 01:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	01/22/18 07:08	01/24/18 01:23	1

Client Sample ID: ILBMP0008_20180109

Lab Sample ID: 440-199995-8

Date Collected: 01/09/18 08:23
Matrix: Water
Date Received: 01/09/18 18:08

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.0000014	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,7,8-PeCDD	ND		0.000054	0.0000019	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,7,8-PeCDF	ND		0.000054	0.0000014	ug/L		01/22/18 07:08	01/25/18 18:14	1
2,3,4,7,8-PeCDF	ND		0.000054	0.0000015	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,4,7,8-HxCDD	**0.0000049**	**J,DX MB**	0.000054	0.0000011	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,6,7,8-HxCDD	**0.0000052**	**J,DX MB**	0.000054	0.0000011	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,7,8,9-HxCDD	**0.0000043**	**J,DX q MB**	0.000054	0.00000097	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,4,7,8-HxCDF	ND		0.000054	0.0000032	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,6,7,8-HxCDF	**0.0000078**	**J,DX q MB**	0.000054	0.0000028	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,7,8,9-HxCDF	ND		0.000054	0.0000021	ug/L		01/22/18 07:08	01/25/18 18:14	1
2,3,4,6,7,8-HxCDF	**0.0000036**	**J,DX MB**	0.000054	0.0000021	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,4,6,7,8-HpCDD	**0.000059**	**MB**	0.000054	0.0000017	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,4,6,7,8-HpCDF	**0.000070**	**MB**	0.000054	0.0000045	ug/L		01/22/18 07:08	01/25/18 18:14	1
1,2,3,4,7,8,9-HpCDF	**0.0000067**	**J,DX MB**	0.000054	0.0000059	ug/L		01/22/18 07:08	01/25/18 18:14	1
OCDD	**0.00050**	**MB**	0.00011	0.0000017	ug/L		01/22/18 07:08	01/25/18 18:14	1
OCDF	**0.00014**	**MB**	0.00011	0.0000017	ug/L		01/22/18 07:08	01/25/18 18:14	1
Total TCDD	ND		0.000011	0.0000014	ug/L		01/22/18 07:08	01/25/18 18:14	1
Total TCDF	**0.0000017**	**J,DX**	0.000011	0.0000010	ug/L		01/22/18 07:08	01/25/18 18:14	1
Total PeCDD	ND		0.000054	0.0000019	ug/L		01/22/18 07:08	01/25/18 18:14	1
Total PeCDF	**0.0000063**	**J,DX q**	0.000054	0.0000015	ug/L		01/22/18 07:08	01/25/18 18:14	1
Total HxCDD	**0.000028**	**J,DX q MB**	0.000054	0.0000010	ug/L		01/22/18 07:08	01/25/18 18:14	1
Total HxCDF	**0.000045**	**J,DX q MB**	0.000054	0.0000026	ug/L		01/22/18 07:08	01/25/18 18:14	1
Total HpCDD	**0.00012**	**MB**	0.000054	0.0000017	ug/L		01/22/18 07:08	01/25/18 18:14	1
Total HpCDF	**0.00013**	**MB**	0.000054	0.0000052	ug/L		01/22/18 07:08	01/25/18 18:14	1

Client Sample ID: ILBMP0008_20180109

Lab Sample ID: 440-199995-8

Date Collected: 01/09/18 08:23

Matrix: Water

Date Received: 01/09/18 18:08

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	82		25 - 164	01/22/18 07:08	01/25/18 18:14	1
13C-2,3,7,8-TCDF	80		24 - 169	01/22/18 07:08	01/25/18 18:14	1
13C-1,2,3,7,8-PeCDD	88		25 - 181	01/22/18 07:08	01/25/18 18:14	1
13C-1,2,3,7,8-PeCDF	78		24 - 185	01/22/18 07:08	01/25/18 18:14	1
13C-2,3,4,7,8-PeCDF	82		21 - 178	01/22/18 07:08	01/25/18 18:14	1
13C-1,2,3,4,7,8-HxCDD	87		32 - 141	01/22/18 07:08	01/25/18 18:14	1
13C-1,2,3,6,7,8-HxCDD	88		28 - 130	01/22/18 07:08	01/25/18 18:14	1
13C-1,2,3,4,7,8-HxCDF	87		26 - 152	01/22/18 07:08	01/25/18 18:14	1
13C-1,2,3,6,7,8-HxCDF	86		26 - 123	01/22/18 07:08	01/25/18 18:14	1
13C-1,2,3,7,8,9-HxCDF	89		29 - 147	01/22/18 07:08	01/25/18 18:14	1
13C-2,3,4,6,7,8-HxCDF	91		28 - 136	01/22/18 07:08	01/25/18 18:14	1
13C-1,2,3,4,6,7,8-HpCDD	97		23 - 140	01/22/18 07:08	01/25/18 18:14	1
13C-1,2,3,4,6,7,8-HpCDF	89		28 - 143	01/22/18 07:08	01/25/18 18:14	1
13C-1,2,3,4,7,8,9-HpCDF	91		26 - 138	01/22/18 07:08	01/25/18 18:14	1
13C-OCDD	113		17 - 157	01/22/18 07:08	01/25/18 18:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	01/22/18 07:08	01/25/18 18:14	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000011	0.0000013	ug/L		01/22/18 07:08	01/29/18 16:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	86		24 - 169	01/22/18 07:08	01/29/18 16:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	01/22/18 07:08	01/29/18 16:25	1

Client Sample ID: B1BMP0009_20180109

Lab Sample ID: 440-199995-9

Date Collected: 01/09/18 07:40

Matrix: Water

Date Received: 01/09/18 18:08

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000037	ug/L		01/22/18 07:08	01/25/18 19:02	1
2,3,7,8-TCDF	ND		0.000010	0.00000038	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,7,8-PeCDD	**0.0000066**	**J,DX**	0.000052	0.00000060	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,7,8-PeCDF	ND		0.000052	0.00000073	ug/L		01/22/18 07:08	01/25/18 19:02	1
2,3,4,7,8-PeCDF	ND		0.000052	0.00000078	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,4,7,8-HxCDD	**0.000015**	**J,DX MB**	0.000052	0.00000080	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,6,7,8-HxCDD	**0.000024**	**J,DX MB**	0.000052	0.00000076	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,7,8,9-HxCDD	**0.000025**	**J,DX MB**	0.000052	0.00000070	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,4,7,8-HxCDF	**0.0000063**	**J,DX MB**	0.000052	0.0000020	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,6,7,8-HxCDF	**0.000011**	**J,DX MB**	0.000052	0.0000019	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,7,8,9-HxCDF	ND		0.000052	0.0000015	ug/L		01/22/18 07:08	01/25/18 19:02	1

Client Sample ID: B1BMP0009_20180109

Lab Sample ID: 440-199995-9

Date Collected: 01/09/18 07:40

Matrix: Water

Date Received: 01/09/18 18:08

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	**0.0000033**	**J,DX q MB**	0.000052	0.0000015	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,4,6,7,8-HpCDD	**0.00067**	**MB**	0.000052	0.000015	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,4,6,7,8-HpCDF	**0.00022**	**MB**	0.000052	0.0000034	ug/L		01/22/18 07:08	01/25/18 19:02	1
1,2,3,4,7,8,9-HpCDF	**0.0000085**	**J,DX MB**	0.000052	0.0000040	ug/L		01/22/18 07:08	01/25/18 19:02	1
OCDD	**0.0082**	**MB**	0.00010	0.0000054	ug/L		01/22/18 07:08	01/25/18 19:02	1
OCDF	**0.00059**	**MB**	0.00010	0.00000081	ug/L		01/22/18 07:08	01/25/18 19:02	1
Total TCDD	**0.00000046**	**J,DX q**	0.000010	0.00000037	ug/L		01/22/18 07:08	01/25/18 19:02	1
Total TCDF	ND		0.000010	0.00000038	ug/L		01/22/18 07:08	01/25/18 19:02	1
Total PeCDD	**0.000014**	**J,DX q**	0.000052	0.00000060	ug/L		01/22/18 07:08	01/25/18 19:02	1
Total PeCDF	**0.0000092**	**J,DX**	0.000052	0.00000076	ug/L		01/22/18 07:08	01/25/18 19:02	1
Total HxCDD	**0.00018**	**MB**	0.000052	0.00000075	ug/L		01/22/18 07:08	01/25/18 19:02	1
Total HxCDF	**0.00018**	**q MB**	0.000052	0.0000017	ug/L		01/22/18 07:08	01/25/18 19:02	1
Total HpCDD	**0.0025**	**MB**	0.000052	0.000015	ug/L		01/22/18 07:08	01/25/18 19:02	1
Total HpCDF	**0.00074**	**MB**	0.000052	0.0000037	ug/L		01/22/18 07:08	01/25/18 19:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*74*		*25 - 164*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-2,3,7,8-TCDF	*73*		*24 - 169*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-1,2,3,7,8-PeCDD	*83*		*25 - 181*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-1,2,3,7,8-PeCDF	*75*		*24 - 185*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-2,3,4,7,8-PeCDF	*76*		*21 - 178*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-1,2,3,4,7,8-HxCDD	*79*		*32 - 141*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-1,2,3,6,7,8-HxCDD	*82*		*28 - 130*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-1,2,3,4,7,8-HxCDF	*84*		*26 - 152*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-1,2,3,6,7,8-HxCDF	*79*		*26 - 123*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-1,2,3,7,8,9-HxCDF	*82*		*29 - 147*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-2,3,4,6,7,8-HxCDF	*82*		*28 - 136*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*88*		*23 - 140*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*76*		*28 - 143*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*82*		*26 - 138*	*01/22/18 07:08*	*01/25/18 19:02*	*1*
13C-OCDD	*108*		*17 - 157*	*01/22/18 07:08*	*01/25/18 19:02*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*96*		*35 - 197*	*01/22/18 07:08*	*01/25/18 19:02*	*1*

Client Sample ID: B1BMP0010_20180109

Lab Sample ID: 440-199995-10

Date Collected: 01/09/18 07:50

Matrix: Water

Date Received: 01/09/18 18:08

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000035	ug/L		01/22/18 07:08	01/25/18 19:51	1
2,3,7,8-TCDF	ND		0.000010	0.00000032	ug/L		01/22/18 07:08	01/25/18 19:51	1
1,2,3,7,8-PeCDD	**0.0000018**	**J,DX**	0.000051	0.00000062	ug/L		01/22/18 07:08	01/25/18 19:51	1

Client Sample ID: B1BMP0010_20180109
Date Collected: 01/09/18 07:50
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-10
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8-PeCDF	ND		0.000051	0.00000040	ug/L		01/22/18 07:08	01/25/18 19:51	1
2,3,4,7,8-PeCDF	ND		0.000051	0.00000044	ug/L		01/22/18 07:08	01/25/18 19:51	1
1,2,3,4,7,8-HxCDD	**0.0000045**	**J,DX MB**	0.000051	0.00000044	ug/L		01/22/18 07:08	01/25/18 19:51	1
1,2,3,6,7,8-HxCDD	**0.0000047**	**J,DX MB**	0.000051	0.00000043	ug/L		01/22/18 07:08	01/25/18 19:51	1
1,2,3,7,8,9-HxCDD	**0.0000049**	**J,DX q MB**	0.000051	0.00000039	ug/L		01/22/18 07:08	01/25/18 19:51	1
1,2,3,4,7,8-HxCDF	**0.0000011**	**J,DX q MB**	0.000051	0.00000084	ug/L		01/22/18 07:08	01/25/18 19:51	1
1,2,3,6,7,8-HxCDF	**0.0000014**	**J,DX MB**	0.000051	0.00000075	ug/L		01/22/18 07:08	01/25/18 19:51	1
1,2,3,7,8,9-HxCDF	ND		0.000051	0.00000060	ug/L		01/22/18 07:08	01/25/18 19:51	1
2,3,4,6,7,8-HxCDF	ND		0.000051	0.00000061	ug/L		01/22/18 07:08	01/25/18 19:51	1
1,2,3,4,6,7,8-HpCDD	**0.000077**	**MB**	0.000051	0.0000015	ug/L		01/22/18 07:08	01/25/18 19:51	1
1,2,3,4,6,7,8-HpCDF	**0.000020**	**J,DX MB**	0.000051	0.00000054	ug/L		01/22/18 07:08	01/25/18 19:51	1
1,2,3,4,7,8,9-HpCDF	**0.0000010**	**J,DX q MB**	0.000051	0.00000071	ug/L		01/22/18 07:08	01/25/18 19:51	1
OCDD	**0.00060**	**MB**	0.00010	0.00000081	ug/L		01/22/18 07:08	01/25/18 19:51	1
OCDF	**0.000022**	**J,DX MB**	0.00010	0.00000044	ug/L		01/22/18 07:08	01/25/18 19:51	1
Total TCDD	ND		0.000010	0.00000035	ug/L		01/22/18 07:08	01/25/18 19:51	1
Total TCDF	ND		0.000010	0.00000032	ug/L		01/22/18 07:08	01/25/18 19:51	1
Total PeCDD	**0.0000026**	**J,DX**	0.000051	0.00000062	ug/L		01/22/18 07:08	01/25/18 19:51	1
Total PeCDF	**0.0000039**	**J,DX q**	0.000051	0.00000042	ug/L		01/22/18 07:08	01/25/18 19:51	1
Total HxCDD	**0.000034**	**J,DX q MB**	0.000051	0.00000042	ug/L		01/22/18 07:08	01/25/18 19:51	1
Total HxCDF	**0.000021**	**J,DX q MB**	0.000051	0.00000070	ug/L		01/22/18 07:08	01/25/18 19:51	1
Total HpCDD	**0.00020**	**MB**	0.000051	0.0000015	ug/L		01/22/18 07:08	01/25/18 19:51	1
Total HpCDF	**0.000049**	**J,DX q MB**	0.000051	0.00000063	ug/L		01/22/18 07:08	01/25/18 19:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*75*		*25 - 164*	*01/22/18 07:08*	*01/25/18 19:51*	*1*
13C-2,3,7,8-TCDF	*73*		*24 - 169*	*01/22/18 07:08*	*01/25/18 19:51*	*1*
13C-1,2,3,7,8-PeCDD	*80*		*25 - 181*	*01/22/18 07:08*	*01/25/18 19:51*	*1*
13C-1,2,3,7,8-PeCDF	*73*		*24 - 185*	*01/22/18 07:08*	*01/25/18 19:51*	*1*
13C-2,3,4,7,8-PeCDF	*74*		*21 - 178*	*01/22/18 07:08*	*01/25/18 19:51*	*1*
13C-1,2,3,4,7,8-HxCDD	*80*		*32 - 141*	*01/22/18 07:08*	*01/25/18 19:51*	*1*
13C-1,2,3,6,7,8-HxCDD	*77*		*28 - 130*	*01/22/18 07:08*	*01/25/18 19:51*	*1*
13C-1,2,3,4,7,8-HxCDF	*81*		*26 - 152*	*01/22/18 07:08*	*01/25/18 19:51*	*1*
13C-1,2,3,6,7,8-HxCDF	*77*		*26 - 123*	*01/22/18 07:08*	*01/25/18 19:51*	*1*
13C-1,2,3,7,8,9-HxCDF	*79*		*29 - 147*	*01/22/18 07:08*	*01/25/18 19:51*	*1*
13C-2,3,4,6,7,8-HxCDF	*81*		*28 - 136*	*01/22/18 07:08*	*01/25/18 19:51*	*1*

Client Sample ID: B1BMP0010_20180109

Lab Sample ID: 440-199995-10

Date Collected: 01/09/18 07:50

Matrix: Water

Date Received: 01/09/18 18:08

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	85		23 - 140	01/22/18 07:08	01/25/18 19:51	1
13C-1,2,3,4,6,7,8-HpCDF	77		28 - 143	01/22/18 07:08	01/25/18 19:51	1
13C-1,2,3,4,7,8,9-HpCDF	79		26 - 138	01/22/18 07:08	01/25/18 19:51	1
13C-OCDD	98		17 - 157	01/22/18 07:08	01/25/18 19:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197	01/22/18 07:08	01/25/18 19:51	1

Client Sample ID: B1BMP0011_20180109

Lab Sample ID: 440-199995-11

Date Collected: 01/09/18 07:41

Matrix: Water

Date Received: 01/09/18 18:08

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000042	ug/L		01/22/18 07:08	01/25/18 20:39	1
2,3,7,8-TCDF	ND		0.000011	0.00000027	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,7,8-PeCDD	**0.00000082**	**J,DX**	0.000053	0.00000050	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,7,8-PeCDF	ND		0.000053	0.00000043	ug/L		01/22/18 07:08	01/25/18 20:39	1
2,3,4,7,8-PeCDF	ND		0.000053	0.00000047	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,4,7,8-HxCDD	**0.0000029**	**J,DX MB**	0.000053	0.00000042	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,6,7,8-HxCDD	**0.0000026**	**J,DX MB**	0.000053	0.00000041	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,7,8,9-HxCDD	**0.0000026**	**J,DX MB**	0.000053	0.00000037	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,4,7,8-HxCDF	ND		0.000053	0.00000086	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,6,7,8-HxCDF	ND		0.000053	0.00000079	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,7,8,9-HxCDF	ND		0.000053	0.00000060	ug/L		01/22/18 07:08	01/25/18 20:39	1
2,3,4,6,7,8-HxCDF	ND		0.000053	0.00000062	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,4,6,7,8-HpCDD	**0.000043**	**J,DX MB**	0.000053	0.0000011	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,4,6,7,8-HpCDF	**0.000011**	**J,DX MB**	0.000053	0.00000055	ug/L		01/22/18 07:08	01/25/18 20:39	1
1,2,3,4,7,8,9-HpCDF	ND		0.000053	0.00000072	ug/L		01/22/18 07:08	01/25/18 20:39	1
OCDD	**0.00045**	**MB**	0.00011	0.00000073	ug/L		01/22/18 07:08	01/25/18 20:39	1
OCDF	**0.000023**	**J,DX MB**	0.00011	0.00000057	ug/L		01/22/18 07:08	01/25/18 20:39	1
Total TCDD	ND		0.000011	0.00000042	ug/L		01/22/18 07:08	01/25/18 20:39	1
Total TCDF	ND		0.000011	0.00000027	ug/L		01/22/18 07:08	01/25/18 20:39	1
Total PeCDD	**0.00000082**	**J,DX**	0.000053	0.00000050	ug/L		01/22/18 07:08	01/25/18 20:39	1
Total PeCDF	ND		0.000053	0.00000043	ug/L		01/22/18 07:08	01/25/18 20:39	1

Client Sample ID: B1BMP0011_20180109
Date Collected: 01/09/18 07:41
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-11
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HxCDD	0.000016	J,DX MB	0.000053	0.00000040	ug/L		01/22/18 07:08	01/25/18 20:39	1
Total HxCDF	0.0000059	J,DX MB	0.000053	0.00000072	ug/L		01/22/18 07:08	01/25/18 20:39	1
Total HpCDD	0.00013	MB	0.000053	0.0000011	ug/L		01/22/18 07:08	01/25/18 20:39	1
Total HpCDF	0.000028	J,DX MB	0.000053	0.00000064	ug/L		01/22/18 07:08	01/25/18 20:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*70*		*25 - 164*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-1,2,3,7,8-PeCDD	*74*		*25 - 181*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-1,2,3,7,8-PeCDF	*68*		*24 - 185*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-2,3,4,7,8-PeCDF	*68*		*21 - 178*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-1,2,3,4,7,8-HxCDD	*73*		*32 - 141*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-1,2,3,6,7,8-HxCDD	*68*		*28 - 130*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-1,2,3,4,7,8-HxCDF	*73*		*26 - 152*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-1,2,3,6,7,8-HxCDF	*70*		*26 - 123*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-1,2,3,7,8,9-HxCDF	*72*		*29 - 147*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-2,3,4,6,7,8-HxCDF	*73*		*28 - 136*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*75*		*23 - 140*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*68*		*28 - 143*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*70*		*26 - 138*	*01/22/18 07:08*	*01/25/18 20:39*	*1*
13C-OCDD	*88*		*17 - 157*	*01/22/18 07:08*	*01/25/18 20:39*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*99*		*35 - 197*	*01/22/18 07:08*	*01/25/18 20:39*	*1*

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-2

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

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

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-2

Client Sample ID: ILBMP0001_20180109
Lab Sample ID: 440-199995-1
Date Collected: 01/09/18 09:10
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			1049 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205219	01/23/18 20:32	AS	TAL SAC

Client Sample ID: LPBMP0002_20180109
Lab Sample ID: 440-199995-2
Date Collected: 01/09/18 09:02
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			955.8 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205219	01/23/18 21:21	AS	TAL SAC
Total/NA	Prep	1613B	RA		955.8 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			206030	01/29/18 14:31	ALM	TAL SAC

Client Sample ID: LPBMP0003_20180109
Lab Sample ID: 440-199995-3
Date Collected: 01/09/18 09:12
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			933.2 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205219	01/23/18 22:09	AS	TAL SAC

Client Sample ID: LPBMP0004_20180109
Lab Sample ID: 440-199995-4
Date Collected: 01/09/18 09:15
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			954.3 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205219	01/23/18 22:57	AS	TAL SAC

Client Sample ID: ILBMP0002_20180109
Lab Sample ID: 440-199995-5
Date Collected: 01/09/18 07:11
Matrix: Water
Date Received: 01/09/18 18:08

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			954.7 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205219	01/23/18 23:46	AS	TAL SAC
Total/NA	Prep	1613B	RA		954.7 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			206030	01/29/18 15:09	ALM	TAL SAC

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-2

Client Sample ID: ILBMP0004_20180109
Date Collected: 01/09/18 08:40
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			961 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205219	01/24/18 00:34	AS	TAL SAC
Total/NA	Prep	1613B	RA		961 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			206030	01/29/18 15:47	ALM	TAL SAC

Client Sample ID: ILBMP0005_20180109
Date Collected: 01/09/18 08:45
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			936 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205219	01/24/18 01:23	AS	TAL SAC

Client Sample ID: ILBMP0008_20180109
Date Collected: 01/09/18 08:23
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			926.5 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205635	01/25/18 18:14	AS	TAL SAC
Total/NA	Prep	1613B	RA		926.5 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			206030	01/29/18 16:25	ALM	TAL SAC

Client Sample ID: B1BMP0009_20180109
Date Collected: 01/09/18 07:40
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			958.3 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205635	01/25/18 19:02	AS	TAL SAC

Client Sample ID: B1BMP0010_20180109
Date Collected: 01/09/18 07:50
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			974.4 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205635	01/25/18 19:51	AS	TAL SAC

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-2

Client Sample ID: B1BMP0011_20180109
Date Collected: 01/09/18 07:41
Date Received: 01/09/18 18:08

Lab Sample ID: 440-199995-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			937.1 mL	20.0 uL	204865	01/22/18 07:08	DXD	TAL SAC
Total/NA	Analysis	1613B		1			205635	01/25/18 20:39	AS	TAL SAC

Laboratory References:

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

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-204865/1-A
Matrix: Water
Analysis Batch: 205219

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 204865

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000028	ug/L		01/22/18 07:08	01/23/18 18:07	1
2,3,7,8-TCDF	ND		0.000010	0.00000019	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,7,8-PeCDD	ND		0.000050	0.00000026	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,7,8-PeCDF	ND		0.000050	0.00000018	ug/L		01/22/18 07:08	01/23/18 18:07	1
2,3,4,7,8-PeCDF	ND		0.000050	0.00000020	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,4,7,8-HxCDD	0.00000162	J,DX q	0.000050	0.00000023	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,6,7,8-HxCDD	0.000000923	J,DX q	0.000050	0.00000023	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,7,8,9-HxCDD	0.000000829	J,DX	0.000050	0.00000021	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,4,7,8-HxCDF	0.000000391	J,DX q	0.000050	0.00000027	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,6,7,8-HxCDF	0.000000442	J,DX q	0.000050	0.00000027	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,7,8,9-HxCDF	0.000000791	J,DX	0.000050	0.00000014	ug/L		01/22/18 07:08	01/23/18 18:07	1
2,3,4,6,7,8-HxCDF	0.000000730	J,DX	0.000050	0.00000018	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,4,6,7,8-HpCDD	0.00000199	J,DX	0.000050	0.00000017	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,4,6,7,8-HpCDF	0.00000100	J,DX q	0.000050	0.00000022	ug/L		01/22/18 07:08	01/23/18 18:07	1
1,2,3,4,7,8,9-HpCDF	0.000000690	J,DX q	0.000050	0.00000028	ug/L		01/22/18 07:08	01/23/18 18:07	1
OCDD	0.0000170	J,DX	0.00010	0.00000018	ug/L		01/22/18 07:08	01/23/18 18:07	1
OCDF	0.00000260	J,DX	0.00010	0.00000021	ug/L		01/22/18 07:08	01/23/18 18:07	1
Total TCDD	ND		0.000010	0.00000028	ug/L		01/22/18 07:08	01/23/18 18:07	1
Total TCDF	ND		0.000010	0.00000019	ug/L		01/22/18 07:08	01/23/18 18:07	1
Total PeCDD	ND		0.000050	0.00000026	ug/L		01/22/18 07:08	01/23/18 18:07	1
Total PeCDF	ND		0.000050	0.00000018	ug/L		01/22/18 07:08	01/23/18 18:07	1
Total HxCDD	0.00000337	J,DX q	0.000050	0.00000022	ug/L		01/22/18 07:08	01/23/18 18:07	1
Total HxCDF	0.00000235	J,DX q	0.000050	0.00000022	ug/L		01/22/18 07:08	01/23/18 18:07	1
Total HpCDD	0.00000348	J,DX q	0.000050	0.00000017	ug/L		01/22/18 07:08	01/23/18 18:07	1
Total HpCDF	0.00000169	J,DX q	0.000050	0.00000025	ug/L		01/22/18 07:08	01/23/18 18:07	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*81*		*25 - 164*	*01/22/18 07:08*	*01/23/18 18:07*	*1*
13C-2,3,7,8-TCDF	*77*		*24 - 169*	*01/22/18 07:08*	*01/23/18 18:07*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-204865/1-A
Matrix: Water
Analysis Batch: 205219

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 204865

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,7,8-PeCDD	90		25 - 181	01/22/18 07:08	01/23/18 18:07	1
13C-1,2,3,7,8-PeCDF	79		24 - 185	01/22/18 07:08	01/23/18 18:07	1
13C-2,3,4,7,8-PeCDF	80		21 - 178	01/22/18 07:08	01/23/18 18:07	1
13C-1,2,3,4,7,8-HxCDD	88		32 - 141	01/22/18 07:08	01/23/18 18:07	1
13C-1,2,3,6,7,8-HxCDD	86		28 - 130	01/22/18 07:08	01/23/18 18:07	1
13C-1,2,3,4,7,8-HxCDF	86		26 - 152	01/22/18 07:08	01/23/18 18:07	1
13C-1,2,3,6,7,8-HxCDF	81		26 - 123	01/22/18 07:08	01/23/18 18:07	1
13C-1,2,3,7,8,9-HxCDF	90		29 - 147	01/22/18 07:08	01/23/18 18:07	1
13C-2,3,4,6,7,8-HxCDF	85		28 - 136	01/22/18 07:08	01/23/18 18:07	1
13C-1,2,3,4,6,7,8-HpCDD	94		23 - 140	01/22/18 07:08	01/23/18 18:07	1
13C-1,2,3,4,6,7,8-HpCDF	86		28 - 143	01/22/18 07:08	01/23/18 18:07	1
13C-1,2,3,4,7,8,9-HpCDF	91		26 - 138	01/22/18 07:08	01/23/18 18:07	1
13C-OCDD	110		17 - 157	01/22/18 07:08	01/23/18 18:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	101		35 - 197	01/22/18 07:08	01/23/18 18:07	1

Lab Sample ID: LCS 320-204865/2-A
Matrix: Water
Analysis Batch: 205219

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 204865

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000189		ug/L		95	67 - 158
2,3,7,8-TCDF	0.000200	0.000203		ug/L		102	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000937		ug/L		94	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00101		ug/L		101	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00103		ug/L		103	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00100	MB	ug/L		100	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000971	MB	ug/L		97	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000988	MB	ug/L		99	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000995	MB	ug/L		99	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000999	MB	ug/L		100	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00101	MB	ug/L		101	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000997	MB	ug/L		100	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000988	MB	ug/L		99	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00102	MB	ug/L		102	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000955	MB	ug/L		95	78 - 138
OCDD	0.00200	0.00183	MB	ug/L		91	78 - 144
OCDF	0.00200	0.00166	MB	ug/L		83	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	76		20 - 175
13C-2,3,7,8-TCDF	70		22 - 152
13C-1,2,3,7,8-PeCDD	85		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,7,8-PeCDF	74		13 - 328
13C-1,2,3,4,7,8-HxCDD	87		21 - 193
13C-1,2,3,6,7,8-HxCDD	82		25 - 163

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-204865/2-A
Matrix: Water
Analysis Batch: 205219

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 204865

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,7,8-HxCDF	85		19 - 202
13C-1,2,3,6,7,8-HxCDF	80		21 - 159
13C-1,2,3,7,8,9-HxCDF	87		17 - 205
13C-2,3,4,6,7,8-HxCDF	85		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	94		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	83		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	91		20 - 186
13C-OCDD	111		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	93		31 - 191

Lab Sample ID: LCSD 320-204865/3-A
Matrix: Water
Analysis Batch: 205219

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 204865

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD			0.000200	0.000194		ug/L		97	67 - 158	3	50
2,3,7,8-TCDF			0.000200	0.000208		ug/L		104	75 - 158	2	50
1,2,3,7,8-PeCDD			0.00100	0.000947		ug/L		95	70 - 142	1	50
1,2,3,7,8-PeCDF			0.00100	0.00102		ug/L		102	80 - 134	1	50
2,3,4,7,8-PeCDF			0.00100	0.00104		ug/L		104	68 - 160	1	50
1,2,3,4,7,8-HxCDD			0.00100	0.000980	MB	ug/L		98	70 - 164	2	50
1,2,3,6,7,8-HxCDD			0.00100	0.000940	MB	ug/L		94	76 - 134	3	50
1,2,3,7,8,9-HxCDD			0.00100	0.000962	MB	ug/L		96	64 - 162	3	50
1,2,3,4,7,8-HxCDF			0.00100	0.000961	MB	ug/L		96	72 - 134	3	50
1,2,3,6,7,8-HxCDF			0.00100	0.000981	MB	ug/L		98	84 - 130	2	50
1,2,3,7,8,9-HxCDF			0.00100	0.000982	MB	ug/L		98	78 - 130	2	50
2,3,4,6,7,8-HxCDF			0.00100	0.000992	MB	ug/L		99	70 - 156	1	50
1,2,3,4,6,7,8-HpCDD			0.00100	0.000880	MB	ug/L		88	70 - 140	12	50
1,2,3,4,6,7,8-HpCDF			0.00100	0.000954	MB	ug/L		95	82 - 122	6	50
1,2,3,4,7,8,9-HpCDF			0.00100	0.000933	MB	ug/L		93	78 - 138	2	50
OCDD			0.00200	0.00183	MB	ug/L		91	78 - 144	0	50
OCDF			0.00200	0.00161	MB	ug/L		80	63 - 170	3	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-2,3,7,8-TCDD	76		20 - 175
13C-2,3,7,8-TCDF	72		22 - 152
13C-1,2,3,7,8-PeCDD	82		21 - 227
13C-1,2,3,7,8-PeCDF	70		21 - 192
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-1,2,3,4,7,8-HxCDD	82		21 - 193
13C-1,2,3,6,7,8-HxCDD	78		25 - 163
13C-1,2,3,4,7,8-HxCDF	80		19 - 202
13C-1,2,3,6,7,8-HxCDF	75		21 - 159
13C-1,2,3,7,8,9-HxCDF	80		17 - 205
13C-2,3,4,6,7,8-HxCDF	77		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	91		26 - 166

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-204865/3-A
Matrix: Water
Analysis Batch: 205219

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 204865

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	81		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	86		20 - 186
13C-OCDD	108		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	96		31 - 191

Specialty Organics

Prep Batch: 204865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Total/NA	Water	1613B	
440-199995-2	LPBMP0002_20180109	Total/NA	Water	1613B	
440-199995-2 - RA	LPBMP0002_20180109	Total/NA	Water	1613B	
440-199995-3	LPBMP0003_20180109	Total/NA	Water	1613B	
440-199995-4	LPBMP0004_20180109	Total/NA	Water	1613B	
440-199995-5	ILBMP0002_20180109	Total/NA	Water	1613B	
440-199995-5 - RA	ILBMP0002_20180109	Total/NA	Water	1613B	
440-199995-6	ILBMP0004_20180109	Total/NA	Water	1613B	
440-199995-6 - RA	ILBMP0004_20180109	Total/NA	Water	1613B	
440-199995-7	ILBMP0005_20180109	Total/NA	Water	1613B	
440-199995-8	ILBMP0008_20180109	Total/NA	Water	1613B	
440-199995-8 - RA	ILBMP0008_20180109	Total/NA	Water	1613B	
440-199995-9	B1BMP0009_20180109	Total/NA	Water	1613B	
440-199995-10	B1BMP0010_20180109	Total/NA	Water	1613B	
440-199995-11	B1BMP0011_20180109	Total/NA	Water	1613B	
MB 320-204865/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-204865/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-204865/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 205219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-1	ILBMP0001_20180109	Total/NA	Water	1613B	204865
440-199995-2	LPBMP0002_20180109	Total/NA	Water	1613B	204865
440-199995-3	LPBMP0003_20180109	Total/NA	Water	1613B	204865
440-199995-4	LPBMP0004_20180109	Total/NA	Water	1613B	204865
440-199995-5	ILBMP0002_20180109	Total/NA	Water	1613B	204865
440-199995-6	ILBMP0004_20180109	Total/NA	Water	1613B	204865
440-199995-7	ILBMP0005_20180109	Total/NA	Water	1613B	204865
MB 320-204865/1-A	Method Blank	Total/NA	Water	1613B	204865
LCS 320-204865/2-A	Lab Control Sample	Total/NA	Water	1613B	204865
LCSD 320-204865/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	204865

Analysis Batch: 205635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-8	ILBMP0008_20180109	Total/NA	Water	1613B	204865
440-199995-9	B1BMP0009_20180109	Total/NA	Water	1613B	204865
440-199995-10	B1BMP0010_20180109	Total/NA	Water	1613B	204865
440-199995-11	B1BMP0011_20180109	Total/NA	Water	1613B	204865

Analysis Batch: 206030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-199995-2 - RA	LPBMP0002_20180109	Total/NA	Water	1613B	204865
440-199995-5 - RA	ILBMP0002_20180109	Total/NA	Water	1613B	204865
440-199995-6 - RA	ILBMP0004_20180109	Total/NA	Water	1613B	204865
440-199995-8 - RA	ILBMP0008_20180109	Total/NA	Water	1613B	204865

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-2

Qualifiers

Dioxin

Qualifier	Qualifier Description
MB	Analyte present in the method blank
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.
EY	Result exceeds normal dynamic range; reported as a min. est.

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)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
TestAmerica Job ID: 440-199995-2
Project/Site: BMP Performance OF 009 Watershed

Laboratory: TestAmerica Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica Sacramento

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	UST-055	01-31-18 *
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-18
L-A-B	DoD ELAP		L2468	01-20-21
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-14-18
Michigan	State Program	5	9947	01-31-18 *
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-18
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-29-20
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	05-31-18
US Fish & Wildlife	Federal		LE148388-0	07-31-18
USDA	Federal		P330-11-00436	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-18
Wyoming	State Program	8	8TMS-L	01-28-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Patel, Urvashi

From: Baluran, Dwayne <DBaluran@haleyaldrich.com>
Sent: Wednesday, January 10, 2018 3:15 PM
To: Patel, Urvashi
Cc: Miller, Katherine
Subject: FW: TestAmerica Sample Login Confirmation files from 440-199995 BMP Performance OF 009 Watershed
Attachments: Std_Tal_Login_Limits for 440-199995-3.pdf; COC 440-199995 (201801092230).pdf; Std_Tal_Login_Limits for 440-199995-1.pdf; Std_Tal_Login_Limits for 440-199995-2.pdf; COC 440-199995 (201801092124).pdf; Std_Tal_Login_Ack for 440-199995-1.pdf; Std_Tal_Login_Ack for 440-199995-2.pdf; Std_Tal_Login_Ack for 440-199995-3.pdf

-External Email-

Hi Urvashi,

Hope all is well. We recently had samples go out yesterday. Could you please make the following updates:

- Sample location IDs missing a "zero": ILBMP0001, LPBMP0002, LPBMP0003, LPBMP0004.
- ILBMP0001 needs turbidity tested
- LPBMP0002 only needs specific metals tested like the rest and it does not need turbidity tested.
- ILBMP0008, B1BMP0009, B1BMP0010, and B1BMP0011 all need particle size to be tested

Feel free to contact me to discuss if you have any questions/comments.

Thank you!
Dwayne Baluran, EIT, QSP
Staff Engineer

Haley & Aldrich, Inc.
5850 Canoga Avenue | Suite 400
Woodland Hills, CA 91367

T: (978) 234.5022
C: (818) 224.0704

www.haleyaldrich.com

From: Nguyen, Jocelyn [mailto:jocelyn.nguyen@testamericainc.com]
Sent: Wednesday, January 10, 2018 1:36 PM
To: Hernandez, Elysse <EHernandez@haleyaldrich.com>; Kim Schultz <kim.schultz@mecx.net>; Miller, Katherine <KMiller@haleyaldrich.com>
Subject: TestAmerica Sample Login Confirmation files from 440-199995 BMP Performance OF 009 Watershed

Hello,

Attached, please find the Sample Confirmation files for job 440-199995; BMP Performance OF 009 Watershed

Please feel free to contact me or your PM, Urvashi Patel, if you have any questions.

Thank you.

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback

JOCELYN NGUYEN
Project Manager Assistant

TestAmerica Irvine
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 949.261,1022

Reference: [421172]
Attachments: 8

Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614
phone (949) 261-1022 fax (949) 260-3299

Chain of Custody Record for
Haley & Aldrich, Inc. Blanket Service Agreement #2015-18-TestAmerica

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc..

Client Contact	H&A Project Manager: Katherine Miller	H&A Site Contact: Matt Birney (818) 466-8782	Date:1/9/2017	COC No:
Haley & Aldrich, Inc.	Tel/Fax: (520) 289-8606	Lab Contact: Urvashi Patel (949) 333-9055	Carrier:	1 of 1 COCs
5333 Mission Center Road, Suite 300	Analysis Turnaround Time			Sampler:
San Diego, California 92108	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(619) 280-9210 Phone	TAT if different from Below _____			Walk-in Client:
(619) 280-9415 FAX	☑ 2 weeks			Lab Sampling:
H&A Project Number : 129095-002 SID 5.2	☐ 1 week			Job / SDG No.:
Site: BMP Performance OF 009 Watershed	☐ 2 days			
H&A P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Metals (Total Recoverable) (Method 200.7/200.8/245.1)*	Metals (Total Dissolved) (Method 200.7/200.8/245.1)*	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Dissolved)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Recoverable)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)	Sample Specific Notes:
								1-250mL P	1-250mL P	1-250mL P	1-250mL P	2-1L A	1-1L P	1-1L P	1-250mL P	Field Staff Notes: Lab may substitute 250mL Poly for 500mL for metals. Only need to fill half of 500mL. Must fill TSS to the top.
ILBMP001_20180109	1/9/2018	0910	G	WM	7		N			X	X	X	X	X		
LPBMP002_20180109	1/9/2018	0902	G	WM	7		N	X	X			X	X	X	X	
LPBMP003_20180109	1/9/2018	0912	G	WM	7		N			X	X	X	X	X		
LPBMP004_20180109	1/9/2018	0915	G	WM	7		N			X	X	X	X	X		
ILBMP0002_20180109	1/9/2018	0711	G	WM	7		N			X	X	X	X	X		
ILBMP0004_20180109	1/9/2018	0840	G	WM	7		N			X	X	X	X	X		
ILBMP0005_20180109	1/9/2018	0845	G	WM	7		N			X	X	X	X	X		
ILBMP0008_20180109	1/9/2018	0823	G	WM	7		N			X	X	X	X			
B1BMP0009_20180109	1/9/2018	0740	G	WM	7		N			X	X	X	X			
B1BMP0010_20180109	1/9/2018	0750	G	WM	7		N			X	X	X	X			
B1BMP0011_20180109	1/9/2018	0741	G	WM	7		N			X	X	X	X			
ILQW0007_20180109	1/9/2018	0847	G	WM	4		N			H	H	H				
FBQW__20180109	1/9/2018	1000	G	WM	2		N				H	H				Hold
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other								4	1	4	1	1	1	1	1	

440-199995 Chain of Custody

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☑ Archive for 6 Months

Special Instructions/QC Requirements & Comments:
Please email data to kmiller@haleyaldrich.com and post to Total Access
Bill to Haley & Aldrich, San Diego at AP@haleyaldrich.com
Report Level II Data Package and provide EDD
All dissolved metal samples are to be filtered within 24 hours of receipt, even those placed on hold. (excl = excluding)
* = analyze metals by either 200.7or 200.8 as communicated to Urvashi on 02/01/2017

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: 13:25 | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company: SHA ENV	Date/Time: 1/9/17	Received by:	Company: TA	Date/Time: 1-9-18 13:25
Relinquished by:	Company: TA	Date/Time: 1/9/18 18:08	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: TA-IRV	Date/Time: 1/9/18 1808

Form No. CA-C-WI-045, Rev. 1.2, dated 1/8/2016

IR - SL6

Temp. 3.7 / 3.0
Temp. 0.1 / -0.6
Temp 1.8 / 1.1

Temp 1.7 / 1.0
Temp -1.1 / -1.8

1/30/2018

Page 33 of 43

1/9/18

Irvine
17461 Derian Avenue, Suite 100
rvine, CA 92614
hone (949) 261-1022 fax (949) 260-3299

Chain of Custody Record for
Haley & Aldrich, Inc. Blanket Service Agreement #2015-18-TestAmerica

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

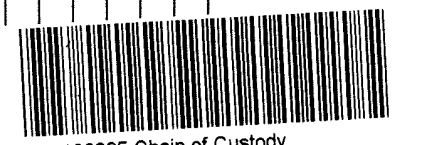
Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc..

Client Contact	H&A Project Manager: Katherine Miller	H&A Site Contact: Matt Birney (818) 466-8782	Date:1/9/2017	COC No:
Haley & Aldrich, Inc.	Tel/Fax: (520) 289-8606	Lab Contact: Urvashi Patel (949) 333-9055	Carrier:	1 of 1 COCs
5333 Mission Center Road, Suite 300	Analysis Turnaround Time			Sampler:
San Diego, California 92108	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(619) 280-9210 Phone	TAT if different from Below _____			Walk-in Client:
(619) 280-9415 FAX	☑ 2 weeks			Lab Sampling:
H&A Project Number : 129095-002 SID 5.2	☐ 1 week			Job / SDG No.:
Site: BMP Performance OF 009 Watershed	☐ 2 days			
H&A P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Metals (Total Recoverable) (Method 200.7/200.8/245.1)*	Metals (Total Dissolved) (Method 200.7/200.8/245.1)*	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Dissolved)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Recoverable)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)	Sample Specific Notes:
								1-250mL P	1-250mL P	1-250mL P	1-250mL P	2-1L A	1-1L P	1-1L P	1-250mL P	Field Staff Notes: Lab may substitute 250mL Poly for 500mL for metals. Only need to fill half of 500mL. Must fill TSS to the top.
ILBMP001_20180109	1/9/2018	0910	G	WM	7		N			X	X	X	X	X		
LPBMP002_20180109	1/9/2018	0902	G	WM	7		N	X	X			X	X	X	X	
LPBMP003_20180109	1/9/2018	0912	G	WM	7		N			X	X	X	X	X		
LPBMP004_20180109	1/9/2018	0915	G	WM	7		N			X	X	X	X	X		
ILBMP0002_20180109	1/9/2018	0711	G	WM	7		N			X	X	X	X	X		
ILBMP0004_20180109	1/9/2018	0840	G	WM	7		N			X	X	X	X	X		
ILBMP0005_20180109	1/9/2018	0845	G	WM	7		N			X	X	X	X	X		
ILBMP0008_20180109	1/9/2018	0823	G	WM	7		N			X	X	X	X			
B1BMP0009_20180109	1/9/2018	0740	G	WM	7		N			X	X	X	X			
B1BMP0010_20180109	1/9/2018	0750	G	WM	7		N			X	X	X	X			
B1BMP0011_20180109	1/9/2018	0741	G	WM	7		N			X	X	X	X			
ILQW0007_20180109	1/9/2018	0847	G	WM	4		N			H	H	H				
FBQW__20180109	1/9/2018	1000	G	WM	2		N				H	H				
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other								4	1	4	1	1	1	1	1	



Page 34 of 43

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☑ Archive for 6 Months

Special Instructions/QC Requirements & Comments:
Please email data to kmiller@haleyaldrich.com and post to Total Access
Bill to Haley & Aldrich, San Diego at AP@haleyaldrich.com
Report Level II Data Package and provide EDD
All dissolved metal samples are to be filtered within 24 hours of receipt, even those placed on hold. (excl = excluding)
* = analyze metals by either 200.7or 200.8 as communicated to Urvashi on 02/01/2017

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.:

	Company	Date/Time		Company	Date/Time
Relinquished by:	SHAENV	1/9/17	Received by:		
Relinquished by:	TA	1/9/18 1806	Received by:		
Relinquished by:			Received in Laboratory by:	TA-IRV	1/9/18 1808

Form No. CA-C-WI-045, Rev. 1.2, dated 1/8/2016

1/30/2018

12 - SL6

Temp. 3.7 / 3.0
Temp. 0.1 / -0.6
Temp 1.8 / 1.1

Temp 1.7 / 1.0
Temp -1.1 / -1.8

2/15/18

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-117958.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-199995-2
Address: 880 Riverside Parkway, ,	Due Date Requested: 1/19/2018			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Boeing SSFL ISRA and BMP	Project #: 44009815			
Site:	SSOW#:			

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 - 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)	1613B/1613B_Sox_Sep_P Standard List w/ Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ILBMP001_20180109 (440-199995-1)	1/9/18	09:10 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
LPBMP002_20180109 (440-199995-2)	1/9/18	09:02 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
LPBMP003_20180109 (440-199995-3)	1/9/18	09:12 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
LPBMP004_20180109 (440-199995-4)	1/9/18	09:15 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
ILBMP0002_20180109 (440-199995-5)	1/9/18	07:11 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
ILBMP0004_20180109 (440-199995-6)	1/9/18	08:40 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
ILBMP0005_20180109 (440-199995-7)	1/9/18	08:45 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
ILBMP0008_20180109 (440-199995-8)	1/9/18	08:23 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
B1BMP0009_20180109 (440-199995-9)	1/9/18	07:40 Pacific		Water			X	2	See QAS, Boeing_w/u to zero

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 complicance 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: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	1/11/18 1700			1/11/18 1020	
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: 0.7 2.1 1.2

Ver: 09/20/2016

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-117958.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-199995-2
Address: 880 Riverside Parkway, ,	Due Date Requested: 1/19/2018			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Boeing SSFL ISRA and BMP	Project #: 44009815			
Site:	SSOW#:			

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 - 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)	1613B/1613B_Sox_Sep_P Standard List w/ Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
B1BMP0010_20180109 (440-199995-10)	1/9/18	07:50 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
B1BMP0011_20180109 (440-199995-11)	1/9/18	07:41 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
* Received # 12 & #13 Not listed on COC. AA 01/11/18									

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. I

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: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 1/11/18 1700	Company: TA-IV	Received by:	Date/Time: 1/11/18 1020	Company: TA-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: 0.7 2.1 1.2

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-199995-2

Login Number: 199995
List Number: 1
Creator: Soderblom, Tim

List Source: TestAmerica Irvine

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.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	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: Haley & Aldrich, Inc.

Job Number: 440-199995-2

Login Number: 199995
List Number: 2
Creator: Aguayo, Alonso

List Source: TestAmerica Sacramento
List Creation: 01/11/18 04:06 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.	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	1.2/0.7/2.1
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.	False	Received extra samples not listed on COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-199995-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
440-199995-1	ILBMP0001_20180109	86	79	94	82	83	95	89	92
440-199995-2	LPBMP0002_20180109	74	70	82	74	73	85	79	80
440-199995-2 - RA	LPBMP0002_20180109		77						
440-199995-3	LPBMP0003_20180109	73	66	75	67	68	79	75	79
440-199995-4	LPBMP0004_20180109	81	76	89	78	79	90	84	89
440-199995-5	ILBMP0002_20180109	85	75	90	79	80	90	86	92
440-199995-5 - RA	ILBMP0002_20180109		86						
440-199995-6	ILBMP0004_20180109	79	75	87	78	78	86	82	87
440-199995-6 - RA	ILBMP0004_20180109		83						
440-199995-7	ILBMP0005_20180109	82	74	88	77	77	88	83	86
440-199995-8	ILBMP0008_20180109	82	80	88	78	82	87	88	87
440-199995-8 - RA	ILBMP0008_20180109		86						
440-199995-9	B1BMP0009_20180109	74	73	83	75	76	79	82	84
440-199995-10	B1BMP0010_20180109	75	73	80	73	74	80	77	81
440-199995-11	B1BMP0011_20180109	70	68	74	68	68	73	68	73
MB 320-204865/1-A	Method Blank	81	77	90	79	80	88	86	86

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-199995-1	ILBMP0001_20180109	86	91	90	104	94	102	123
440-199995-2	LPBMP0002_20180109	76	83	82	95	85	88	115
440-199995-2 - RA	LPBMP0002_20180109							
440-199995-3	LPBMP0003_20180109	74	73	77	89	82	85	105
440-199995-4	LPBMP0004_20180109	84	90	86	99	89	93	121
440-199995-5	ILBMP0002_20180109	84	90	89	101	94	101	122
440-199995-5 - RA	ILBMP0002_20180109							
440-199995-6	ILBMP0004_20180109	78	85	84	95	87	90	118
440-199995-6 - RA	ILBMP0004_20180109							
440-199995-7	ILBMP0005_20180109	82	89	86	102	94	99	121
440-199995-8	ILBMP0008_20180109	86	89	91	97	89	91	113
440-199995-8 - RA	ILBMP0008_20180109							
440-199995-9	B1BMP0009_20180109	79	82	82	88	76	82	108
440-199995-10	B1BMP0010_20180109	77	79	81	85	77	79	98
440-199995-11	B1BMP0011_20180109	70	72	73	75	68	70	88
MB 320-204865/1-A	Method Blank	81	90	85	94	86	91	110

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-204865/2-A	Lab Control Sample	76	70	85	72	74	87	82	85
LCSD 320-204865/3-A	Lab Control Sample Dup	76	72	82	70	73	82	78	80

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-204865/2-A	Lab Control Sample	80	87	85	94	83	91	111
LCSD 320-204865/3-A	Lab Control Sample Dup	75	80	77	91	81	86	108

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Tracking # 4176 2737 6193

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes:

Received # 12 of 13
Not listed on COC.

Therm. ID: AK-2 / AK-3 / HACCP /Other

Ice X Wet X Dry Other

Cooler Custody Seal: Seal

Sample Custody Seal:

Cooler ID: 1 of 3

Temp: Observed ~~1 of 3~~ 1.2

Corrected:

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☒ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☒
CoC is complete w/o discrepancies?	☒	☐	☐
Samples received within holding time?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Cooler compromised/tampered with?	☐	☒	☐
Samples compromised/tampered with?	☐	☒	☐
COC and Samples w/o discrepancies?	☒	☐	☐
Sample containers have legible labels?	☒	☐	☐
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided.	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐

Initials: DH Date: 1/11/18

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

WSE

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Sample Receiving Notes

Job: _____

Tracking # 4176 2737 6208

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes: _____

Therm. ID: (AK-2) / AK-3 / HACCP /Other _____

Ice X Wet X Dry _____ Other _____

Cooler Custody Seal: Seal

Sample Custody Seal: -

Cooler ID: 2 of 3

Temp: Observed 0.7

Corrected: -

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☒
CoC is complete w/o discrepancies?	☒	☐	☐
Samples received within holding time?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Cooler compromised/tampered with?	☐	☒	☐
Samples compromised/tampered with?	☐	☒	☐
COC and Samples w/o discrepancies?	☒	☐	☐
Sample containers have legible labels?	☒	☐	☐
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided.	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐

Initials: PH Date: 1/11/18

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Sample Receiving Notes

Job: _____

Tracking # 4176 2737 6249

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes: _____

Therm. ID: ~~AK-2~~ / **AK-3** / **HACCP** /Other _____

Ice X Wet X Dry _____ Other _____

Cooler Custody Seal: Sun

Sample Custody Seal: —

Cooler ID: 3 of 3

Temp: Observed ~~2.1~~ 2.1

Corrected: —

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☒
CoC is complete w/o discrepancies?	☒	☐	☐
Samples received within holding time?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Cooler compromised/tampered with?	☐	☒	☐
Samples compromised/tampered with?	☐	☒	☐
COC and Samples w/o discrepancies?	☒	☐	☐
Sample containers have legible labels?	☒	☐	☐
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided.	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐

Initials: DH Date: 1/4/18

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-204619-1
Client Project/Site: Boeing SSFL ISRA and BMP

For:
Haley & Aldrich, Inc.
400 E Van Buren St.
Suite 545
Phoenix, Arizona 85004

Attn: Katherine Miller

Authorized for release by:
3/21/2018 8:51:06 PM

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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL ISRA and BMP

TestAmerica Job ID: 440-204619-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-204619-1	B1BMP0009_20180302	Water	03/02/18 08:10	03/02/18 17:15
440-204619-2	B1BMP0010_20180302	Water	03/02/18 08:30	03/02/18 17:15
440-204619-3	B1BMP0011_20180302	Water	03/02/18 08:15	03/02/18 17:15
440-204619-4	ILBMP0002_20180302	Water	03/02/18 09:50	03/02/18 17:15
440-204619-5	ILBMP0004_20180302	Water	03/02/18 08:00	03/02/18 17:15
440-204619-6	ILBMP0005_20180302	Water	03/02/18 08:50	03/02/18 17:15
440-204619-8	ILBMP0008_20180302	Water	03/02/18 07:00	03/02/18 17:15
440-204619-9	LPBMP0002_20180302	Water	03/02/18 07:25	03/02/18 17:15
440-204619-10	LPBMP0003_20180302	Water	03/02/18 07:28	03/02/18 17:15
440-204619-11	LPBMP0004_20180302	Water	03/02/18 07:45	03/02/18 17:15

Job ID: 440-204619-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-204619-1

Comments
No additional comments.

Receipt
The samples were received on 3/2/2018 5:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 2.2º C, 2.4º C, 3.0º C and 4.9º C.

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

Metals
Method(s) 200.8: The method blank for preparation batch 440-464257 and analytical batch 440-464409 contained Copper above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method(s) 200.8: The following samples requested dissolved metals and were not filtered in the field: B1BMP0009_20180302 (440-204619-1), B1BMP0010_20180302 (440-204619-2), B1BMP0011_20180302 (440-204619-3), ILBMP0002_20180302 (440-204619-4), ILBMP0004_20180302 (440-204619-5), ILBMP0005_20180302 (440-204619-6), ILBMP0008_20180302 (440-204619-8), LPBMP0002_20180302 (440-204619-9), LPBMP0003_20180302 (440-204619-10) and LPBMP0004_20180302 (440-204619-11). These samples were filtered and preserved upon receipt to the laboratory.

Method(s) 200.8: The method blank for preparation batch 440-462011 and 440-464293 and analytical batch 440-464407 contained Copper above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

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.

Subcontract non-Sister
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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

Subcontract Work
Method Particle Size: This method was subcontracted to PTS Laboratories, Inc. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample ID: B1BMP0009_20180302
Date Collected: 03/02/18 08:10
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-1
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000028	ug/L		03/08/18 08:55	03/13/18 06:46	1
2,3,7,8-TCDF	ND		0.000011	0.00000026	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,7,8-PeCDD	**0.0000033**	**J,DX**	0.000053	0.00000051	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,7,8-PeCDF	ND		0.000053	0.00000050	ug/L		03/08/18 08:55	03/13/18 06:46	1
2,3,4,7,8-PeCDF	ND		0.000053	0.00000055	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,4,7,8-HxCDD	**0.0000060**	**J,DX MB**	0.000053	0.00000056	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,6,7,8-HxCDD	**0.0000085**	**J,DX**	0.000053	0.00000052	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,7,8,9-HxCDD	**0.000010**	**J,DX MB**	0.000053	0.00000050	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,4,7,8-HxCDF	ND		0.000053	0.0000017	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,6,7,8-HxCDF	**0.0000083**	**J,DX**	0.000053	0.0000017	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,7,8,9-HxCDF	ND		0.000053	0.00000082	ug/L		03/08/18 08:55	03/13/18 06:46	1
2,3,4,6,7,8-HxCDF	**0.0000027**	**J,DX**	0.000053	0.00000099	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,4,6,7,8-HpCDD	**0.00021**	**MB**	0.000053	0.0000031	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,4,6,7,8-HpCDF	**0.000075**	**MB**	0.000053	0.0000011	ug/L		03/08/18 08:55	03/13/18 06:46	1
1,2,3,4,7,8,9-HpCDF	**0.0000035**	**J,DX**	0.000053	0.0000014	ug/L		03/08/18 08:55	03/13/18 06:46	1
OCDD	**0.0018**	**MB**	0.00011	0.0000012	ug/L		03/08/18 08:55	03/13/18 06:46	1
OCDF	**0.00020**	**MB**	0.00011	0.00000053	ug/L		03/08/18 08:55	03/13/18 06:46	1
Total TCDD	ND		0.000011	0.00000028	ug/L		03/08/18 08:55	03/13/18 06:46	1
Total TCDF	ND		0.000011	0.00000026	ug/L		03/08/18 08:55	03/13/18 06:46	1
Total PeCDD	**0.0000061**	**J,DX q**	0.000053	0.00000051	ug/L		03/08/18 08:55	03/13/18 06:46	1
Total PeCDF	**0.0000060**	**J,DX**	0.000053	0.00000053	ug/L		03/08/18 08:55	03/13/18 06:46	1
Total HxCDD	**0.000067**	**J,DX q MB**	0.000053	0.00000053	ug/L		03/08/18 08:55	03/13/18 06:46	1
Total HxCDF	**0.000060**	**MB**	0.000053	0.0000013	ug/L		03/08/18 08:55	03/13/18 06:46	1
Total HpCDD	**0.00069**	**MB**	0.000053	0.0000031	ug/L		03/08/18 08:55	03/13/18 06:46	1
Total HpCDF	**0.00021**	**J,DX MB**	0.000053	0.0000013	ug/L		03/08/18 08:55	03/13/18 06:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*77*		*25 - 164*	*03/08/18 08:55*	*03/13/18 06:46*	*1*
13C-2,3,7,8-TCDF	*82*		*24 - 169*	*03/08/18 08:55*	*03/13/18 06:46*	*1*
13C-1,2,3,7,8-PeCDD	*75*		*25 - 181*	*03/08/18 08:55*	*03/13/18 06:46*	*1*
13C-1,2,3,7,8-PeCDF	*81*		*24 - 185*	*03/08/18 08:55*	*03/13/18 06:46*	*1*
13C-2,3,4,7,8-PeCDF	*80*		*21 - 178*	*03/08/18 08:55*	*03/13/18 06:46*	*1*
13C-1,2,3,4,7,8-HxCDD	*75*		*32 - 141*	*03/08/18 08:55*	*03/13/18 06:46*	*1*
13C-1,2,3,6,7,8-HxCDD	*76*		*28 - 130*	*03/08/18 08:55*	*03/13/18 06:46*	*1*
13C-1,2,3,4,7,8-HxCDF	*67*		*26 - 152*	*03/08/18 08:55*	*03/13/18 06:46*	*1*
13C-1,2,3,6,7,8-HxCDF	*69*		*26 - 123*	*03/08/18 08:55*	*03/13/18 06:46*	*1*
13C-1,2,3,7,8,9-HxCDF	*72*		*29 - 147*	*03/08/18 08:55*	*03/13/18 06:46*	*1*
13C-2,3,4,6,7,8-HxCDF	*69*		*28 - 136*	*03/08/18 08:55*	*03/13/18 06:46*	*1*

Client Sample ID: B1BMP0009_20180302

Lab Sample ID: 440-204619-1
Date Collected: 03/02/18 08:10
Matrix: Water
Date Received: 03/02/18 17:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	68		23 - 140	03/08/18 08:55	03/13/18 06:46	1
13C-1,2,3,4,6,7,8-HpCDF	73		28 - 143	03/08/18 08:55	03/13/18 06:46	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138	03/08/18 08:55	03/13/18 06:46	1
13C-OCDD	68		17 - 157	03/08/18 08:55	03/13/18 06:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105		35 - 197	03/08/18 08:55	03/13/18 06:46	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 07:05	03/18/18 17:33	1
Copper	**18**	**MB**	2.0	0.50	ug/L		03/18/18 07:05	03/18/18 17:33	1
Lead	**4.8**		1.0	0.50	ug/L		03/18/18 07:05	03/18/18 17:33	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 10:15	03/18/18 17:04	1
Copper	**3.8**	**MB**	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 17:04	1
Lead	ND		1.0	0.50	ug/L		03/18/18 10:15	03/18/18 17:04	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:20	03/05/18 23:45	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**24**		2.5	1.3	mg/L			03/07/18 16:32	1

Client Sample ID: B1BMP0010_20180302

Lab Sample ID: 440-204619-2
Date Collected: 03/02/18 08:30
Matrix: Water
Date Received: 03/02/18 17:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000028	ug/L		03/08/18 08:55	03/13/18 07:32	1
2,3,7,8-TCDF	ND		0.000010	0.00000015	ug/L		03/08/18 08:55	03/13/18 07:32	1
1,2,3,7,8-PeCDD	**0.00000085**	**J,DX q**	0.000050	0.00000040	ug/L		03/08/18 08:55	03/13/18 07:32	1
1,2,3,7,8-PeCDF	ND		0.000050	0.00000042	ug/L		03/08/18 08:55	03/13/18 07:32	1
2,3,4,7,8-PeCDF	ND		0.000050	0.00000045	ug/L		03/08/18 08:55	03/13/18 07:32	1
1,2,3,4,7,8-HxCDD	**0.0000030**	**J,DX MB**	0.000050	0.00000040	ug/L		03/08/18 08:55	03/13/18 07:32	1
1,2,3,6,7,8-HxCDD	**0.0000021**	**J,DX q**	0.000050	0.00000038	ug/L		03/08/18 08:55	03/13/18 07:32	1

Client Sample ID: B1BMP0010_20180302
Date Collected: 03/02/18 08:30
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-2
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDD	**0.0000030**	**J,DX MB**	0.000050	0.00000036	ug/L		03/08/18 08:55	03/13/18 07:32	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.00000068	ug/L		03/08/18 08:55	03/13/18 07:32	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.00000069	ug/L		03/08/18 08:55	03/13/18 07:32	1
1,2,3,7,8,9-HxCDF	**0.00000052**	**J,DX MB**	0.000050	0.00000033	ug/L		03/08/18 08:55	03/13/18 07:32	1
2,3,4,6,7,8-HxCDF	**0.00000077**	**J,DX**	0.000050	0.00000041	ug/L		03/08/18 08:55	03/13/18 07:32	1
1,2,3,4,6,7,8-HpCDD	**0.000062**	**MB**	0.000050	0.00000089	ug/L		03/08/18 08:55	03/13/18 07:32	1
1,2,3,4,6,7,8-HpCDF	**0.000016**	**J,DX MB**	0.000050	0.00000055	ug/L		03/08/18 08:55	03/13/18 07:32	1
1,2,3,4,7,8,9-HpCDF	**0.00000095**	**J,DX q**	0.000050	0.00000069	ug/L		03/08/18 08:55	03/13/18 07:32	1
OCDD	**0.00065**	**MB**	0.00010	0.00000067	ug/L		03/08/18 08:55	03/13/18 07:32	1
OCDF	**0.000036**	**J,DX MB**	0.00010	0.00000033	ug/L		03/08/18 08:55	03/13/18 07:32	1
Total TCDD	ND		0.000010	0.00000028	ug/L		03/08/18 08:55	03/13/18 07:32	1
Total TCDF	ND		0.000010	0.00000015	ug/L		03/08/18 08:55	03/13/18 07:32	1
Total PeCDD	**0.00000085**	**J,DX q**	0.000050	0.00000040	ug/L		03/08/18 08:55	03/13/18 07:32	1
Total PeCDF	**0.00000065**	**J,DX q**	0.000050	0.00000044	ug/L		03/08/18 08:55	03/13/18 07:32	1
Total HxCDD	**0.000017**	**J,DX MB q**	0.000050	0.00000038	ug/L		03/08/18 08:55	03/13/18 07:32	1
Total HxCDF	**0.000012**	**J,DX MB q**	0.000050	0.00000053	ug/L		03/08/18 08:55	03/13/18 07:32	1
Total HpCDD	**0.00018**	**MB**	0.000050	0.00000089	ug/L		03/08/18 08:55	03/13/18 07:32	1
Total HpCDF	**0.000046**	**J,DX MB q**	0.000050	0.00000062	ug/L		03/08/18 08:55	03/13/18 07:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*73*		*25 - 164*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-2,3,7,8-TCDF	*79*		*24 - 169*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-1,2,3,7,8-PeCDD	*73*		*25 - 181*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-1,2,3,7,8-PeCDF	*78*		*24 - 185*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-2,3,4,7,8-PeCDF	*78*		*21 - 178*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-1,2,3,4,7,8-HxCDD	*72*		*32 - 141*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-1,2,3,6,7,8-HxCDD	*75*		*28 - 130*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-1,2,3,4,7,8-HxCDF	*66*		*26 - 152*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-1,2,3,6,7,8-HxCDF	*66*		*26 - 123*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-1,2,3,7,8,9-HxCDF	*71*		*29 - 147*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-2,3,4,6,7,8-HxCDF	*67*		*28 - 136*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*66*		*23 - 140*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*70*		*28 - 143*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*71*		*26 - 138*	*03/08/18 08:55*	*03/13/18 07:32*	*1*
13C-OCDD	*66*		*17 - 157*	*03/08/18 08:55*	*03/13/18 07:32*	*1*

Client Sample ID: B1BMP0010_20180302

Date Collected: 03/02/18 08:30
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-2

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*03/08/18 08:55*	*03/13/18 07:32*	*1*

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 07:01	03/20/18 16:07	1
Copper	**4.7**		2.0	0.50	ug/L		03/18/18 07:01	03/20/18 16:07	1
Lead	**2.8**		1.0	0.50	ug/L		03/18/18 07:01	03/20/18 16:07	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 10:15	03/18/18 17:02	1
Copper	**3.8**	**MB**	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 17:02	1
Lead	ND		1.0	0.50	ug/L		03/18/18 10:15	03/18/18 17:02	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:20	03/05/18 23:38	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**30**		2.5	1.3	mg/L			03/07/18 16:32	1

Client Sample ID: B1BMP0011_20180302

Date Collected: 03/02/18 08:15
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-3

Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000027	ug/L		03/08/18 08:55	03/13/18 08:18	1
2,3,7,8-TCDF	ND		0.000011	0.00000022	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,7,8-PeCDD	**0.0000021**	**J,DX**	0.000053	0.00000055	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,7,8-PeCDF	ND		0.000053	0.00000039	ug/L		03/08/18 08:55	03/13/18 08:18	1
2,3,4,7,8-PeCDF	ND		0.000053	0.00000043	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,4,7,8-HxCDD	**0.0000053**	**J,DX MB**	0.000053	0.00000056	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,6,7,8-HxCDD	**0.0000053**	**J,DX**	0.000053	0.00000053	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,7,8,9-HxCDD	**0.0000060**	**J,DX MB q**	0.000053	0.00000051	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,4,7,8-HxCDF	**0.0000017**	**J,DX**	0.000053	0.00000096	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,6,7,8-HxCDF	ND		0.000053	0.00000095	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,7,8,9-HxCDF	**0.0000013**	**J,DX MB**	0.000053	0.00000046	ug/L		03/08/18 08:55	03/13/18 08:18	1

Client Sample ID: B1BMP0011_20180302
Date Collected: 03/02/18 08:15
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-3
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	**0.0000011**	**J,DX**	0.000053	0.00000057	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,4,6,7,8-HpCDD	**0.00015**	**MB**	0.000053	0.0000022	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,4,6,7,8-HpCDF	**0.000030**	**J,DX MB**	0.000053	0.00000073	ug/L		03/08/18 08:55	03/13/18 08:18	1
1,2,3,4,7,8,9-HpCDF	**0.0000021**	**J,DX q**	0.000053	0.00000089	ug/L		03/08/18 08:55	03/13/18 08:18	1
OCDD	**0.0015**	**MB**	0.00011	0.0000010	ug/L		03/08/18 08:55	03/13/18 08:18	1
OCDF	**0.000049**	**J,DX MB**	0.00011	0.00000040	ug/L		03/08/18 08:55	03/13/18 08:18	1
Total TCDD	ND		0.000011	0.00000027	ug/L		03/08/18 08:55	03/13/18 08:18	1
Total TCDF	ND		0.000011	0.00000022	ug/L		03/08/18 08:55	03/13/18 08:18	1
Total PeCDD	**0.0000027**	**J,DX q**	0.000053	0.00000055	ug/L		03/08/18 08:55	03/13/18 08:18	1
Total PeCDF	**0.0000034**	**J,DX q**	0.000053	0.00000041	ug/L		03/08/18 08:55	03/13/18 08:18	1
Total HxCDD	**0.000038**	**J,DX MB q**	0.000053	0.00000053	ug/L		03/08/18 08:55	03/13/18 08:18	1
Total HxCDF	**0.000030**	**J,DX MB q**	0.000053	0.00000074	ug/L		03/08/18 08:55	03/13/18 08:18	1
Total HpCDD	**0.00041**	**MB**	0.000053	0.0000022	ug/L		03/08/18 08:55	03/13/18 08:18	1
Total HpCDF	**0.000092**	**J,DX MB q**	0.000053	0.00000081	ug/L		03/08/18 08:55	03/13/18 08:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*76*		*25 - 164*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-2,3,7,8-TCDF	*81*		*24 - 169*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-1,2,3,7,8-PeCDD	*72*		*25 - 181*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-1,2,3,7,8-PeCDF	*76*		*24 - 185*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-2,3,4,7,8-PeCDF	*76*		*21 - 178*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-1,2,3,4,7,8-HxCDD	*72*		*32 - 141*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-1,2,3,6,7,8-HxCDD	*72*		*28 - 130*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-1,2,3,4,7,8-HxCDF	*63*		*26 - 152*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-1,2,3,6,7,8-HxCDF	*65*		*26 - 123*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-1,2,3,7,8,9-HxCDF	*69*		*29 - 147*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-2,3,4,6,7,8-HxCDF	*65*		*28 - 136*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*63*		*23 - 140*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*68*		*28 - 143*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*68*		*26 - 138*	*03/08/18 08:55*	*03/13/18 08:18*	*1*
13C-OCDD	*62*		*17 - 157*	*03/08/18 08:55*	*03/13/18 08:18*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*03/08/18 08:55*	*03/13/18 08:18*	*1*

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 07:05	03/18/18 17:28	1
Copper	**3.6**	**MB**	2.0	0.50	ug/L		03/18/18 07:05	03/18/18 17:28	1
Lead	**0.57**	**J,DX**	1.0	0.50	ug/L		03/18/18 07:05	03/18/18 17:28	1

Client Sample ID: B1BMP0011_20180302

Lab Sample ID: 440-204619-3

Date Collected: 03/02/18 08:15

Matrix: Water

Date Received: 03/02/18 17:15

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 10:15	03/18/18 17:00	1
Copper	**3.1**	**MB**	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 17:00	1
Lead	ND		1.0	0.50	ug/L		03/18/18 10:15	03/18/18 17:00	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:18	03/06/18 01:14	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**5.8**		1.7	0.83	mg/L			03/07/18 16:32	1

Client Sample ID: ILBMP0002_20180302

Lab Sample ID: 440-204619-4

Date Collected: 03/02/18 09:50

Matrix: Water

Date Received: 03/02/18 17:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000036	ug/L		03/08/18 08:55	03/13/18 09:04	1
2,3,7,8-TCDF	ND		0.000010	0.00000049	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,7,8-PeCDD	ND		0.000052	0.0000025	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,7,8-PeCDF	ND		0.000052	0.00000065	ug/L		03/08/18 08:55	03/13/18 09:04	1
2,3,4,7,8-PeCDF	ND		0.000052	0.00000070	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,4,7,8-HxCDD	**0.0000038**	**J,DX q MB**	0.000052	0.00000064	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,6,7,8-HxCDD	**0.0000062**	**J,DX**	0.000052	0.00000061	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,7,8,9-HxCDD	**0.0000059**	**J,DX q MB**	0.000052	0.00000058	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,4,7,8-HxCDF	ND		0.000052	0.0000015	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,6,7,8-HxCDF	**0.0000076**	**J,DX**	0.000052	0.0000015	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,7,8,9-HxCDF	ND		0.000052	0.00000073	ug/L		03/08/18 08:55	03/13/18 09:04	1
2,3,4,6,7,8-HxCDF	**0.0000027**	**J,DX**	0.000052	0.00000089	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,4,6,7,8-HpCDD	**0.00012**	**MB**	0.000052	0.0000015	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,4,6,7,8-HpCDF	**0.000045**	**J,DX MB**	0.000052	0.0000013	ug/L		03/08/18 08:55	03/13/18 09:04	1
1,2,3,4,7,8,9-HpCDF	**0.0000027**	**J,DX**	0.000052	0.0000017	ug/L		03/08/18 08:55	03/13/18 09:04	1
OCDD	**0.0013**	**MB**	0.00010	0.0000011	ug/L		03/08/18 08:55	03/13/18 09:04	1
OCDF	**0.000076**	**J,DX MB**	0.00010	0.00000049	ug/L		03/08/18 08:55	03/13/18 09:04	1
Total TCDD	ND		0.000010	0.00000036	ug/L		03/08/18 08:55	03/13/18 09:04	1
Total TCDF	**0.0000021**	**J,DX q**	0.000010	0.00000049	ug/L		03/08/18 08:55	03/13/18 09:04	1

Client Sample ID: ILBMP0002_20180302
Date Collected: 03/02/18 09:50
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-4
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PeCDD	0.0000011	J,DX q	0.000052	0.0000025	ug/L		03/08/18 08:55	03/13/18 09:04	1
Total PeCDF	0.000016	J,DX q	0.000052	0.00000068	ug/L		03/08/18 08:55	03/13/18 09:04	1
Total HxCDD	0.000039	J,DX q MB	0.000052	0.00000061	ug/L		03/08/18 08:55	03/13/18 09:04	1
Total HxCDF	0.000046	J,DX MB	0.000052	0.0000011	ug/L		03/08/18 08:55	03/13/18 09:04	1
Total HpCDD	0.00027	MB	0.000052	0.0000015	ug/L		03/08/18 08:55	03/13/18 09:04	1
Total HpCDF	0.000085	J,DX MB	0.000052	0.0000015	ug/L		03/08/18 08:55	03/13/18 09:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*70*		*25 - 164*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-2,3,7,8-TCDF	*75*		*24 - 169*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-1,2,3,7,8-PeCDD	*67*		*25 - 181*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-1,2,3,7,8-PeCDF	*71*		*24 - 185*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-2,3,4,7,8-PeCDF	*71*		*21 - 178*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-1,2,3,4,7,8-HxCDD	*64*		*32 - 141*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-1,2,3,6,7,8-HxCDD	*66*		*28 - 130*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-1,2,3,4,7,8-HxCDF	*58*		*26 - 152*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-1,2,3,6,7,8-HxCDF	*59*		*26 - 123*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-1,2,3,7,8,9-HxCDF	*62*		*29 - 147*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-2,3,4,6,7,8-HxCDF	*59*		*28 - 136*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*55*		*23 - 140*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*61*		*28 - 143*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*59*		*26 - 138*	*03/08/18 08:55*	*03/13/18 09:04*	*1*
13C-OCDD	*55*		*17 - 157*	*03/08/18 08:55*	*03/13/18 09:04*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*108*		*35 - 197*	*03/08/18 08:55*	*03/13/18 09:04*	*1*

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 07:01	03/20/18 14:44	1
Copper	9.3		2.0	0.50	ug/L		03/18/18 07:01	03/20/18 14:44	1
Lead	37		1.0	0.50	ug/L		03/18/18 07:01	03/20/18 14:44	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 10:15	03/18/18 16:58	1
Copper	8.0	MB	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:58	1
Lead	12		1.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:58	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:18	03/06/18 01:11	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	30		5.0	2.5	mg/L			03/07/18 16:32	1

Client Sample ID: ILBMP0004_20180302
Date Collected: 03/02/18 08:00
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-5
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.0000010	J,DX q	0.000011	0.00000030	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,7,8-PeCDD	0.0000041	J,DX q	0.000053	0.00000088	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,7,8-PeCDF	0.0000023	J,DX q	0.000053	0.00000049	ug/L		03/08/18 08:55	03/13/18 09:50	1
2,3,4,7,8-PeCDF	0.0000021	J,DX	0.000053	0.00000053	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,4,7,8-HxCDD	0.0000075	J,DX MB	0.000053	0.00000067	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,6,7,8-HxCDD	0.000010	J,DX	0.000053	0.00000064	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,7,8,9-HxCDD	0.000012	J,DX MB	0.000053	0.00000061	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,4,7,8-HxCDF	0.0000058	J,DX	0.000053	0.0000015	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,6,7,8-HxCDF	0.000010	J,DX q	0.000053	0.0000014	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,7,8,9-HxCDF	0.0000030	J,DX MB	0.000053	0.00000072	ug/L		03/08/18 08:55	03/13/18 09:50	1
2,3,4,6,7,8-HxCDF	0.0000046	J,DX	0.000053	0.00000086	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,4,6,7,8-HpCDD	0.00019	MB	0.000053	0.0000033	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,4,6,7,8-HpCDF	0.000069	MB	0.000053	0.0000012	ug/L		03/08/18 08:55	03/13/18 09:50	1
1,2,3,4,7,8,9-HpCDF	0.0000045	J,DX	0.000053	0.0000015	ug/L		03/08/18 08:55	03/13/18 09:50	1
OCDD	0.0024	MB	0.00011	0.0000015	ug/L		03/08/18 08:55	03/13/18 09:50	1
OCDF	0.000098	J,DX MB	0.00011	0.00000043	ug/L		03/08/18 08:55	03/13/18 09:50	1
Total TCDD	0.0000010	J,DX q	0.000011	0.00000030	ug/L		03/08/18 08:55	03/13/18 09:50	1
Total TCDF	0.0000035	J,DX q	0.000011	0.00000027	ug/L		03/08/18 08:55	03/13/18 09:50	1
Total PeCDD	0.0000085	J,DX q	0.000053	0.00000088	ug/L		03/08/18 08:55	03/13/18 09:50	1
Total PeCDF	0.000021	J,DX q	0.000053	0.00000051	ug/L		03/08/18 08:55	03/13/18 09:50	1
Total HxCDD	0.000070	J,DX MB	0.000053	0.00000064	ug/L		03/08/18 08:55	03/13/18 09:50	1
Total HxCDF	0.000072	J,DX MB q	0.000053	0.0000011	ug/L		03/08/18 08:55	03/13/18 09:50	1
Total HpCDD	0.00054	MB	0.000053	0.0000033	ug/L		03/08/18 08:55	03/13/18 09:50	1
Total HpCDF	0.00013	J,DX MB	0.000053	0.0000013	ug/L		03/08/18 08:55	03/13/18 09:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*71*		*25 - 164*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-2,3,7,8-TCDF	*74*		*24 - 169*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-1,2,3,7,8-PeCDD	*67*		*25 - 181*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-1,2,3,7,8-PeCDF	*72*		*24 - 185*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-2,3,4,7,8-PeCDF	*73*		*21 - 178*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-1,2,3,4,7,8-HxCDD	*64*		*32 - 141*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-1,2,3,6,7,8-HxCDD	*68*		*28 - 130*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-1,2,3,4,7,8-HxCDF	*58*		*26 - 152*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-1,2,3,6,7,8-HxCDF	*60*		*26 - 123*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-1,2,3,7,8,9-HxCDF	*62*		*29 - 147*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-2,3,4,6,7,8-HxCDF	*59*		*28 - 136*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*56*		*23 - 140*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*60*		*28 - 143*	*03/08/18 08:55*	*03/13/18 09:50*	*1*

Client Sample ID: ILBMP0004_20180302

Lab Sample ID: 440-204619-5

Date Collected: 03/02/18 08:00

Matrix: Water

Date Received: 03/02/18 17:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,7,8,9-HpCDF	*61*		*26 - 138*	*03/08/18 08:55*	*03/13/18 09:50*	*1*
13C-OCDD	*56*		*17 - 157*	*03/08/18 08:55*	*03/13/18 09:50*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*03/08/18 08:55*	*03/13/18 09:50*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000011	0.00000050	ug/L		03/08/18 08:55	03/13/18 17:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*58*		*24 - 169*	*03/08/18 08:55*	*03/13/18 17:59*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*86*		*35 - 197*	*03/08/18 08:55*	*03/13/18 17:59*	*1*

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 07:01	03/20/18 14:52	1
Copper	**7.7**		2.0	0.50	ug/L		03/18/18 07:01	03/20/18 14:52	1
Lead	**3.3**		1.0	0.50	ug/L		03/18/18 07:01	03/20/18 14:52	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 10:15	03/18/18 16:53	1
Copper	**3.8**	**MB**	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:53	1
Lead	ND		1.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:53	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:18	03/06/18 01:09	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**41**		5.0	2.5	mg/L			03/07/18 16:32	1

Client Sample ID: ILBMP0005_20180302

Lab Sample ID: 440-204619-6

Date Collected: 03/02/18 08:50

Matrix: Water

Date Received: 03/02/18 17:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000024	ug/L		03/08/18 08:55	03/13/18 10:36	1
2,3,7,8-TCDF	ND		0.000011	0.00000011	ug/L		03/08/18 08:55	03/13/18 10:36	1
1,2,3,7,8-PeCDD	ND		0.000054	0.00000035	ug/L		03/08/18 08:55	03/13/18 10:36	1

Client Sample ID: ILBMP0005_20180302
Date Collected: 03/02/18 08:50
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-6
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8-PeCDF	ND		0.000054	0.00000025	ug/L		03/08/18 08:55	03/13/18 10:36	1
2,3,4,7,8-PeCDF	ND		0.000054	0.00000028	ug/L		03/08/18 08:55	03/13/18 10:36	1
1,2,3,4,7,8-HxCDD	**0.0000017**	**J,DX MB**	0.000054	0.00000029	ug/L		03/08/18 08:55	03/13/18 10:36	1
1,2,3,6,7,8-HxCDD	ND		0.000054	0.00000028	ug/L		03/08/18 08:55	03/13/18 10:36	1
1,2,3,7,8,9-HxCDD	**0.00000033**	**J,DX MB q**	0.000054	0.00000026	ug/L		03/08/18 08:55	03/13/18 10:36	1
1,2,3,4,7,8-HxCDF	**0.00000081**	**J,DX**	0.000054	0.00000038	ug/L		03/08/18 08:55	03/13/18 10:36	1
1,2,3,6,7,8-HxCDF	ND		0.000054	0.00000039	ug/L		03/08/18 08:55	03/13/18 10:36	1
1,2,3,7,8,9-HxCDF	**0.00000061**	**J,DX MB**	0.000054	0.00000019	ug/L		03/08/18 08:55	03/13/18 10:36	1
2,3,4,6,7,8-HxCDF	ND		0.000054	0.00000023	ug/L		03/08/18 08:55	03/13/18 10:36	1
1,2,3,4,6,7,8-HpCDD	**0.0000040**	**J,DX MB**	0.000054	0.00000039	ug/L		03/08/18 08:55	03/13/18 10:36	1
1,2,3,4,6,7,8-HpCDF	**0.0000014**	**J,DX MB q**	0.000054	0.00000039	ug/L		03/08/18 08:55	03/13/18 10:36	1
1,2,3,4,7,8,9-HpCDF	ND		0.000054	0.00000048	ug/L		03/08/18 08:55	03/13/18 10:36	1
OCDD	**0.000023**	**J,DX MB**	0.00011	0.00000037	ug/L		03/08/18 08:55	03/13/18 10:36	1
OCDF	**0.0000027**	**J,DX MB**	0.00011	0.00000023	ug/L		03/08/18 08:55	03/13/18 10:36	1
Total TCDD	ND		0.000011	0.00000024	ug/L		03/08/18 08:55	03/13/18 10:36	1
Total TCDF	**0.00000019**	**J,DX q**	0.000011	0.00000011	ug/L		03/08/18 08:55	03/13/18 10:36	1
Total PeCDD	ND		0.000054	0.00000035	ug/L		03/08/18 08:55	03/13/18 10:36	1
Total PeCDF	ND		0.000054	0.00000025	ug/L		03/08/18 08:55	03/13/18 10:36	1
Total HxCDD	**0.0000021**	**J,DX MB q**	0.000054	0.00000027	ug/L		03/08/18 08:55	03/13/18 10:36	1
Total HxCDF	**0.0000014**	**J,DX MB**	0.000054	0.00000030	ug/L		03/08/18 08:55	03/13/18 10:36	1
Total HpCDD	**0.0000076**	**J,DX MB**	0.000054	0.00000039	ug/L		03/08/18 08:55	03/13/18 10:36	1
Total HpCDF	**0.0000014**	**J,DX MB q**	0.000054	0.00000044	ug/L		03/08/18 08:55	03/13/18 10:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*86*		*25 - 164*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-2,3,7,8-TCDF	*91*		*24 - 169*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-1,2,3,7,8-PeCDD	*84*		*25 - 181*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-1,2,3,7,8-PeCDF	*90*		*24 - 185*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-2,3,4,7,8-PeCDF	*90*		*21 - 178*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-1,2,3,4,7,8-HxCDD	*83*		*32 - 141*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-1,2,3,6,7,8-HxCDD	*88*		*28 - 130*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-1,2,3,4,7,8-HxCDF	*76*		*26 - 152*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-1,2,3,6,7,8-HxCDF	*79*		*26 - 123*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-1,2,3,7,8,9-HxCDF	*83*		*29 - 147*	*03/08/18 08:55*	*03/13/18 10:36*	*1*

Client Sample ID: ILBMP0005_20180302

Lab Sample ID: 440-204619-6

Date Collected: 03/02/18 08:50

Matrix: Water

Date Received: 03/02/18 17:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,4,6,7,8-HxCDF	*79*		*28 - 136*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*77*		*23 - 140*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*82*		*28 - 143*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*83*		*26 - 138*	*03/08/18 08:55*	*03/13/18 10:36*	*1*
13C-OCDD	*75*		*17 - 157*	*03/08/18 08:55*	*03/13/18 10:36*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*106*		*35 - 197*	*03/08/18 08:55*	*03/13/18 10:36*	*1*

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 07:01	03/20/18 14:55	1
Copper	**8.5**		2.0	0.50	ug/L		03/18/18 07:01	03/20/18 14:55	1
Lead	**0.67**	**J,DX**	1.0	0.50	ug/L		03/18/18 07:01	03/20/18 14:55	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 10:15	03/18/18 16:51	1
Copper	**9.7**	**MB**	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:51	1
Lead	ND		1.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:51	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/06/18 12:25	03/06/18 19:37	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**9.3**		1.3	0.63	mg/L			03/07/18 16:32	1

Client Sample ID: ILBMP0008_20180302

Lab Sample ID: 440-204619-8

Date Collected: 03/02/18 07:00

Matrix: Water

Date Received: 03/02/18 17:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000033	ug/L		03/08/18 08:55	03/13/18 11:22	1
1,2,3,7,8-PeCDD	ND		0.000053	0.00000069	ug/L		03/08/18 08:55	03/13/18 11:22	1
1,2,3,7,8-PeCDF	ND		0.000053	0.00000046	ug/L		03/08/18 08:55	03/13/18 11:22	1
2,3,4,7,8-PeCDF	ND		0.000053	0.00000049	ug/L		03/08/18 08:55	03/13/18 11:22	1
1,2,3,4,7,8-HxCDD	**0.0000027**	**J,DX MB**	0.000053	0.00000059	ug/L		03/08/18 08:55	03/13/18 11:22	1
1,2,3,6,7,8-HxCDD	**0.0000018**	**J,DX q**	0.000053	0.00000055	ug/L		03/08/18 08:55	03/13/18 11:22	1
1,2,3,7,8,9-HxCDD	**0.0000021**	**J,DX MB**	0.000053	0.00000053	ug/L		03/08/18 08:55	03/13/18 11:22	1

Client Sample ID: ILBMP0008_20180302
Date Collected: 03/02/18 07:00
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-8
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	ND		0.000053	0.0000012	ug/L		03/08/18 08:55	03/13/18 11:22	1
1,2,3,6,7,8-HxCDF	**0.0000020**	**J,DX q**	0.000053	0.0000011	ug/L		03/08/18 08:55	03/13/18 11:22	1
1,2,3,7,8,9-HxCDF	ND		0.000053	0.00000057	ug/L		03/08/18 08:55	03/13/18 11:22	1
2,3,4,6,7,8-HxCDF	**0.0000011**	**J,DX**	0.000053	0.00000066	ug/L		03/08/18 08:55	03/13/18 11:22	1
1,2,3,4,6,7,8-HpCDD	**0.000046**	**J,DX MB**	0.000053	0.0000013	ug/L		03/08/18 08:55	03/13/18 11:22	1
1,2,3,4,6,7,8-HpCDF	**0.000027**	**J,DX MB**	0.000053	0.00000092	ug/L		03/08/18 08:55	03/13/18 11:22	1
1,2,3,4,7,8,9-HpCDF	ND		0.000053	0.0000012	ug/L		03/08/18 08:55	03/13/18 11:22	1
OCDD	**0.00044**	**MB**	0.00011	0.00000082	ug/L		03/08/18 08:55	03/13/18 11:22	1
OCDF	**0.000042**	**J,DX MB**	0.00011	0.00000045	ug/L		03/08/18 08:55	03/13/18 11:22	1
Total TCDD	ND		0.000011	0.00000033	ug/L		03/08/18 08:55	03/13/18 11:22	1
Total TCDF	**0.0000017**	**J,DX q**	0.000011	0.00000020	ug/L		03/08/18 08:55	03/13/18 11:22	1
Total PeCDD	**0.00000097**	**J,DX q**	0.000053	0.00000069	ug/L		03/08/18 08:55	03/13/18 11:22	1
Total PeCDF	**0.0000077**	**J,DX q**	0.000053	0.00000047	ug/L		03/08/18 08:55	03/13/18 11:22	1
Total HxCDD	**0.000018**	**J,DX MB q**	0.000053	0.00000056	ug/L		03/08/18 08:55	03/13/18 11:22	1
Total HxCDF	**0.000015**	**J,DX MB q**	0.000053	0.00000088	ug/L		03/08/18 08:55	03/13/18 11:22	1
Total HpCDD	**0.00018**	**J,DX MB**	0.000053	0.0000013	ug/L		03/08/18 08:55	03/13/18 11:22	1
Total HpCDF	**0.000055**	**J,DX MB**	0.000053	0.0000010	ug/L		03/08/18 08:55	03/13/18 11:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*51*		*25 - 164*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-2,3,7,8-TCDF	*53*		*24 - 169*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-1,2,3,7,8-PeCDD	*47*		*25 - 181*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-1,2,3,7,8-PeCDF	*51*		*24 - 185*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-2,3,4,7,8-PeCDF	*52*		*21 - 178*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-1,2,3,4,7,8-HxCDD	*47*		*32 - 141*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-1,2,3,6,7,8-HxCDD	*51*		*28 - 130*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-1,2,3,4,7,8-HxCDF	*43*		*26 - 152*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-1,2,3,6,7,8-HxCDF	*45*		*26 - 123*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-1,2,3,7,8,9-HxCDF	*46*		*29 - 147*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-2,3,4,6,7,8-HxCDF	*46*		*28 - 136*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*43*		*23 - 140*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*47*		*28 - 143*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*45*		*26 - 138*	*03/08/18 08:55*	*03/13/18 11:22*	*1*
13C-OCDD	*40*		*17 - 157*	*03/08/18 08:55*	*03/13/18 11:22*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*106*		*35 - 197*	*03/08/18 08:55*	*03/13/18 11:22*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000011	0.00000061	ug/L		03/08/18 08:55	03/13/18 18:37	1

Client Sample ID: ILBMP0008_20180302

Lab Sample ID: 440-204619-8

Date Collected: 03/02/18 07:00

Matrix: Water

Date Received: 03/02/18 17:15

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	42		24 - 169	03/08/18 08:55	03/13/18 18:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	03/08/18 08:55	03/13/18 18:37	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.63**	**J,DX**	1.0	0.25	ug/L		03/18/18 07:01	03/20/18 14:58	1
Copper	**7.1**		2.0	0.50	ug/L		03/18/18 07:01	03/20/18 14:58	1
Lead	**2.4**		1.0	0.50	ug/L		03/18/18 07:01	03/20/18 14:58	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.26**	**J,DX**	1.0	0.25	ug/L		03/18/18 10:15	03/18/18 16:50	1
Copper	**7.0**	**MB**	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:50	1
Lead	ND		1.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:50	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:03	03/06/18 01:04	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**18**		3.3	1.7	mg/L			03/07/18 16:32	1

Client Sample ID: LPBMP0002_20180302

Lab Sample ID: 440-204619-9

Date Collected: 03/02/18 07:25

Matrix: Water

Date Received: 03/02/18 17:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000023	ug/L		03/08/18 08:55	03/13/18 14:05	1
2,3,7,8-TCDF	ND		0.000010	0.00000019	ug/L		03/08/18 08:55	03/13/18 14:05	1
1,2,3,7,8-PeCDD	**0.0000010**	**J,DX**	0.000050	0.00000036	ug/L		03/08/18 08:55	03/13/18 14:05	1
1,2,3,7,8-PeCDF	ND		0.000050	0.00000034	ug/L		03/08/18 08:55	03/13/18 14:05	1
2,3,4,7,8-PeCDF	ND		0.000050	0.00000037	ug/L		03/08/18 08:55	03/13/18 14:05	1
1,2,3,4,7,8-HxCDD	**0.0000025**	**J,DX MB**	0.000050	0.00000031	ug/L		03/08/18 08:55	03/13/18 14:05	1
1,2,3,6,7,8-HxCDD	**0.0000032**	**J,DX**	0.000050	0.00000031	ug/L		03/08/18 08:55	03/13/18 14:05	1
1,2,3,7,8,9-HxCDD	**0.0000034**	**J,DX MB**	0.000050	0.00000028	ug/L		03/08/18 08:55	03/13/18 14:05	1
1,2,3,4,7,8-HxCDF	**0.0000024**	**J,DX q**	0.000050	0.00000062	ug/L		03/08/18 08:55	03/13/18 14:05	1
1,2,3,6,7,8-HxCDF	**0.0000033**	**J,DX**	0.000050	0.00000058	ug/L		03/08/18 08:55	03/13/18 14:05	1

Client Sample ID: LPBMP0002_20180302
Date Collected: 03/02/18 07:25
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-9
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDF	ND		0.000050	0.00000045	ug/L		03/08/18 08:55	03/13/18 14:05	1
2,3,4,6,7,8-HxCDF	**0.0000012**	**J,DX**	0.000050	0.00000044	ug/L		03/08/18 08:55	03/13/18 14:05	1
1,2,3,4,6,7,8-HpCDD	**0.000048**	**J,DX MB**	0.000050	0.0000012	ug/L		03/08/18 08:55	03/13/18 14:05	1
1,2,3,4,6,7,8-HpCDF	**0.000031**	**J,DX MB**	0.000050	0.00000056	ug/L		03/08/18 08:55	03/13/18 14:05	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.00000070	ug/L		03/08/18 08:55	03/13/18 14:05	1
OCDD	**0.00038**	**MB**	0.00010	0.0000010	ug/L		03/08/18 08:55	03/13/18 14:05	1
OCDF	**0.000020**	**J,DX MB**	0.00010	0.00000028	ug/L		03/08/18 08:55	03/13/18 14:05	1
Total TCDD	ND		0.000010	0.00000023	ug/L		03/08/18 08:55	03/13/18 14:05	1
Total TCDF	**0.00000053**	**J,DX**	0.000010	0.00000019	ug/L		03/08/18 08:55	03/13/18 14:05	1
Total PeCDD	**0.0000025**	**J,DX q**	0.000050	0.00000036	ug/L		03/08/18 08:55	03/13/18 14:05	1
Total PeCDF	**0.0000069**	**J,DX q**	0.000050	0.00000035	ug/L		03/08/18 08:55	03/13/18 14:05	1
Total HxCDD	**0.000025**	**J,DX q MB**	0.000050	0.00000030	ug/L		03/08/18 08:55	03/13/18 14:05	1
Total HxCDF	**0.000023**	**J,DX q MB**	0.000050	0.00000052	ug/L		03/08/18 08:55	03/13/18 14:05	1
Total HpCDD	**0.00011**	**J,DX MB**	0.000050	0.0000012	ug/L		03/08/18 08:55	03/13/18 14:05	1
Total HpCDF	**0.000042**	**J,DX MB**	0.000050	0.00000063	ug/L		03/08/18 08:55	03/13/18 14:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*72*		*25 - 164*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-2,3,7,8-TCDF	*75*		*24 - 169*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-1,2,3,7,8-PeCDD	*76*		*25 - 181*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-1,2,3,7,8-PeCDF	*72*		*24 - 185*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-2,3,4,7,8-PeCDF	*72*		*21 - 178*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-1,2,3,4,7,8-HxCDD	*75*		*32 - 141*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-1,2,3,6,7,8-HxCDD	*78*		*28 - 130*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-1,2,3,4,7,8-HxCDF	*81*		*26 - 152*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-1,2,3,6,7,8-HxCDF	*79*		*26 - 123*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-1,2,3,7,8,9-HxCDF	*81*		*29 - 147*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-2,3,4,6,7,8-HxCDF	*83*		*28 - 136*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*74*		*23 - 140*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*66*		*28 - 143*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*71*		*26 - 138*	*03/08/18 08:55*	*03/13/18 14:05*	*1*
13C-OCDD	*81*		*17 - 157*	*03/08/18 08:55*	*03/13/18 14:05*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*99*		*35 - 197*	*03/08/18 08:55*	*03/13/18 14:05*	*1*

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 07:01	03/20/18 15:29	1
Copper	**9.5**		2.0	0.50	ug/L		03/18/18 07:01	03/20/18 15:29	1
Lead	**1.1**		1.0	0.50	ug/L		03/18/18 07:01	03/20/18 15:29	1

Client Sample ID: LPBMP0002_20180302

Lab Sample ID: 440-204619-9

Date Collected: 03/02/18 07:25

Matrix: Water

Date Received: 03/02/18 17:15

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 10:15	03/18/18 16:48	1
Copper	**9.9**	**MB**	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:48	1
Lead	ND		1.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:48	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:03	03/06/18 01:02	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**8.4**		2.0	1.0	mg/L			03/07/18 16:32	1

Client Sample ID: LPBMP0003_20180302

Lab Sample ID: 440-204619-10

Date Collected: 03/02/18 07:28

Matrix: Water

Date Received: 03/02/18 17:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000023	ug/L		03/08/18 08:55	03/13/18 14:53	1
2,3,7,8-TCDF	ND		0.000010	0.00000017	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,7,8-PeCDD	**0.00000041**	**J,DX q**	0.000052	0.00000036	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,7,8-PeCDF	ND		0.000052	0.00000026	ug/L		03/08/18 08:55	03/13/18 14:53	1
2,3,4,7,8-PeCDF	ND		0.000052	0.00000028	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,4,7,8-HxCDD	**0.0000024**	**J,DX MB**	0.000052	0.00000026	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,6,7,8-HxCDD	**0.0000015**	**J,DX**	0.000052	0.00000026	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,7,8,9-HxCDD	**0.0000017**	**J,DX q MB**	0.000052	0.00000023	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,4,7,8-HxCDF	ND		0.000052	0.00000052	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,6,7,8-HxCDF	**0.0000014**	**J,DX q**	0.000052	0.00000049	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,7,8,9-HxCDF	ND		0.000052	0.00000037	ug/L		03/08/18 08:55	03/13/18 14:53	1
2,3,4,6,7,8-HxCDF	**0.00000059**	**J,DX**	0.000052	0.00000039	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,4,6,7,8-HpCDD	**0.000031**	**J,DX MB**	0.000052	0.00000080	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,4,6,7,8-HpCDF	**0.000014**	**J,DX MB**	0.000052	0.00000047	ug/L		03/08/18 08:55	03/13/18 14:53	1
1,2,3,4,7,8,9-HpCDF	ND		0.000052	0.00000049	ug/L		03/08/18 08:55	03/13/18 14:53	1
OCDD	**0.00028**	**MB**	0.00010	0.00000080	ug/L		03/08/18 08:55	03/13/18 14:53	1

Client Sample ID: LPBMP0003_20180302
Date Collected: 03/02/18 07:28
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-10
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDF	**0.000012**	**J,DX MB**	0.00010	0.00000025	ug/L		03/08/18 08:55	03/13/18 14:53	1
Total TCDD	ND		0.000010	0.00000023	ug/L		03/08/18 08:55	03/13/18 14:53	1
Total TCDF	ND		0.000010	0.00000017	ug/L		03/08/18 08:55	03/13/18 14:53	1
Total PeCDD	**0.00000041**	**J,DX q**	0.000052	0.00000036	ug/L		03/08/18 08:55	03/13/18 14:53	1
Total PeCDF	**0.0000018**	**J,DX q**	0.000052	0.00000027	ug/L		03/08/18 08:55	03/13/18 14:53	1
Total HxCDD	**0.000013**	**J,DX q MB**	0.000052	0.00000025	ug/L		03/08/18 08:55	03/13/18 14:53	1
Total HxCDF	**0.0000077**	**J,DX q MB**	0.000052	0.00000044	ug/L		03/08/18 08:55	03/13/18 14:53	1
Total HpCDD	**0.000069**	**J,DX MB**	0.000052	0.00000080	ug/L		03/08/18 08:55	03/13/18 14:53	1
Total HpCDF	**0.000022**	**J,DX MB**	0.000052	0.00000048	ug/L		03/08/18 08:55	03/13/18 14:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*79*		*25 - 164*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-2,3,7,8-TCDF	*81*		*24 - 169*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-1,2,3,7,8-PeCDD	*81*		*25 - 181*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-1,2,3,7,8-PeCDF	*80*		*24 - 185*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-2,3,4,7,8-PeCDF	*79*		*21 - 178*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-1,2,3,4,7,8-HxCDD	*84*		*32 - 141*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-1,2,3,6,7,8-HxCDD	*81*		*28 - 130*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-1,2,3,4,7,8-HxCDF	*86*		*26 - 152*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-1,2,3,6,7,8-HxCDF	*84*		*26 - 123*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-1,2,3,7,8,9-HxCDF	*86*		*29 - 147*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-2,3,4,6,7,8-HxCDF	*87*		*28 - 136*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*78*		*23 - 140*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*60*		*28 - 143*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*74*		*26 - 138*	*03/08/18 08:55*	*03/13/18 14:53*	*1*
13C-OCDD	*85*		*17 - 157*	*03/08/18 08:55*	*03/13/18 14:53*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*03/08/18 08:55*	*03/13/18 14:53*	*1*

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 07:01	03/20/18 15:01	1
Copper	**11**		2.0	0.50	ug/L		03/18/18 07:01	03/20/18 15:01	1
Lead	**0.86**	**J,DX**	1.0	0.50	ug/L		03/18/18 07:01	03/20/18 15:01	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 10:15	03/18/18 16:46	1
Copper	**12**	**MB**	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:46	1
Lead	**0.56**	**J,DX**	1.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:46	1

Client Sample ID: LPBMP0003_20180302

Lab Sample ID: 440-204619-10
Date Collected: 03/02/18 07:28
Matrix: Water
Date Received: 03/02/18 17:15

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:03	03/06/18 00:59	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	7.0		1.7	0.83	mg/L			03/07/18 16:32	1

Client Sample ID: LPBMP0004_20180302

Lab Sample ID: 440-204619-11
Date Collected: 03/02/18 07:45
Matrix: Water
Date Received: 03/02/18 17:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000023	ug/L		03/08/18 08:55	03/13/18 15:42	1
2,3,7,8-TCDF	ND		0.000011	0.00000019	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,7,8-PeCDD	0.00000063	J,DX q	0.000053	0.00000032	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,7,8-PeCDF	ND		0.000053	0.00000022	ug/L		03/08/18 08:55	03/13/18 15:42	1
2,3,4,7,8-PeCDF	ND		0.000053	0.00000024	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,4,7,8-HxCDD	0.0000017	J,DX q MB	0.000053	0.00000025	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,6,7,8-HxCDD	0.0000011	J,DX q	0.000053	0.00000025	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,7,8,9-HxCDD	0.0000011	J,DX q MB	0.000053	0.00000022	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,4,7,8-HxCDF	ND		0.000053	0.00000034	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,6,7,8-HxCDF	0.00000095	J,DX q	0.000053	0.00000031	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,7,8,9-HxCDF	0.00000049	J,DX MB	0.000053	0.00000023	ug/L		03/08/18 08:55	03/13/18 15:42	1
2,3,4,6,7,8-HxCDF	ND		0.000053	0.00000024	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,4,6,7,8-HpCDD	0.000020	J,DX MB	0.000053	0.00000069	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,4,6,7,8-HpCDF	0.0000076	J,DX MB	0.000053	0.00000058	ug/L		03/08/18 08:55	03/13/18 15:42	1
1,2,3,4,7,8,9-HpCDF	ND		0.000053	0.00000062	ug/L		03/08/18 08:55	03/13/18 15:42	1
OCDD	0.00020	MB	0.00011	0.00000085	ug/L		03/08/18 08:55	03/13/18 15:42	1
OCDF	0.0000089	J,DX MB	0.00011	0.00000025	ug/L		03/08/18 08:55	03/13/18 15:42	1
Total TCDD	ND		0.000011	0.00000023	ug/L		03/08/18 08:55	03/13/18 15:42	1
Total TCDF	0.00000030	J,DX	0.000011	0.00000019	ug/L		03/08/18 08:55	03/13/18 15:42	1

Client Sample ID: LPBMP0004_20180302
Date Collected: 03/02/18 07:45
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-11
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PeCDD	0.00000063	J,DX q	0.000053	0.00000032	ug/L		03/08/18 08:55	03/13/18 15:42	1
Total PeCDF	0.00000084	J,DX	0.000053	0.00000023	ug/L		03/08/18 08:55	03/13/18 15:42	1
Total HxCDD	0.0000080	J,DX q MB	0.000053	0.00000024	ug/L		03/08/18 08:55	03/13/18 15:42	1
Total HxCDF	0.0000055	J,DX q MB	0.000053	0.00000028	ug/L		03/08/18 08:55	03/13/18 15:42	1
Total HpCDD	0.000046	J,DX MB	0.000053	0.00000069	ug/L		03/08/18 08:55	03/13/18 15:42	1
Total HpCDF	0.000013	J,DX MB	0.000053	0.00000060	ug/L		03/08/18 08:55	03/13/18 15:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*76*		*25 - 164*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-2,3,7,8-TCDF	*79*		*24 - 169*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-1,2,3,7,8-PeCDD	*81*		*25 - 181*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-1,2,3,7,8-PeCDF	*77*		*24 - 185*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-2,3,4,7,8-PeCDF	*78*		*21 - 178*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-1,2,3,4,7,8-HxCDD	*79*		*32 - 141*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-1,2,3,6,7,8-HxCDD	*79*		*28 - 130*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-1,2,3,4,7,8-HxCDF	*84*		*26 - 152*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-1,2,3,6,7,8-HxCDF	*82*		*26 - 123*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-1,2,3,7,8,9-HxCDF	*84*		*29 - 147*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-2,3,4,6,7,8-HxCDF	*84*		*28 - 136*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*75*		*23 - 140*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*57*		*28 - 143*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*69*		*26 - 138*	*03/08/18 08:55*	*03/13/18 15:42*	*1*
13C-OCDD	*84*		*17 - 157*	*03/08/18 08:55*	*03/13/18 15:42*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*99*		*35 - 197*	*03/08/18 08:55*	*03/13/18 15:42*	*1*

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/14/18 14:13	03/16/18 11:05	1
Copper	13		2.0	0.50	ug/L		03/14/18 14:13	03/16/18 11:05	1
Lead	0.96	J,DX	1.0	0.50	ug/L		03/14/18 14:13	03/16/18 11:05	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 10:15	03/18/18 16:41	1
Copper	12	MB	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:41	1
Lead	ND		1.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:41	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:03	03/06/18 00:57	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:35	1

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL ISRA and BMP

TestAmerica Job ID: 440-204619-1

Client Sample ID: LPBMP0004_20180302
Date Collected: 03/02/18 07:45
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-11
Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	17		1.7	0.83	mg/L			03/07/18 16:32	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL ISRA and BMP

TestAmerica Job ID: 440-204619-1

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
Particle Size	General Sub Contract Method	NONE	SC0028

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
EPA = US Environmental Protection Agency
NONE = NONE
SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

SC0028 = PTS Laboratories, Inc, 5730 Central Crest Street, Houston, TX 77092, TEL (713)316-1800
TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022
TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL ISRA and BMP

TestAmerica Job ID: 440-204619-1

Client Sample ID: B1BMP0009_20180302

Lab Sample ID: 440-204619-1

Date Collected: 03/02/18 08:10

Matrix: Water

Date Received: 03/02/18 17:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			950.9 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B		1			212657	03/13/18 06:46	AS	TAL SAC
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	464293	03/18/18 10:15	JL	TAL IRV
Dissolved	Analysis	200.8		1			464407	03/18/18 17:04	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	464257	03/18/18 07:05	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			464409	03/18/18 17:33	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	462300	03/08/18 11:28	DB	TAL IRV
Dissolved	Analysis	245.1		1			462713	03/08/18 16:05	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	461469	03/05/18 13:20	DB	TAL IRV
Total/NA	Analysis	245.1		1			461759	03/05/18 23:45	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	400 mL	1000 mL	462119	03/07/18 16:32	HTL	TAL IRV

Client Sample ID: B1BMP0010_20180302

Lab Sample ID: 440-204619-2

Date Collected: 03/02/18 08:30

Matrix: Water

Date Received: 03/02/18 17:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			995 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B		1			212657	03/13/18 07:32	AS	TAL SAC
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	464293	03/18/18 10:15	JL	TAL IRV
Dissolved	Analysis	200.8		1			464407	03/18/18 17:02	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	464255	03/18/18 07:01	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			464803	03/20/18 16:07	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	462300	03/08/18 11:28	DB	TAL IRV
Dissolved	Analysis	245.1		1			462713	03/08/18 16:12	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	461469	03/05/18 13:20	DB	TAL IRV
Total/NA	Analysis	245.1		1			461759	03/05/18 23:38	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	400 mL	1000 mL	462119	03/07/18 16:32	HTL	TAL IRV

Client Sample ID: B1BMP0011_20180302

Lab Sample ID: 440-204619-3

Date Collected: 03/02/18 08:15

Matrix: Water

Date Received: 03/02/18 17:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			935 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B		1			212657	03/13/18 08:18	AS	TAL SAC
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	464293	03/18/18 10:15	JL	TAL IRV
Dissolved	Analysis	200.8		1			464407	03/18/18 17:00	B1H	TAL IRV

Client Sample ID: B1BMP0011_20180302

Date Collected: 03/02/18 08:15
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	464257	03/18/18 07:05	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			464409	03/18/18 17:28	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	462300	03/08/18 11:28	DB	TAL IRV
Dissolved	Analysis	245.1		1			462713	03/08/18 16:14	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	461463	03/05/18 13:18	DB	TAL IRV
Total/NA	Analysis	245.1		1			461761	03/06/18 01:14	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	600 mL	1000 mL	462119	03/07/18 16:32	HTL	TAL IRV

Client Sample ID: ILBMP0002_20180302

Date Collected: 03/02/18 09:50
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			953 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B		1			212657	03/13/18 09:04	AS	TAL SAC
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	464293	03/18/18 10:15	JL	TAL IRV
Dissolved	Analysis	200.8		1			464407	03/18/18 16:58	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	464255	03/18/18 07:01	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			464803	03/20/18 14:44	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	462300	03/08/18 11:28	DB	TAL IRV
Dissolved	Analysis	245.1		1			462713	03/08/18 16:16	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	461463	03/05/18 13:18	DB	TAL IRV
Total/NA	Analysis	245.1		1			461761	03/06/18 01:11	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	462119	03/07/18 16:32	HTL	TAL IRV

Client Sample ID: ILBMP0004_20180302

Date Collected: 03/02/18 08:00
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			936.3 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B		1			212657	03/13/18 09:50	AS	TAL SAC
Total/NA	Prep	1613B	RA		936.3 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B	RA	1			212804	03/13/18 17:59	ALM	TAL SAC
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	464293	03/18/18 10:15	JL	TAL IRV
Dissolved	Analysis	200.8		1			464407	03/18/18 16:53	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	464255	03/18/18 07:01	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			464803	03/20/18 14:52	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	462300	03/08/18 11:28	DB	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL ISRA and BMP

TestAmerica Job ID: 440-204619-1

Client Sample ID: ILBMP0004_20180302

Date Collected: 03/02/18 08:00
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	245.1		1			462713	03/08/18 16:19	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	461463	03/05/18 13:18	DB	TAL IRV
Total/NA	Analysis	245.1		1			461761	03/06/18 01:09	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	462119	03/07/18 16:32	HTL	TAL IRV

Client Sample ID: ILBMP0005_20180302

Date Collected: 03/02/18 08:50
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			927.5 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B		1			212657	03/13/18 10:36	AS	TAL SAC
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	464293	03/18/18 10:15	JL	TAL IRV
Dissolved	Analysis	200.8		1			464407	03/18/18 16:51	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	464255	03/18/18 07:01	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			464803	03/20/18 14:55	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	462300	03/08/18 11:28	DB	TAL IRV
Dissolved	Analysis	245.1		1			462713	03/08/18 16:21	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	461734	03/06/18 12:25	Q1N	TAL IRV
Total/NA	Analysis	245.1		1			462057	03/06/18 19:37	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	800 mL	1000 mL	462119	03/07/18 16:32	HTL	TAL IRV

Client Sample ID: ILBMP0008_20180302

Date Collected: 03/02/18 07:00
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			938.3 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B		1			212657	03/13/18 11:22	AS	TAL SAC
Total/NA	Prep	1613B	RA		938.3 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B	RA	1			212804	03/13/18 18:37	ALM	TAL SAC
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	464293	03/18/18 10:15	JL	TAL IRV
Dissolved	Analysis	200.8		1			464407	03/18/18 16:50	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	464255	03/18/18 07:01	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			464803	03/20/18 14:58	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	462300	03/08/18 11:28	DB	TAL IRV
Dissolved	Analysis	245.1		1			462713	03/08/18 16:28	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	461463	03/05/18 13:03	DB	TAL IRV
Total/NA	Analysis	245.1		1			461761	03/06/18 01:04	DB	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL ISRA and BMP

TestAmerica Job ID: 440-204619-1

Client Sample ID: ILBMP0008_20180302

Lab Sample ID: 440-204619-8

Date Collected: 03/02/18 07:00
Matrix: Water
Date Received: 03/02/18 17:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	300 mL	1000 mL	462119	03/07/18 16:32	HTL	TAL IRV

Client Sample ID: LPBMP0002_20180302

Lab Sample ID: 440-204619-9

Date Collected: 03/02/18 07:25
Matrix: Water
Date Received: 03/02/18 17:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			990.2 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B		1			212706	03/13/18 14:05	ALM	TAL SAC
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	464293	03/18/18 10:15	JL	TAL IRV
Dissolved	Analysis	200.8		1			464407	03/18/18 16:48	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	464255	03/18/18 07:01	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			464803	03/20/18 15:29	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	462300	03/08/18 11:28	DB	TAL IRV
Dissolved	Analysis	245.1		1			462713	03/08/18 16:30	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	461463	03/05/18 13:03	DB	TAL IRV
Total/NA	Analysis	245.1		1			461761	03/06/18 01:02	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	500 mL	1000 mL	462119	03/07/18 16:32	HTL	TAL IRV

Client Sample ID: LPBMP0003_20180302

Lab Sample ID: 440-204619-10

Date Collected: 03/02/18 07:28
Matrix: Water
Date Received: 03/02/18 17:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			965.6 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B		1			212706	03/13/18 14:53	ALM	TAL SAC
Dissolved	Filtration	FILTRATION			160 mL	160 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	464293	03/18/18 10:15	JL	TAL IRV
Dissolved	Analysis	200.8		1			464407	03/18/18 16:46	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	464255	03/18/18 07:01	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			464803	03/20/18 15:01	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			160 mL	160 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	462300	03/08/18 11:28	DB	TAL IRV
Dissolved	Analysis	245.1		1			462713	03/08/18 16:32	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	461463	03/05/18 13:03	DB	TAL IRV
Total/NA	Analysis	245.1		1			461761	03/06/18 00:59	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	600 mL	1000 mL	462119	03/07/18 16:32	HTL	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL ISRA and BMP

TestAmerica Job ID: 440-204619-1

Client Sample ID: LPBMP0004_20180302

Date Collected: 03/02/18 07:45
Date Received: 03/02/18 17:15

Lab Sample ID: 440-204619-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			939.3 mL	20.00 uL	211843	03/08/18 08:55	A1A	TAL SAC
Total/NA	Analysis	1613B		1			212706	03/13/18 15:42	ALM	TAL SAC
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	464293	03/18/18 10:15	JL	TAL IRV
Dissolved	Analysis	200.8		1			464407	03/18/18 16:41	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	463547	03/14/18 14:13	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			464044	03/16/18 11:05	MQP	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	462011	03/07/18 11:49	TQN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	462300	03/08/18 11:28	DB	TAL IRV
Dissolved	Analysis	245.1		1			462713	03/08/18 16:35	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	461463	03/05/18 13:03	DB	TAL IRV
Total/NA	Analysis	245.1		1			461761	03/06/18 00:57	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	600 mL	1000 mL	462119	03/07/18 16:32	HTL	TAL IRV

Laboratory References:

SC0028 = PTS Laboratories, Inc, 5730 Central Crest Street, Houston, TX 77092, TEL (713)316-1800

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-211843/1-A
Matrix: Water
Analysis Batch: 212657

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 211843

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000051	ug/L		03/08/18 08:55	03/13/18 04:28	1
2,3,7,8-TCDF	ND		0.000010	0.00000023	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,7,8-PeCDD	ND		0.000050	0.00000055	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,7,8-PeCDF	ND		0.000050	0.00000036	ug/L		03/08/18 08:55	03/13/18 04:28	1
2,3,4,7,8-PeCDF	ND		0.000050	0.00000040	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,4,7,8-HxCDD	0.00000150	J,DX q	0.000050	0.00000043	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.00000041	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,7,8,9-HxCDD	0.000000763	J,DX	0.000050	0.00000039	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.00000053	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.00000055	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,7,8,9-HxCDF	0.000000475	J,DX q	0.000050	0.00000027	ug/L		03/08/18 08:55	03/13/18 04:28	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.00000032	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,4,6,7,8-HpCDD	0.00000224	J,DX	0.000050	0.00000039	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,4,6,7,8-HpCDF	0.000000714	J,DX q	0.000050	0.00000042	ug/L		03/08/18 08:55	03/13/18 04:28	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.00000055	ug/L		03/08/18 08:55	03/13/18 04:28	1
OCDD	0.0000103	J,DX	0.00010	0.00000045	ug/L		03/08/18 08:55	03/13/18 04:28	1
OCDF	0.00000213	J,DX	0.00010	0.00000044	ug/L		03/08/18 08:55	03/13/18 04:28	1
Total TCDD	ND		0.000010	0.00000051	ug/L		03/08/18 08:55	03/13/18 04:28	1
Total TCDF	ND		0.000010	0.00000023	ug/L		03/08/18 08:55	03/13/18 04:28	1
Total PeCDD	ND		0.000050	0.00000055	ug/L		03/08/18 08:55	03/13/18 04:28	1
Total PeCDF	ND		0.000050	0.00000040	ug/L		03/08/18 08:55	03/13/18 04:28	1
Total HxCDD	0.00000226	J,DX q	0.000050	0.00000041	ug/L		03/08/18 08:55	03/13/18 04:28	1
Total HxCDF	0.000000475	J,DX q	0.000050	0.00000042	ug/L		03/08/18 08:55	03/13/18 04:28	1
Total HpCDD	0.00000391	J,DX q	0.000050	0.00000039	ug/L		03/08/18 08:55	03/13/18 04:28	1
Total HpCDF	0.000000714	J,DX q	0.000050	0.00000049	ug/L		03/08/18 08:55	03/13/18 04:28	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*62*		*25 - 164*	*03/08/18 08:55*	*03/13/18 04:28*	*1*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*03/08/18 08:55*	*03/13/18 04:28*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-211843/1-A
Matrix: Water
Analysis Batch: 212657

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 211843

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,7,8-PeCDD	60		25 - 181	03/08/18 08:55	03/13/18 04:28	1
13C-1,2,3,7,8-PeCDF	65		24 - 185	03/08/18 08:55	03/13/18 04:28	1
13C-2,3,4,7,8-PeCDF	65		21 - 178	03/08/18 08:55	03/13/18 04:28	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141	03/08/18 08:55	03/13/18 04:28	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130	03/08/18 08:55	03/13/18 04:28	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152	03/08/18 08:55	03/13/18 04:28	1
13C-1,2,3,6,7,8-HxCDF	54		26 - 123	03/08/18 08:55	03/13/18 04:28	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	03/08/18 08:55	03/13/18 04:28	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136	03/08/18 08:55	03/13/18 04:28	1
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	03/08/18 08:55	03/13/18 04:28	1
13C-1,2,3,4,6,7,8-HpCDF	56		28 - 143	03/08/18 08:55	03/13/18 04:28	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138	03/08/18 08:55	03/13/18 04:28	1
13C-OCDD	52		17 - 157	03/08/18 08:55	03/13/18 04:28	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	102		35 - 197	03/08/18 08:55	03/13/18 04:28	1

Lab Sample ID: LCS 320-211843/2-A
Matrix: Water
Analysis Batch: 212657

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 211843

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000200		ug/L		100	67 - 158
2,3,7,8-TCDF	0.000200	0.000178		ug/L		89	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00101		ug/L		101	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000909		ug/L		91	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000933		ug/L		93	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000919	MB	ug/L		92	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000868		ug/L		87	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000922	MB	ug/L		92	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000932		ug/L		93	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000928		ug/L		93	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000928	MB	ug/L		93	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000926		ug/L		93	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000996	MB	ug/L		100	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000911	MB	ug/L		91	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000886		ug/L		89	78 - 138
OCDD	0.00200	0.00191	MB	ug/L		95	78 - 144
OCDF	0.00200	0.00178	MB	ug/L		89	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	70		20 - 175
13C-2,3,7,8-TCDF	76		22 - 152
13C-1,2,3,7,8-PeCDD	67		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,7,8-PeCDF	72		13 - 328
13C-1,2,3,4,7,8-HxCDD	64		21 - 193
13C-1,2,3,6,7,8-HxCDD	65		25 - 163

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-211843/2-A
Matrix: Water
Analysis Batch: 212657

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 211843

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,7,8-HxCDF	58		19 - 202
13C-1,2,3,6,7,8-HxCDF	59		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	57		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	61		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	60		20 - 186
13C-OCDD	56		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	103		31 - 191

Lab Sample ID: LCSD 320-211843/3-A
Matrix: Water
Analysis Batch: 212657

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 211843

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD			0.000200	0.000202		ug/L		101	67 - 158	1	50
2,3,7,8-TCDF			0.000200	0.000183		ug/L		91	75 - 158	3	50
1,2,3,7,8-PeCDD			0.00100	0.00103		ug/L		103	70 - 142	2	50
1,2,3,7,8-PeCDF			0.00100	0.000942		ug/L		94	80 - 134	4	50
2,3,4,7,8-PeCDF			0.00100	0.000963		ug/L		96	68 - 160	3	50
1,2,3,4,7,8-HxCDD			0.00100	0.000916	MB	ug/L		92	70 - 164	0	50
1,2,3,6,7,8-HxCDD			0.00100	0.000895		ug/L		89	76 - 134	3	50
1,2,3,7,8,9-HxCDD			0.00100	0.000950	MB	ug/L		95	64 - 162	3	50
1,2,3,4,7,8-HxCDF			0.00100	0.000950		ug/L		95	72 - 134	2	50
1,2,3,6,7,8-HxCDF			0.00100	0.000946		ug/L		95	84 - 130	2	50
1,2,3,7,8,9-HxCDF			0.00100	0.000947	MB	ug/L		95	78 - 130	2	50
2,3,4,6,7,8-HxCDF			0.00100	0.000964		ug/L		96	70 - 156	4	50
1,2,3,4,6,7,8-HpCDD			0.00100	0.00101	MB	ug/L		101	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF			0.00100	0.000916	MB	ug/L		92	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF			0.00100	0.000905		ug/L		91	78 - 138	2	50
OCDD			0.00200	0.00190	MB	ug/L		95	78 - 144	0	50
OCDF			0.00200	0.00179	MB	ug/L		89	63 - 170	0	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-2,3,7,8-TCDD	75		20 - 175
13C-2,3,7,8-TCDF	80		22 - 152
13C-1,2,3,7,8-PeCDD	72		21 - 227
13C-1,2,3,7,8-PeCDF	77		21 - 192
13C-2,3,4,7,8-PeCDF	77		13 - 328
13C-1,2,3,4,7,8-HxCDD	69		21 - 193
13C-1,2,3,6,7,8-HxCDD	69		25 - 163
13C-1,2,3,4,7,8-HxCDF	61		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	63		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	61		26 - 166

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-211843/3-A
Matrix: Water
Analysis Batch: 212657

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 211843

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*65*		*20 - 186*
13C-OCDD	*59*		*13 - 199*

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*106*		*31 - 191*

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-463547/1-A
Matrix: Water
Analysis Batch: 464044

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 463547

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/14/18 14:13	03/16/18 10:59	1
Copper	ND		2.0	0.50	ug/L		03/14/18 14:13	03/16/18 10:59	1
Lead	ND		1.0	0.50	ug/L		03/14/18 14:13	03/16/18 10:59	1

Lab Sample ID: LCS 440-463547/2-A
Matrix: Water
Analysis Batch: 464044

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 463547

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	75.0		ug/L		94	85 - 115
Copper	80.0	74.2		ug/L		93	85 - 115
Lead	80.0	74.5		ug/L		93	85 - 115

Lab Sample ID: 440-204619-11 MS
Matrix: Water
Analysis Batch: 464044

Client Sample ID: LPBMP0004_20180302
Prep Type: Total Recoverable
Prep Batch: 463547

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	73.2		ug/L		92	70 - 130
Copper	13		80.0	86.4		ug/L		92	70 - 130
Lead	0.96	J,DX	80.0	74.3		ug/L		92	70 - 130

Lab Sample ID: 440-204619-11 MSD
Matrix: Water
Analysis Batch: 464044

Client Sample ID: LPBMP0004_20180302
Prep Type: Total Recoverable
Prep Batch: 463547

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	76.6		ug/L		96	70 - 130	4	20
Copper	13		80.0	91.4		ug/L		98	70 - 130	6	20
Lead	0.96	J,DX	80.0	78.1		ug/L		96	70 - 130	5	20

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-464255/1-A
Matrix: Water
Analysis Batch: 464803

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 464255

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 07:01	03/20/18 14:38	1
Copper	ND		2.0	0.50	ug/L		03/18/18 07:01	03/20/18 14:38	1
Lead	ND		1.0	0.50	ug/L		03/18/18 07:01	03/20/18 14:38	1

Lab Sample ID: LCS 440-464255/2-A
Matrix: Water
Analysis Batch: 464803

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 464255

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	72.7		ug/L		91	85 - 115
Copper	80.0	71.3		ug/L		89	85 - 115
Lead	80.0	71.4		ug/L		89	85 - 115

Lab Sample ID: 440-204619-4 MS
Matrix: Water
Analysis Batch: 464803

Client Sample ID: ILBMP0002_20180302
Prep Type: Total Recoverable
Prep Batch: 464255

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	77.3		ug/L		97	70 - 130
Copper	9.3		80.0	85.6		ug/L		95	70 - 130
Lead	37		80.0	122		ug/L		106	70 - 130

Lab Sample ID: 440-204619-4 MSD
Matrix: Water
Analysis Batch: 464803

Client Sample ID: ILBMP0002_20180302
Prep Type: Total Recoverable
Prep Batch: 464255

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	74.3		ug/L		93	70 - 130	4	20
Copper	9.3		80.0	82.4		ug/L		91	70 - 130	4	20
Lead	37		80.0	114		ug/L		96	70 - 130	6	20

Lab Sample ID: 440-204619-9 MS
Matrix: Water
Analysis Batch: 464803

Client Sample ID: LPBMP0002_20180302
Prep Type: Total Recoverable
Prep Batch: 464255

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	71.8		ug/L		90	70 - 130
Copper	9.5		80.0	84.8		ug/L		94	70 - 130
Lead	1.1		80.0	72.5		ug/L		89	70 - 130

Lab Sample ID: 440-204619-9 MSD
Matrix: Water
Analysis Batch: 464803

Client Sample ID: LPBMP0002_20180302
Prep Type: Total Recoverable
Prep Batch: 464255

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	73.2		ug/L		91	70 - 130	2	20
Copper	9.5		80.0	80.4		ug/L		89	70 - 130	5	20
Lead	1.1		80.0	73.3		ug/L		90	70 - 130	1	20

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-464257/1-A
Matrix: Water
Analysis Batch: 464409

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 464257

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 07:05	03/18/18 17:25	1
Copper	1.01	J,DX	2.0	0.50	ug/L		03/18/18 07:05	03/18/18 17:25	1
Lead	ND		1.0	0.50	ug/L		03/18/18 07:05	03/18/18 17:25	1

Lab Sample ID: LCS 440-464257/2-A
Matrix: Water
Analysis Batch: 464409

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 464257

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	77.9		ug/L		97	85 - 115
Copper	80.0	78.5		ug/L		98	85 - 115
Lead	80.0	78.0		ug/L		97	85 - 115

Lab Sample ID: 440-204619-3 MS
Matrix: Water
Analysis Batch: 464409

Client Sample ID: B1BMP0011_20180302
Prep Type: Total Recoverable
Prep Batch: 464257

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	78.8		ug/L		98	70 - 130
Copper	3.6	MB	80.0	83.2		ug/L		100	70 - 130
Lead	0.57	J,DX	80.0	79.4		ug/L		99	70 - 130

Lab Sample ID: 440-204619-3 MSD
Matrix: Water
Analysis Batch: 464409

Client Sample ID: B1BMP0011_20180302
Prep Type: Total Recoverable
Prep Batch: 464257

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	81.3		ug/L		102	70 - 130	3	20
Copper	3.6	MB	80.0	85.6		ug/L		103	70 - 130	3	20
Lead	0.57	J,DX	80.0	81.0		ug/L		101	70 - 130	2	20

Lab Sample ID: MB 440-462011/1-C
Matrix: Water
Analysis Batch: 464407

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 464293

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/18/18 10:15	03/18/18 16:37	1
Copper	0.745	J,DX	2.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:37	1
Lead	ND		1.0	0.50	ug/L		03/18/18 10:15	03/18/18 16:37	1

Lab Sample ID: LCS 440-462011/2-C
Matrix: Water
Analysis Batch: 464407

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 464293

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	75.0		ug/L		94	85 - 115
Copper	80.0	76.6		ug/L		96	85 - 115
Lead	80.0	75.4		ug/L		94	85 - 115

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-204619-11 MS
Matrix: Water
Analysis Batch: 464407

Client Sample ID: LPBMP0004_20180302
Prep Type: Dissolved
Prep Batch: 464293

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	71.4		ug/L		89	70 - 130
Copper	12	MB	80.0	85.8		ug/L		92	70 - 130
Lead	ND		80.0	72.9		ug/L		91	70 - 130

Lab Sample ID: 440-204619-11 MSD
Matrix: Water
Analysis Batch: 464407

Client Sample ID: LPBMP0004_20180302
Prep Type: Dissolved
Prep Batch: 464293

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	72.9		ug/L		91	70 - 130	2	20
Copper	12	MB	80.0	85.1		ug/L		91	70 - 130	1	20
Lead	ND		80.0	73.3		ug/L		92	70 - 130	1	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-461463/1-A
Matrix: Water
Analysis Batch: 461761

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 461463

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:03	03/06/18 00:10	1

Lab Sample ID: LCS 440-461463/2-A
Matrix: Water
Analysis Batch: 461761

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 461463

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	7.19		ug/L		90	85 - 115

Lab Sample ID: 440-204651-A-3-B MS
Matrix: Water
Analysis Batch: 461761

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 461463

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	6.85		ug/L		86	70 - 130

Lab Sample ID: 440-204651-A-3-C MSD
Matrix: Water
Analysis Batch: 461761

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 461463

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	7.01		ug/L		88	70 - 130	2	20

Lab Sample ID: MB 440-461469/1-A
Matrix: Water
Analysis Batch: 461759

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 461469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/05/18 13:20	03/05/18 23:33	1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-461469/2-A
Matrix: Water
Analysis Batch: 461759

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 461469

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			8.00	7.02		ug/L		88	85 - 115		

Lab Sample ID: 440-204619-2 MS
Matrix: Water
Analysis Batch: 461759

Client Sample ID: B1BMP0010_20180302
Prep Type: Total/NA
Prep Batch: 461469

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		8.00	7.16		ug/L		90	70 - 130		

Lab Sample ID: 440-204619-2 MSD
Matrix: Water
Analysis Batch: 461759

Client Sample ID: B1BMP0010_20180302
Prep Type: Total/NA
Prep Batch: 461469

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	7.14		ug/L		89	70 - 130	0	20

Lab Sample ID: MB 440-461734/1-A
Matrix: Water
Analysis Batch: 462057

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 461734

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/06/18 12:25	03/06/18 19:20	1

Lab Sample ID: LCS 440-461734/2-A
Matrix: Water
Analysis Batch: 462057

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 461734

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			8.00	8.14		ug/L		102	85 - 115		

Lab Sample ID: 440-204673-X-1-C MS
Matrix: Water
Analysis Batch: 462057

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 461734

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		8.00	8.12		ug/L		102	70 - 130		

Lab Sample ID: 440-204673-X-1-D MSD
Matrix: Water
Analysis Batch: 462057

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 461734

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.15		ug/L		102	70 - 130	0	20

Lab Sample ID: MB 440-462011/1-B
Matrix: Water
Analysis Batch: 462713

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 462300

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/08/18 11:28	03/08/18 16:00	1

Lab Sample ID: LCS 440-462011/2-B
Matrix: Water
Analysis Batch: 462713

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 462300

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			8.00	7.27		ug/L		91	85 - 115		

Lab Sample ID: 440-204619-1 MS
Matrix: Water
Analysis Batch: 462713

Client Sample ID: B1BMP0009_20180302
Prep Type: Dissolved
Prep Batch: 462300

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		8.00	7.26		ug/L		91	70 - 130		

Lab Sample ID: 440-204619-1 MSD
Matrix: Water
Analysis Batch: 462713

Client Sample ID: B1BMP0009_20180302
Prep Type: Dissolved
Prep Batch: 462300

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	7.32		ug/L		92	70 - 130	1	20

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-462119/1
Matrix: Water
Analysis Batch: 462119

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			03/07/18 16:32	1

Lab Sample ID: LCS 440-462119/2
Matrix: Water
Analysis Batch: 462119

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			1000	983		mg/L		98	85 - 115		

Lab Sample ID: 440-204661-K-1 DU
Matrix: Water
Analysis Batch: 462119

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	1300			1330		mg/L				7	10

Lab Sample ID: 440-204704-A-2 DU
Matrix: Water
Analysis Batch: 462119

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	59			56.7		mg/L				5	10

Specialty Organics

Prep Batch: 211843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Total/NA	Water	1613B	
440-204619-2	B1BMP0010_20180302	Total/NA	Water	1613B	
440-204619-3	B1BMP0011_20180302	Total/NA	Water	1613B	
440-204619-4	ILBMP0002_20180302	Total/NA	Water	1613B	
440-204619-5	ILBMP0004_20180302	Total/NA	Water	1613B	
440-204619-5 - RA	ILBMP0004_20180302	Total/NA	Water	1613B	
440-204619-6	ILBMP0005_20180302	Total/NA	Water	1613B	
440-204619-8	ILBMP0008_20180302	Total/NA	Water	1613B	
440-204619-8 - RA	ILBMP0008_20180302	Total/NA	Water	1613B	
440-204619-9	LPBMP0002_20180302	Total/NA	Water	1613B	
440-204619-10	LPBMP0003_20180302	Total/NA	Water	1613B	
440-204619-11	LPBMP0004_20180302	Total/NA	Water	1613B	
MB 320-211843/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-211843/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-211843/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 212657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Total/NA	Water	1613B	211843
440-204619-2	B1BMP0010_20180302	Total/NA	Water	1613B	211843
440-204619-3	B1BMP0011_20180302	Total/NA	Water	1613B	211843
440-204619-4	ILBMP0002_20180302	Total/NA	Water	1613B	211843
440-204619-5	ILBMP0004_20180302	Total/NA	Water	1613B	211843
440-204619-6	ILBMP0005_20180302	Total/NA	Water	1613B	211843
440-204619-8	ILBMP0008_20180302	Total/NA	Water	1613B	211843
MB 320-211843/1-A	Method Blank	Total/NA	Water	1613B	211843
LCS 320-211843/2-A	Lab Control Sample	Total/NA	Water	1613B	211843
LCSD 320-211843/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	211843

Analysis Batch: 212706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-9	LPBMP0002_20180302	Total/NA	Water	1613B	211843
440-204619-10	LPBMP0003_20180302	Total/NA	Water	1613B	211843
440-204619-11	LPBMP0004_20180302	Total/NA	Water	1613B	211843

Analysis Batch: 212804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-5 - RA	ILBMP0004_20180302	Total/NA	Water	1613B	211843
440-204619-8 - RA	ILBMP0008_20180302	Total/NA	Water	1613B	211843

Metals

Prep Batch: 461463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-3	B1BMP0011_20180302	Total/NA	Water	245.1	
440-204619-4	ILBMP0002_20180302	Total/NA	Water	245.1	
440-204619-5	ILBMP0004_20180302	Total/NA	Water	245.1	
440-204619-8	ILBMP0008_20180302	Total/NA	Water	245.1	
440-204619-9	LPBMP0002_20180302	Total/NA	Water	245.1	
440-204619-10	LPBMP0003_20180302	Total/NA	Water	245.1	

Metals (Continued)

Prep Batch: 461463 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-11	LPBMP0004_20180302	Total/NA	Water	245.1	
MB 440-461463/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-461463/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-204651-A-3-B MS	Matrix Spike	Total/NA	Water	245.1	
440-204651-A-3-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Prep Batch: 461469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Total/NA	Water	245.1	
440-204619-2	B1BMP0010_20180302	Total/NA	Water	245.1	
MB 440-461469/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-461469/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-204619-2 MS	B1BMP0010_20180302	Total/NA	Water	245.1	
440-204619-2 MSD	B1BMP0010_20180302	Total/NA	Water	245.1	

Prep Batch: 461734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-6	ILBMP0005_20180302	Total/NA	Water	245.1	
MB 440-461734/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-461734/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-204673-X-1-C MS	Matrix Spike	Total/NA	Water	245.1	
440-204673-X-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 461759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Total/NA	Water	245.1	461469
440-204619-2	B1BMP0010_20180302	Total/NA	Water	245.1	461469
MB 440-461469/1-A	Method Blank	Total/NA	Water	245.1	461469
LCS 440-461469/2-A	Lab Control Sample	Total/NA	Water	245.1	461469
440-204619-2 MS	B1BMP0010_20180302	Total/NA	Water	245.1	461469
440-204619-2 MSD	B1BMP0010_20180302	Total/NA	Water	245.1	461469

Analysis Batch: 461761

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-3	B1BMP0011_20180302	Total/NA	Water	245.1	461463
440-204619-4	ILBMP0002_20180302	Total/NA	Water	245.1	461463
440-204619-5	ILBMP0004_20180302	Total/NA	Water	245.1	461463
440-204619-8	ILBMP0008_20180302	Total/NA	Water	245.1	461463
440-204619-9	LPBMP0002_20180302	Total/NA	Water	245.1	461463
440-204619-10	LPBMP0003_20180302	Total/NA	Water	245.1	461463
440-204619-11	LPBMP0004_20180302	Total/NA	Water	245.1	461463
MB 440-461463/1-A	Method Blank	Total/NA	Water	245.1	461463
LCS 440-461463/2-A	Lab Control Sample	Total/NA	Water	245.1	461463
440-204651-A-3-B MS	Matrix Spike	Total/NA	Water	245.1	461463
440-204651-A-3-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	461463

Filtration Batch: 462011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Dissolved	Water	FILTRATION	
440-204619-2	B1BMP0010_20180302	Dissolved	Water	FILTRATION	
440-204619-3	B1BMP0011_20180302	Dissolved	Water	FILTRATION	

Metals (Continued)

Filtration Batch: 462011 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-4	ILBMP0002_20180302	Dissolved	Water	FILTRATION	
440-204619-5	ILBMP0004_20180302	Dissolved	Water	FILTRATION	
440-204619-6	ILBMP0005_20180302	Dissolved	Water	FILTRATION	
440-204619-8	ILBMP0008_20180302	Dissolved	Water	FILTRATION	
440-204619-9	LPBMP0002_20180302	Dissolved	Water	FILTRATION	
440-204619-10	LPBMP0003_20180302	Dissolved	Water	FILTRATION	
440-204619-11	LPBMP0004_20180302	Dissolved	Water	FILTRATION	
MB 440-462011/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-462011/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-462011/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-462011/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
440-204619-1 MS	B1BMP0009_20180302	Dissolved	Water	FILTRATION	
440-204619-1 MSD	B1BMP0009_20180302	Dissolved	Water	FILTRATION	
440-204619-11 MS	LPBMP0004_20180302	Dissolved	Water	FILTRATION	
440-204619-11 MSD	LPBMP0004_20180302	Dissolved	Water	FILTRATION	

Analysis Batch: 462057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-6	ILBMP0005_20180302	Total/NA	Water	245.1	461734
MB 440-461734/1-A	Method Blank	Total/NA	Water	245.1	461734
LCS 440-461734/2-A	Lab Control Sample	Total/NA	Water	245.1	461734
440-204673-X-1-C MS	Matrix Spike	Total/NA	Water	245.1	461734
440-204673-X-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	461734

Prep Batch: 462300

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Dissolved	Water	245.1	462011
440-204619-2	B1BMP0010_20180302	Dissolved	Water	245.1	462011
440-204619-3	B1BMP0011_20180302	Dissolved	Water	245.1	462011
440-204619-4	ILBMP0002_20180302	Dissolved	Water	245.1	462011
440-204619-5	ILBMP0004_20180302	Dissolved	Water	245.1	462011
440-204619-6	ILBMP0005_20180302	Dissolved	Water	245.1	462011
440-204619-8	ILBMP0008_20180302	Dissolved	Water	245.1	462011
440-204619-9	LPBMP0002_20180302	Dissolved	Water	245.1	462011
440-204619-10	LPBMP0003_20180302	Dissolved	Water	245.1	462011
440-204619-11	LPBMP0004_20180302	Dissolved	Water	245.1	462011
MB 440-462011/1-B	Method Blank	Dissolved	Water	245.1	462011
LCS 440-462011/2-B	Lab Control Sample	Dissolved	Water	245.1	462011
440-204619-1 MS	B1BMP0009_20180302	Dissolved	Water	245.1	462011
440-204619-1 MSD	B1BMP0009_20180302	Dissolved	Water	245.1	462011

Analysis Batch: 462713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Dissolved	Water	245.1	462300
440-204619-2	B1BMP0010_20180302	Dissolved	Water	245.1	462300
440-204619-3	B1BMP0011_20180302	Dissolved	Water	245.1	462300
440-204619-4	ILBMP0002_20180302	Dissolved	Water	245.1	462300
440-204619-5	ILBMP0004_20180302	Dissolved	Water	245.1	462300
440-204619-6	ILBMP0005_20180302	Dissolved	Water	245.1	462300
440-204619-8	ILBMP0008_20180302	Dissolved	Water	245.1	462300
440-204619-9	LPBMP0002_20180302	Dissolved	Water	245.1	462300

Metals (Continued)

Analysis Batch: 462713 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-10	LPBMP0003_20180302	Dissolved	Water	245.1	462300
440-204619-11	LPBMP0004_20180302	Dissolved	Water	245.1	462300
MB 440-462011/1-B	Method Blank	Dissolved	Water	245.1	462300
LCS 440-462011/2-B	Lab Control Sample	Dissolved	Water	245.1	462300
440-204619-1 MS	B1BMP0009_20180302	Dissolved	Water	245.1	462300
440-204619-1 MSD	B1BMP0009_20180302	Dissolved	Water	245.1	462300

Prep Batch: 463547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-11	LPBMP0004_20180302	Total Recoverable	Water	200.2	
MB 440-463547/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-463547/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-204619-11 MS	LPBMP0004_20180302	Total Recoverable	Water	200.2	
440-204619-11 MSD	LPBMP0004_20180302	Total Recoverable	Water	200.2	

Analysis Batch: 464044

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-11	LPBMP0004_20180302	Total Recoverable	Water	200.8	463547
MB 440-463547/1-A	Method Blank	Total Recoverable	Water	200.8	463547
LCS 440-463547/2-A	Lab Control Sample	Total Recoverable	Water	200.8	463547
440-204619-11 MS	LPBMP0004_20180302	Total Recoverable	Water	200.8	463547
440-204619-11 MSD	LPBMP0004_20180302	Total Recoverable	Water	200.8	463547

Prep Batch: 464255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-2	B1BMP0010_20180302	Total Recoverable	Water	200.2	
440-204619-4	ILBMP0002_20180302	Total Recoverable	Water	200.2	
440-204619-5	ILBMP0004_20180302	Total Recoverable	Water	200.2	
440-204619-6	ILBMP0005_20180302	Total Recoverable	Water	200.2	
440-204619-8	ILBMP0008_20180302	Total Recoverable	Water	200.2	
440-204619-9	LPBMP0002_20180302	Total Recoverable	Water	200.2	
440-204619-10	LPBMP0003_20180302	Total Recoverable	Water	200.2	
MB 440-464255/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-464255/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-204619-4 MS	ILBMP0002_20180302	Total Recoverable	Water	200.2	
440-204619-4 MSD	ILBMP0002_20180302	Total Recoverable	Water	200.2	
440-204619-9 MS	LPBMP0002_20180302	Total Recoverable	Water	200.2	
440-204619-9 MSD	LPBMP0002_20180302	Total Recoverable	Water	200.2	

Prep Batch: 464257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Total Recoverable	Water	200.2	
440-204619-3	B1BMP0011_20180302	Total Recoverable	Water	200.2	
MB 440-464257/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-464257/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-204619-3 MS	B1BMP0011_20180302	Total Recoverable	Water	200.2	
440-204619-3 MSD	B1BMP0011_20180302	Total Recoverable	Water	200.2	

Prep Batch: 464293

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Dissolved	Water	200.2	462011

Metals (Continued)

Prep Batch: 464293 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-2	B1BMP0010_20180302	Dissolved	Water	200.2	462011
440-204619-3	B1BMP0011_20180302	Dissolved	Water	200.2	462011
440-204619-4	ILBMP0002_20180302	Dissolved	Water	200.2	462011
440-204619-5	ILBMP0004_20180302	Dissolved	Water	200.2	462011
440-204619-6	ILBMP0005_20180302	Dissolved	Water	200.2	462011
440-204619-8	ILBMP0008_20180302	Dissolved	Water	200.2	462011
440-204619-9	LPBMP0002_20180302	Dissolved	Water	200.2	462011
440-204619-10	LPBMP0003_20180302	Dissolved	Water	200.2	462011
440-204619-11	LPBMP0004_20180302	Dissolved	Water	200.2	462011
MB 440-462011/1-C	Method Blank	Dissolved	Water	200.2	462011
LCS 440-462011/2-C	Lab Control Sample	Dissolved	Water	200.2	462011
440-204619-11 MS	LPBMP0004_20180302	Dissolved	Water	200.2	462011
440-204619-11 MSD	LPBMP0004_20180302	Dissolved	Water	200.2	462011

Analysis Batch: 464407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Dissolved	Water	200.8	464293
440-204619-2	B1BMP0010_20180302	Dissolved	Water	200.8	464293
440-204619-3	B1BMP0011_20180302	Dissolved	Water	200.8	464293
440-204619-4	ILBMP0002_20180302	Dissolved	Water	200.8	464293
440-204619-5	ILBMP0004_20180302	Dissolved	Water	200.8	464293
440-204619-6	ILBMP0005_20180302	Dissolved	Water	200.8	464293
440-204619-8	ILBMP0008_20180302	Dissolved	Water	200.8	464293
440-204619-9	LPBMP0002_20180302	Dissolved	Water	200.8	464293
440-204619-10	LPBMP0003_20180302	Dissolved	Water	200.8	464293
440-204619-11	LPBMP0004_20180302	Dissolved	Water	200.8	464293
MB 440-462011/1-C	Method Blank	Dissolved	Water	200.8	464293
LCS 440-462011/2-C	Lab Control Sample	Dissolved	Water	200.8	464293
440-204619-11 MS	LPBMP0004_20180302	Dissolved	Water	200.8	464293
440-204619-11 MSD	LPBMP0004_20180302	Dissolved	Water	200.8	464293

Analysis Batch: 464409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Total Recoverable	Water	200.8	464257
440-204619-3	B1BMP0011_20180302	Total Recoverable	Water	200.8	464257
MB 440-464257/1-A	Method Blank	Total Recoverable	Water	200.8	464257
LCS 440-464257/2-A	Lab Control Sample	Total Recoverable	Water	200.8	464257
440-204619-3 MS	B1BMP0011_20180302	Total Recoverable	Water	200.8	464257
440-204619-3 MSD	B1BMP0011_20180302	Total Recoverable	Water	200.8	464257

Analysis Batch: 464803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-2	B1BMP0010_20180302	Total Recoverable	Water	200.8	464255
440-204619-4	ILBMP0002_20180302	Total Recoverable	Water	200.8	464255
440-204619-5	ILBMP0004_20180302	Total Recoverable	Water	200.8	464255
440-204619-6	ILBMP0005_20180302	Total Recoverable	Water	200.8	464255
440-204619-8	ILBMP0008_20180302	Total Recoverable	Water	200.8	464255
440-204619-9	LPBMP0002_20180302	Total Recoverable	Water	200.8	464255
440-204619-10	LPBMP0003_20180302	Total Recoverable	Water	200.8	464255
MB 440-464255/1-A	Method Blank	Total Recoverable	Water	200.8	464255
LCS 440-464255/2-A	Lab Control Sample	Total Recoverable	Water	200.8	464255

Metals (Continued)

Analysis Batch: 464803 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-4 MS	ILBMP0002_20180302	Total Recoverable	Water	200.8	464255
440-204619-4 MSD	ILBMP0002_20180302	Total Recoverable	Water	200.8	464255
440-204619-9 MS	LPBMP0002_20180302	Total Recoverable	Water	200.8	464255
440-204619-9 MSD	LPBMP0002_20180302	Total Recoverable	Water	200.8	464255

General Chemistry

Analysis Batch: 462119

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-204619-1	B1BMP0009_20180302	Total/NA	Water	SM 2540D	
440-204619-2	B1BMP0010_20180302	Total/NA	Water	SM 2540D	
440-204619-3	B1BMP0011_20180302	Total/NA	Water	SM 2540D	
440-204619-4	ILBMP0002_20180302	Total/NA	Water	SM 2540D	
440-204619-5	ILBMP0004_20180302	Total/NA	Water	SM 2540D	
440-204619-6	ILBMP0005_20180302	Total/NA	Water	SM 2540D	
440-204619-8	ILBMP0008_20180302	Total/NA	Water	SM 2540D	
440-204619-9	LPBMP0002_20180302	Total/NA	Water	SM 2540D	
440-204619-10	LPBMP0003_20180302	Total/NA	Water	SM 2540D	
440-204619-11	LPBMP0004_20180302	Total/NA	Water	SM 2540D	
MB 440-462119/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-462119/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-204661-K-1 DU	Duplicate	Total/NA	Water	SM 2540D	
440-204704-A-2 DU	Duplicate	Total/NA	Water	SM 2540D	

Qualifiers

Dioxin

Qualifier	Qualifier Description
MB	Analyte present in the method blank
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
MB	Analyte present in the method blank
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

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)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL ISRA and BMP

TestAmerica Job ID: 440-204619-1

Laboratory: TestAmerica Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica Sacramento

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	17-020	01-20-21
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-18 *
Kansas	NELAP	7	E-10375	10-31-18
L-A-B	DoD ELAP		L2468	01-20-21
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-14-18
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-18
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-18 *
Texas	NELAP	6	T104704399	05-31-18
US Fish & Wildlife	Federal		LE148388-0	07-31-18
USDA	Federal		P330-11-00436	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18 *
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

PTS Laboratories, Inc.

5730 Centralcrest St. • Houston, TX 77092
Telephone (713) 316-1800 • Fax (877) 225-9953

March 7, 2018

Patel Urvashi,
Project Manager,
TestAmerica Irvine.
17461 Derian Ave. Suite 100,
Irvine, CA 92614-5817

Re: PTS File No: 48048
Project Name: Boeing SSFL ISRA and BMP
Project Number: 44009815
Laser Particle Size Analyses

Dear Patel Urvashi:

Please find enclosed report for Physical Properties analyses conducted upon samples received from the above referenced project.
All analyses were performed by ASTM D4464 methodology. The samples are currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact myself or Emeka Anazodo at (713) 316-1800.

Sincerely,
PTS Laboratories, Inc.

Rick Schweizer

Rick Schweizer
Laboratory Supervisor

Encl.

PTS Laboratories

Project Name: Boeing SSFL ISRA and BMP
Project Number: 44009815

PTS File No: 48048
Client: TestAmerica Irvine

TEST PROGRAM - 20180307

FLUID ID	Date	Time (Pacific)	Fluid Type	Particle Size: Microsize			Comments
			Method:	ASTM D4464			
Date Received: 20180306							
B1BMP0009_20180302 (440-204619-1)	03/02/18	0810	Water	X			950cc Plastic Bottle
B1BMP0010_20180302 (440-204619-2)	03/02/18	0830	Water	X			950cc Plastic Bottle
B1BMP0011_20180302 (440-204619-3)	03/02/18	0815	Water	X			950cc Plastic Bottle
ILBMP0002_20180302 (440-204619-4)	03/02/18	0950	Water	X			950cc Plastic Bottle
ILBMP0004_20180302 (440-204619-5)	03/02/18	0800	Water	X			950cc Plastic Bottle
ILBMP0005_20180302 (440-204619-6)	03/02/18	0850	Water	X			950cc Plastic Bottle
ILBMP0008_20180302 (440-204619-8)	03/02/18	0700	Water	X			950cc Plastic Bottle
LPBMP0002_20180302 (440-204619-9)	03/02/18	0725	Water	X			950cc Plastic Bottle
LPBMP0003_20180302 (440-204619-10)	03/02/18	0728	Water	X			950cc Plastic Bottle
LPBMP0004_20180302 (440-204619-11)	03/02/18	0745	Water	X			950cc Plastic Bottle
FBQW0049_20180302 (440204619-B-12)	03/02/18	1140	Water	HOLD			1 litre Glass Amber (Not included in Original COC but clarified in email of 03-07-18)
TOTALS:				11			

Laboratory Test Program Notes
Standard TAT for basic analysis is 10-15 business days.
Water samples to be disposed 15 days after completion of analyses.

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D4464M)

PROJECT NAME: Boeing SSFL ISRA and BMP
PROJECT NO: 44009815

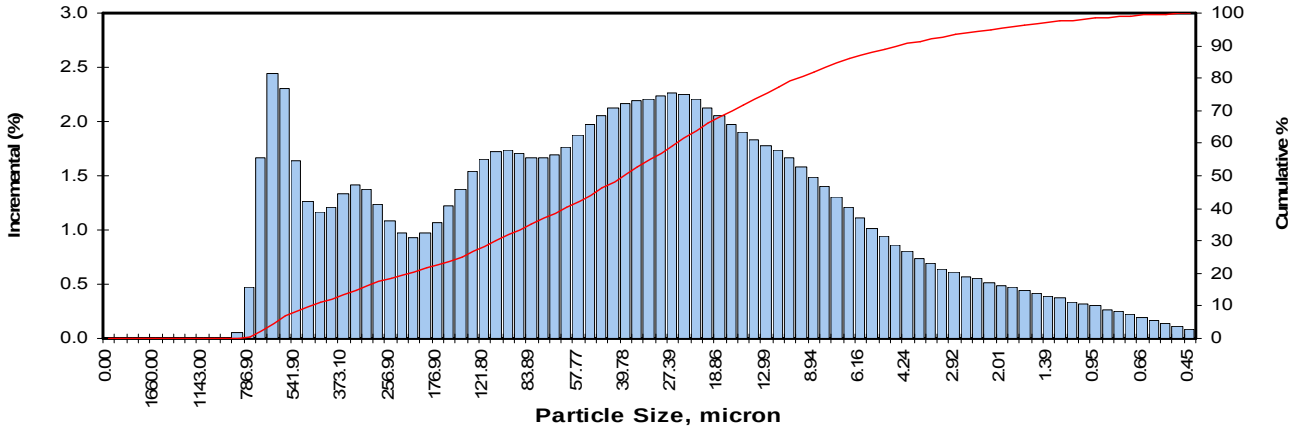
Sample ID	Matrix	Median Grain Size, micron (1)	CUMULATIVE PERCENT GREATER THAN Distribution percent, microns										
			5%	10%	16%	25%	40%	50%	60%	75%	84%	90%	95%
B1BMP0009-20180302 (440-204619-1)	Aqueous	34.365	539.845	409.948	263.707	125.450	54.550	34.365	21.502	9.452	5.039	1.812	1.056
B1BMP0010-20180302 (440-204619-2)	Aqueous	9.222	115.277	99.958	87.139	71.119	26.627	9.222	5.198	1.656	1.149	0.820	0.529
B1BMP0011-20180302 (440-204619-3)	Aqueous	71.109	320.502	198.775	140.071	109.784	84.377	71.109	55.883	22.368	9.415	4.452	1.404
ILBMP0002-20180302 (440-204619-4)	Aqueous	10.433	106.508	73.080	54.464	33.017	16.159	10.433	7.544	2.792	1.385	0.919	0.518
ILBMP0004-20180302 (440-204619-5)	Aqueous	14.165	88.397	71.232	55.266	37.575	20.785	14.165	9.499	4.822	1.855	1.230	0.748
ILBMP0005-20180302 (440-204619-6)	Aqueous	8.838	138.861	116.312	97.455	75.473	20.395	8.838	5.839	2.162	1.330	0.983	0.523
ILBMP0008-20180302 (440-204619-8)	Aqueous	9.320	78.816	65.437	51.496	26.043	13.033	9.320	6.798	2.856	1.560	1.137	0.706
LBMP0002-20180302 (440-204619-9)	Aqueous	11.873	81.183	68.257	57.159	39.089	19.020	11.873	8.383	3.870	1.771	1.210	0.725
LBMP0003-20180302 (440-204619-10)	Aqueous	36.941	98.090	87.162	79.520	69.692	54.673	36.941	16.916	6.583	2.808	1.517	1.006
LBMP0004-20180302 (440-204619-11)	Aqueous	47.718	121.763	101.237	88.612	77.177	61.254	47.718	20.015	4.507	1.698	1.140	0.639

(1) Based on Trask Median

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48048
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	B1BMP0009-20180302 (440-204619-1)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.05	0.1
786.90	0.47	0.5
716.80	1.66	2.2
653.00	2.44	4.6
594.90	2.30	6.9
541.90	1.64	8.6
493.60	1.27	9.8
449.70	1.17	11.0
409.60	1.21	12.2
373.10	1.33	13.5
339.90	1.41	15.0
309.60	1.38	16.3
282.10	1.24	17.6
256.90	1.09	18.7
234.10	0.97	19.6
213.20	0.93	20.6
194.20	0.97	21.5
176.90	1.07	22.6
161.20	1.22	23.8
146.80	1.38	25.2
133.70	1.54	26.7
121.80	1.65	28.4
111.00	1.72	30.1
101.10	1.74	31.9
92.09	1.71	33.6
83.89	1.67	35.2
76.42	1.66	36.9
69.61	1.69	38.6

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	1.76	40.3
57.77	1.87	42.2
52.62	1.97	44.2
47.94	2.06	46.2
43.67	2.12	48.4
39.78	2.16	50.5
36.24	2.19	52.7
33.01	2.21	54.9
30.07	2.24	57.2
27.39	2.26	59.4
24.95	2.25	61.7
22.73	2.21	63.9
20.70	2.13	66.0
18.86	2.05	68.1
17.18	1.97	70.0
15.65	1.90	71.9
14.26	1.84	73.8
12.99	1.78	75.6
11.83	1.73	77.3
10.78	1.66	78.9
9.82	1.58	80.5
8.94	1.49	82.0
8.15	1.40	83.4
7.42	1.30	84.7
6.76	1.21	85.9
6.16	1.11	87.0
5.61	1.02	88.1
5.11	0.94	89.0
4.66	0.86	89.9
4.24	0.80	90.7
3.86	0.74	91.4
3.52	0.69	92.1
3.21	0.64	92.7
2.92	0.61	93.3
2.66	0.57	93.9
2.42	0.55	94.5
2.21	0.52	95.0
2.01	0.49	95.5
1.83	0.47	95.9

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.440	96.4
1.520	0.420	96.8
1.385	0.390	97.2
1.261	0.370	97.6
1.149	0.340	97.9
1.047	0.320	98.2
0.953	0.300	98.5
0.868	0.270	98.8
0.791	0.250	99.0
0.721	0.220	99.3
0.656	0.190	99.4
0.598	0.170	99.6
0.545	0.140	99.8
0.496	0.110	99.9
0.452	0.077	99.9
TOTALS:	**99.94**	**99.9**

Measure	Trask	Inman
Median, mm	0.0344	0.0344
Median, micron	34.365	34.365
Mean, mm	0.0675	0.0365
Mean, micron	67.451	36.452
Sorting	3.6432	2.855
Skewness	1.0020	-0.030
Kurtosis	0.1421	0.576

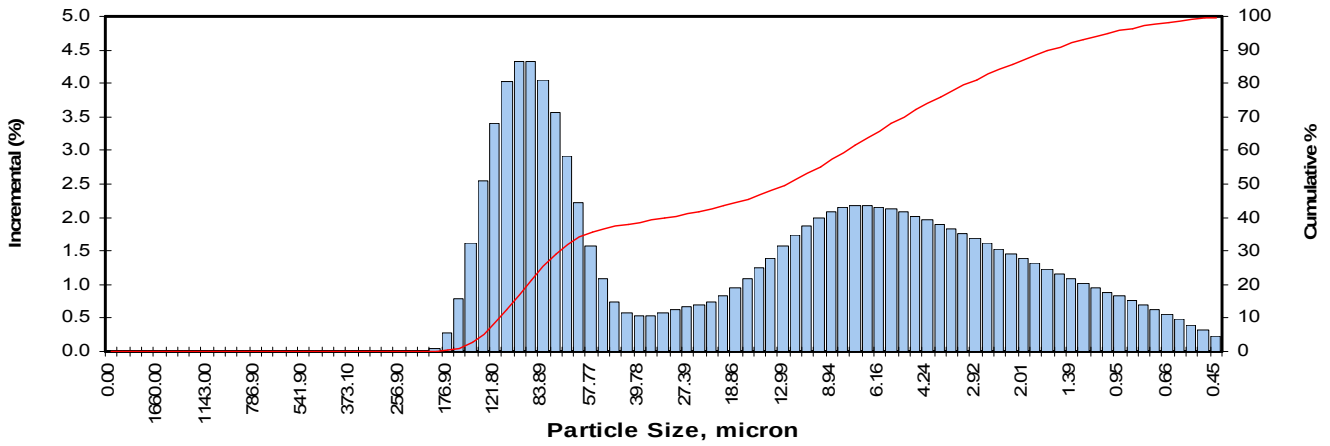
Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	539.845	0.5398
10	409.948	0.4099
16	263.707	0.2637
25	125.450	0.1255
40	54.550	0.0545
50	34.365	0.0344
60	21.502	0.0215
75	9.452	0.0095
84	5.039	0.0050
90	1.812	0.0018
95	1.056	0.0011

Phone: (562) 907-3607
Fax: (562) 907-3611

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48048
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	B1BMP0010-20180302 (440-204619-2)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	2.22	34.1	1.668	1.230	89.7
0.00	0.00	0.0	57.77	1.58	35.7	1.520	1.160	90.9
2000.00	0.00	0.0	52.62	1.08	36.8	1.385	1.090	92.0
1822.00	0.00	0.0	47.94	0.75	37.5	1.261	1.020	93.0
1660.00	0.00	0.0	43.67	0.58	38.1	1.149	0.960	94.0
1512.00	0.00	0.0	39.78	0.53	38.6	1.047	0.890	94.9
1377.00	0.00	0.0	36.24	0.54	39.2	0.953	0.830	95.7
1255.00	0.00	0.0	33.01	0.58	39.7	0.868	0.760	96.4
1143.00	0.00	0.0	30.07	0.63	40.4	0.791	0.700	97.1
1041.00	0.00	0.0	27.39	0.66	41.0	0.721	0.620	97.8
948.30	0.00	0.0	24.95	0.70	41.7	0.656	0.550	98.3
863.90	0.00	0.0	22.73	0.75	42.5	0.598	0.480	98.8
786.90	0.00	0.0	20.70	0.83	43.3	0.545	0.400	99.2
716.80	0.00	0.0	18.86	0.94	44.3	0.496	0.320	99.5
653.00	0.00	0.0	17.18	1.08	45.3	0.452	0.220	99.7
594.90	0.00	0.0	15.65	1.24	46.6	**TOTALS:**	**99.74**	**99.7**
541.90	0.00	0.0	14.26	1.40	48.0			
493.60	0.00	0.0	12.99	1.57	49.5			
449.70	0.00	0.0	11.83	1.73	51.3			
409.60	0.00	0.0	10.78	1.88	53.2			
373.10	0.00	0.0	9.82	2.00	55.2			
339.90	0.00	0.0	8.94	2.09	57.2			
309.60	0.00	0.0	8.15	2.15	59.4			
282.10	0.00	0.0	7.42	2.17	61.6			
256.90	0.00	0.0	6.76	2.17	63.7			
234.10	0.00	0.0	6.16	2.16	65.9			
213.20	0.00	0.0	5.61	2.12	68.0			
194.20	0.05	0.0	5.11	2.08	70.1			
176.90	0.27	0.3	4.66	2.02	72.1			
161.20	0.79	1.1	4.24	1.96	74.1			
146.80	1.62	2.7	3.86	1.89	76.0			
133.70	2.55	5.3	3.52	1.82	77.8			
121.80	3.40	8.7	3.21	1.75	79.5			
111.00	4.02	12.7	2.92	1.68	81.2			
101.10	4.33	17.0	2.66	1.61	82.8			
92.09	4.33	21.4	2.42	1.53	84.4			
83.89	4.05	25.4	2.21	1.46	85.8			
76.42	3.56	29.0	2.01	1.38	87.2			
69.61	2.92	31.9	1.83	1.31	88.5			

Measure	Trask	Inman
Median, mm	0.0092	0.0092
Median, micron	9.222	9.222
Mean, mm	0.0364	0.0100
Mean, micron	36.387	10.006
Sorting	6.5537	3.122
Skewness	1.1767	-0.038
Kurtosis	0.3503	0.244

Distribution percent	Cumulative Percent greater than Particle Size	
	Micron	Millimeters
5	115.277	0.1153
10	99.958	0.1000
16	87.139	0.0871
25	71.119	0.0711
40	26.627	0.0266
50	9.222	0.0092
60	5.198	0.0052
75	1.656	0.0017
84	1.149	0.0011
90	0.820	0.0008
95	0.529	0.0005

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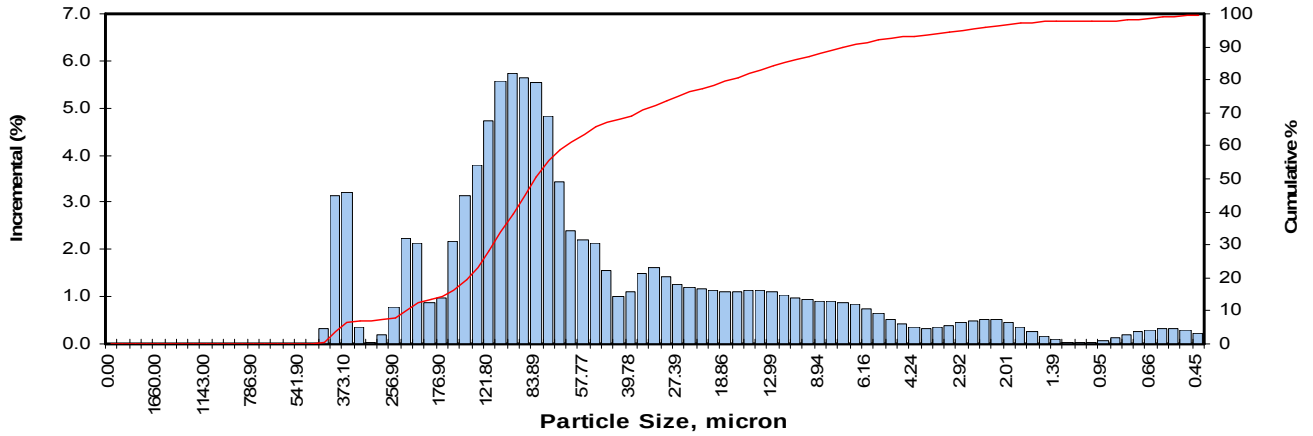
Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48048
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	B1BMP0011-20180302 (440-204619-3)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.34	0.3
409.60	3.14	3.5
373.10	3.20	6.7
339.90	0.36	7.0
309.60	0.02	7.1
282.10	0.18	7.2
256.90	0.79	8.0
234.10	2.25	10.3
213.20	2.14	12.4
194.20	0.86	13.3
176.90	0.96	14.2
161.20	2.17	16.4
146.80	3.15	19.6
133.70	3.79	23.4
121.80	4.73	28.1
111.00	5.57	33.7
101.10	5.73	39.4
92.09	5.64	45.0
83.89	5.53	50.6
76.42	4.82	55.4
69.61	3.43	58.8

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	2.41	61.2
57.77	2.21	63.4
52.62	2.13	65.6
47.94	1.54	67.1
43.67	1.02	68.1
39.78	1.10	69.2
36.24	1.50	70.7
33.01	1.61	72.3
30.07	1.42	73.7
27.39	1.25	75.0
24.95	1.19	76.2
22.73	1.16	77.3
20.70	1.12	78.5
18.86	1.10	79.6
17.18	1.11	80.7
15.65	1.13	81.8
14.26	1.14	82.9
12.99	1.11	84.1
11.83	1.04	85.1
10.78	0.97	86.1
9.82	0.93	87.0
8.94	0.92	87.9
8.15	0.91	88.8
7.42	0.89	89.7
6.76	0.83	90.5
6.16	0.75	91.3
5.61	0.64	91.9
5.11	0.52	92.5
4.66	0.42	92.9
4.24	0.35	93.2
3.86	0.33	93.6
3.52	0.35	93.9
3.21	0.40	94.3
2.92	0.45	94.8
2.66	0.50	95.3
2.42	0.52	95.8
2.21	0.51	96.3
2.01	0.46	96.7
1.83	0.37	97.1

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.270	97.4
1.520	0.170	97.6
1.385	0.090	97.6
1.261	0.037	97.7
1.149	0.019	97.7
1.047	0.027	97.7
0.953	0.064	97.8
0.868	0.120	97.9
0.791	0.190	98.1
0.721	0.250	98.3
0.656	0.290	98.6
0.598	0.310	98.9
0.545	0.310	99.3
0.496	0.280	99.5
0.452	0.220	99.8
TOTALS:	**99.76**	**99.8**

Measure	Trask	Inman
Median, mm	0.0711	0.0711
Median, micron	71.109	71.109
Mean, mm	0.0661	0.0363
Mean, micron	66.076	36.314
Sorting	2.2154	1.948
Skewness	0.6969	0.498
Kurtosis	0.2249	1.012

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	320.502	0.3205
10	198.775	0.1988
16	140.071	0.1401
25	109.784	0.1098
40	84.377	0.0844
50	71.109	0.0711
60	55.883	0.0559
75	22.368	0.0224
84	9.415	0.0094
90	4.452	0.0045
95	1.404	0.0014

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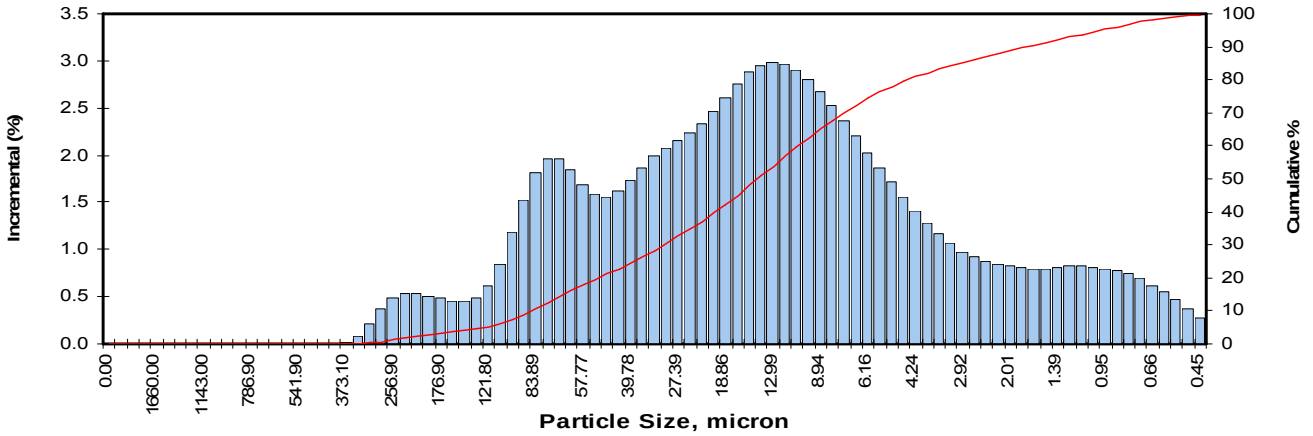
Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48048
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	ILBMP0002-20180302 (440-204619-4)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.02	0.0
339.90	0.08	0.1
309.60	0.21	0.3
282.10	0.37	0.7
256.90	0.48	1.2
234.10	0.54	1.7
213.20	0.54	2.2
194.20	0.51	2.8
176.90	0.48	3.2
161.20	0.45	3.7
146.80	0.45	4.1
133.70	0.49	4.6
121.80	0.62	5.2
111.00	0.85	6.1
101.10	1.18	7.3
92.09	1.53	8.8
83.89	1.82	10.6
76.42	1.96	12.6
69.61	1.96	14.5

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	1.84	16.4
57.77	1.69	18.1
52.62	1.59	19.7
47.94	1.56	21.2
43.67	1.62	22.8
39.78	1.73	24.6
36.24	1.87	26.4
33.01	1.99	28.4
30.07	2.08	30.5
27.39	2.16	32.7
24.95	2.23	34.9
22.73	2.33	37.2
20.70	2.46	39.7
18.86	2.61	42.3
17.18	2.75	45.1
15.65	2.88	47.9
14.26	2.95	50.9
12.99	2.98	53.9
11.83	2.96	56.8
10.78	2.90	59.7
9.82	2.80	62.5
8.94	2.67	65.2
8.15	2.52	67.7
7.42	2.37	70.1
6.76	2.20	72.3
6.16	2.03	74.3
5.61	1.87	76.2
5.11	1.71	77.9
4.66	1.55	79.4
4.24	1.41	80.9
3.86	1.28	82.1
3.52	1.16	83.3
3.21	1.07	84.4
2.92	0.98	85.3
2.66	0.92	86.3
2.42	0.87	87.1
2.21	0.84	88.0
2.01	0.82	88.8
1.83	0.81	89.6

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.800	90.4
1.520	0.800	91.2
1.385	0.810	92.0
1.261	0.820	92.8
1.149	0.820	93.7
1.047	0.810	94.5
0.953	0.800	95.3
0.868	0.770	96.0
0.791	0.740	96.8
0.721	0.690	97.5
0.656	0.620	98.1
0.598	0.550	98.6
0.545	0.470	99.1
0.496	0.380	99.5
0.452	0.270	99.8
TOTALS:	**99.75**	**99.8**

Measure	Trask	Inman
Median, mm	0.0104	0.0104
Median, micron	10.433	10.433
Mean, mm	0.0179	0.0087
Mean, micron	17.905	8.686
Sorting	3.4386	2.649
Skewness	0.9203	0.100
Kurtosis	0.2094	0.451

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	106.508	0.1065
10	73.080	0.0731
16	54.464	0.0545
25	33.017	0.0330
40	16.159	0.0162
50	10.433	0.0104
60	7.544	0.0075
75	2.792	0.0028
84	1.385	0.0014
90	0.919	0.0009
95	0.518	0.0005

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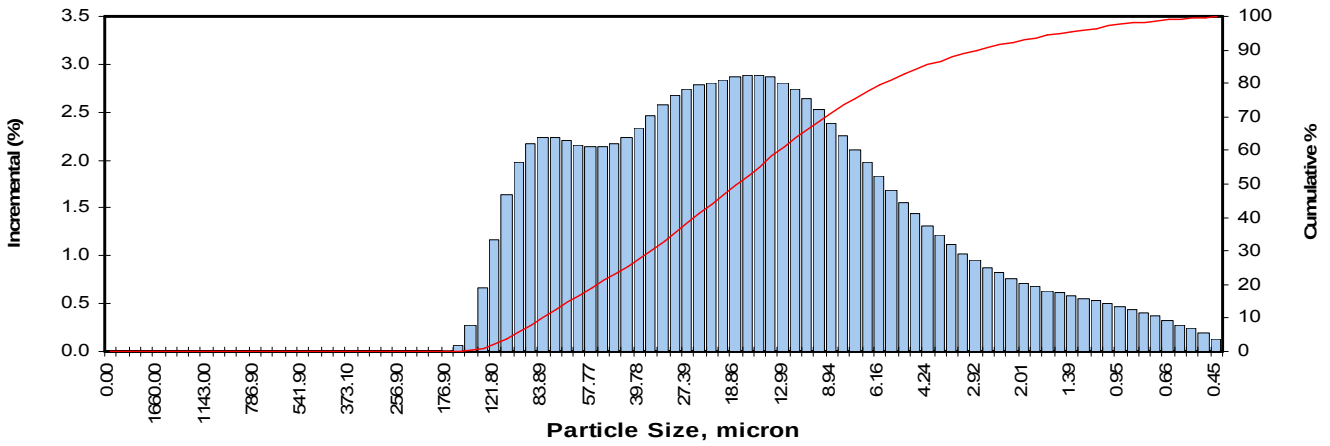
Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48048
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	ILBMP0004-20180302 (440-204619-5)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.00	0.0
256.90	0.00	0.0
234.10	0.00	0.0
213.20	0.00	0.0
194.20	0.00	0.0
176.90	0.01	0.0
161.20	0.07	0.1
146.80	0.28	0.4
133.70	0.67	1.0
121.80	1.17	2.2
111.00	1.63	3.8
101.10	1.97	5.8
92.09	2.17	8.0
83.89	2.24	10.2
76.42	2.23	12.4
69.61	2.20	14.6

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	2.16	16.8
57.77	2.14	18.9
52.62	2.14	21.1
47.94	2.17	23.2
43.67	2.24	25.5
39.78	2.34	27.8
36.24	2.46	30.3
33.01	2.57	32.9
30.07	2.67	35.5
27.39	2.74	38.3
24.95	2.78	41.0
22.73	2.81	43.9
20.70	2.84	46.7
18.86	2.86	49.6
17.18	2.88	52.4
15.65	2.88	55.3
14.26	2.86	58.2
12.99	2.81	61.0
11.83	2.74	63.7
10.78	2.64	66.4
9.82	2.52	68.9
8.94	2.39	71.3
8.15	2.26	73.5
7.42	2.11	75.6
6.76	1.97	77.6
6.16	1.83	79.4
5.61	1.69	81.1
5.11	1.56	82.7
4.66	1.44	84.1
4.24	1.32	85.5
3.86	1.21	86.7
3.52	1.11	87.8
3.21	1.02	88.8
2.92	0.95	89.7
2.66	0.88	90.6
2.42	0.82	91.4
2.21	0.76	92.2
2.01	0.72	92.9
1.83	0.68	93.6

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.640	94.2
1.520	0.610	94.9
1.385	0.580	95.4
1.261	0.550	96.0
1.149	0.530	96.5
1.047	0.500	97.0
0.953	0.470	97.5
0.868	0.440	97.9
0.791	0.400	98.3
0.721	0.370	98.7
0.656	0.320	99.0
0.598	0.280	99.3
0.545	0.240	99.5
0.496	0.190	99.7
0.452	0.130	99.9
TOTALS:	**99.86**	**99.9**

Measure	Trask	Inman
Median, mm	0.0142	0.0142
Median, micron	14.165	14.165
Mean, mm	0.0212	0.0101
Mean, micron	21.199	10.125
Sorting	2.7915	2.448
Skewness	0.9503	0.198
Kurtosis	0.2339	0.406

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	88.397	0.0884
10	71.232	0.0712
16	55.266	0.0553
25	37.575	0.0376
40	20.785	0.0208
50	14.165	0.0142
60	9.499	0.0095
75	4.822	0.0048
84	1.855	0.0019
90	1.230	0.0012
95	0.748	0.0007

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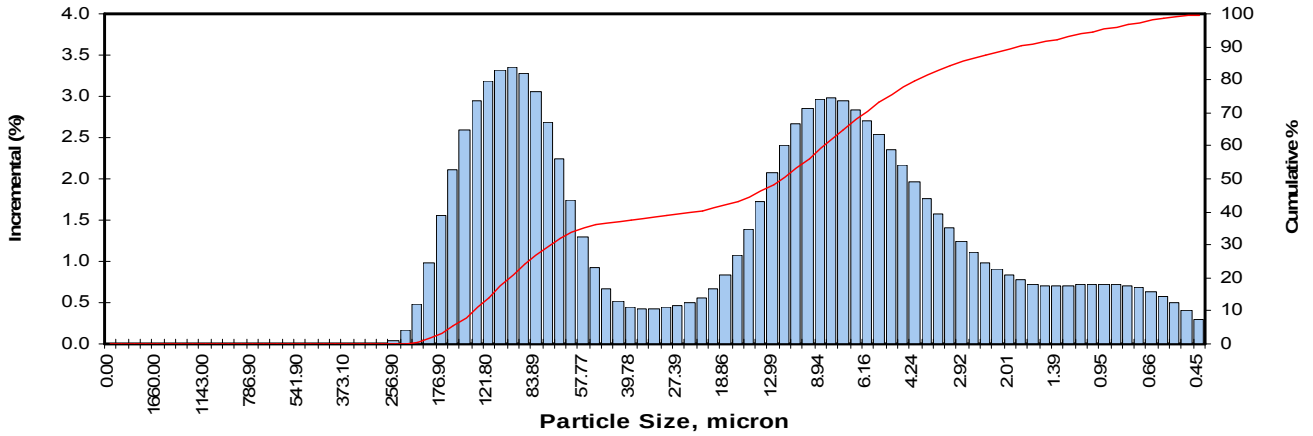
PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48048
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	ILBMP0005-20180302 (440-204619-6)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.00	0.0
256.90	0.03	0.0
234.10	0.17	0.2
213.20	0.49	0.7
194.20	0.99	1.7
176.90	1.56	3.2
161.20	2.12	5.4
146.80	2.59	8.0
133.70	2.94	10.9
121.80	3.18	14.1
111.00	3.32	17.4
101.10	3.35	20.7
92.09	3.27	24.0
83.89	3.05	27.1
76.42	2.69	29.8
69.61	2.24	32.0

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	1.75	33.7
57.77	1.30	35.0
52.62	0.93	36.0
47.94	0.67	36.6
43.67	0.52	37.2
39.78	0.45	37.6
36.24	0.43	38.0
33.01	0.43	38.5
30.07	0.44	38.9
27.39	0.46	39.4
24.95	0.50	39.9
22.73	0.56	40.4
20.70	0.67	41.1
18.86	0.84	41.9
17.18	1.08	43.0
15.65	1.39	44.4
14.26	1.73	46.1
12.99	2.08	48.2
11.83	2.41	50.6
10.78	2.67	53.3
9.82	2.86	56.2
8.94	2.96	59.1
8.15	2.98	62.1
7.42	2.94	65.0
6.76	2.84	67.9
6.16	2.70	70.6
5.61	2.54	73.1
5.11	2.35	75.5
4.66	2.16	77.6
4.24	1.96	79.6
3.86	1.76	81.4
3.52	1.57	82.9
3.21	1.40	84.3
2.92	1.25	85.6
2.66	1.11	86.7
2.42	0.99	87.7
2.21	0.90	88.6
2.01	0.83	89.4
1.83	0.77	90.2

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.730	90.9
1.520	0.710	91.6
1.385	0.710	92.3
1.261	0.710	93.0
1.149	0.720	93.8
1.047	0.720	94.5
0.953	0.730	95.2
0.868	0.730	95.9
0.791	0.710	96.6
0.721	0.680	97.3
0.656	0.630	98.0
0.598	0.570	98.5
0.545	0.500	99.0
0.496	0.400	99.4
0.452	0.290	99.7
TOTALS:	**99.71**	**99.7**

Measure	Trask	Inman
Median, mm	0.0088	0.0088
Median, micron	8.838	8.838
Mean, mm	0.0388	0.0114
Mean, micron	38.817	11.384
Sorting	5.9088	3.098
Skewness	1.4452	-0.118
Kurtosis	0.3178	0.300

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	138.861	0.1389
10	116.312	0.1163
16	97.455	0.0975
25	75.473	0.0755
40	20.395	0.0204
50	8.838	0.0088
60	5.839	0.0058
75	2.162	0.0022
84	1.330	0.0013
90	0.983	0.0010
95	0.523	0.0005

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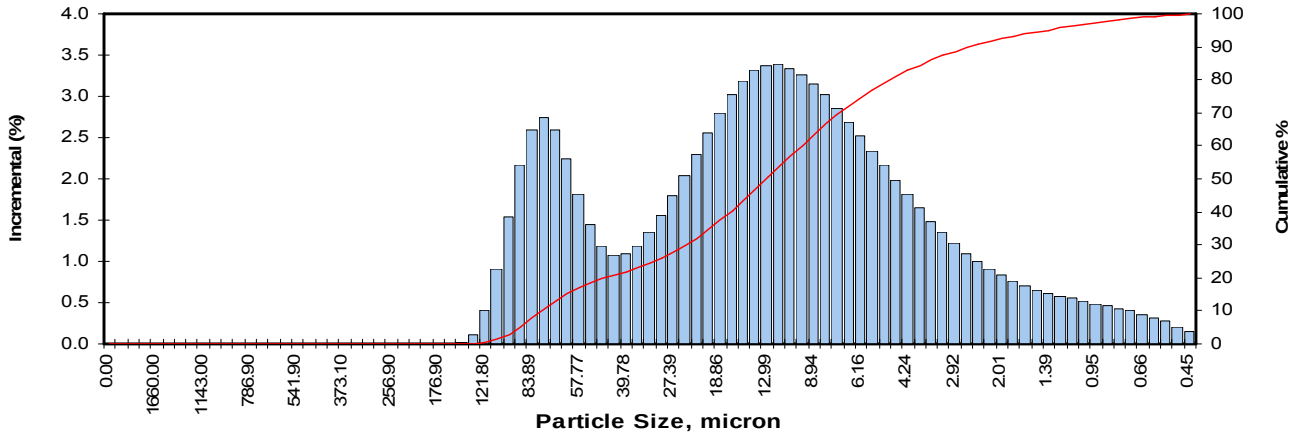
Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48048
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	ILBMP0008-20180302 (440-204619-8)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	2.24	15.3	1.668	0.700	93.8
0.00	0.00	0.0	57.77	1.81	17.1	1.520	0.650	94.5
2000.00	0.00	0.0	52.62	1.44	18.6	1.385	0.620	95.1
1822.00	0.00	0.0	47.94	1.19	19.7	1.261	0.580	95.7
1660.00	0.00	0.0	43.67	1.07	20.8	1.149	0.550	96.2
1512.00	0.00	0.0	39.78	1.09	21.9	1.047	0.520	96.8
1377.00	0.00	0.0	36.24	1.19	23.1	0.953	0.490	97.3
1255.00	0.00	0.0	33.01	1.36	24.5	0.868	0.460	97.7
1143.00	0.00	0.0	30.07	1.56	26.0	0.791	0.430	98.1
1041.00	0.00	0.0	27.39	1.79	27.8	0.721	0.400	98.5
948.30	0.00	0.0	24.95	2.03	29.8	0.656	0.350	98.9
863.90	0.00	0.0	22.73	2.29	32.1	0.598	0.310	99.2
786.90	0.00	0.0	20.70	2.55	34.7	0.545	0.270	99.5
716.80	0.00	0.0	18.86	2.79	37.5	0.496	0.210	99.7
653.00	0.00	0.0	17.18	3.01	40.5	0.452	0.150	99.8
594.90	0.00	0.0	15.65	3.19	43.7	**TOTALS:**	**99.84**	**99.8**
541.90	0.00	0.0	14.26	3.31	47.0			
493.60	0.00	0.0	12.99	3.37	50.3			
449.70	0.00	0.0	11.83	3.38	53.7			
409.60	0.00	0.0	10.78	3.34	57.1			
373.10	0.00	0.0	9.82	3.26	60.3			
339.90	0.00	0.0	8.94	3.15	63.5			
309.60	0.00	0.0	8.15	3.01	66.5			
282.10	0.00	0.0	7.42	2.86	69.3			
256.90	0.00	0.0	6.76	2.69	72.0			
234.10	0.00	0.0	6.16	2.52	74.6			
213.20	0.00	0.0	5.61	2.34	76.9			
194.20	0.00	0.0	5.11	2.16	79.1			
176.90	0.00	0.0	4.66	1.98	81.0			
161.20	0.00	0.0	4.24	1.81	82.8			
146.80	0.02	0.0	3.86	1.64	84.5			
133.70	0.12	0.1	3.52	1.49	86.0			
121.80	0.40	0.5	3.21	1.35	87.3			
111.00	0.91	1.4	2.92	1.22	88.5			
101.10	1.54	3.0	2.66	1.10	89.6			
92.09	2.16	5.1	2.42	1.00	90.6			
83.89	2.59	7.7	2.21	0.91	91.6			
76.42	2.74	10.5	2.01	0.83	92.4			
69.61	2.59	13.1	1.83	0.76	93.1			

Measure	Trask	Inman
Median, mm	0.0093	0.0093
Median, micron	9.320	9.320
Mean, mm	0.0144	0.0090
Mean, micron	14.449	8.964
Sorting	3.0200	2.522
Skewness	0.9253	0.022
Kurtosis	0.1803	0.349

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	78.816	0.0788
10	65.437	0.0654
16	51.496	0.0515
25	26.043	0.0260
40	13.033	0.0130
50	9.320	0.0093
60	6.798	0.0068
75	2.856	0.0029
84	1.560	0.0016
90	1.137	0.0011
95	0.706	0.0007

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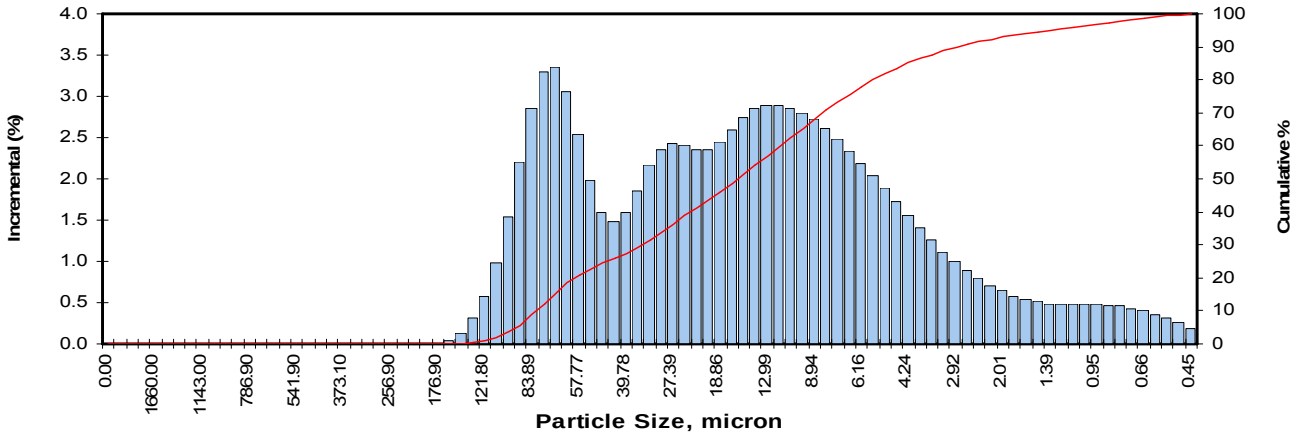
Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48048
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	LBMP0002-20180302 (440-204619-9)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	3.06	18.3	1.668	0.540	94.0
0.00	0.00	0.0	57.77	2.53	20.9	1.520	0.510	94.5
2000.00	0.00	0.0	52.62	1.98	22.8	1.385	0.490	95.0
1822.00	0.00	0.0	47.94	1.60	24.4	1.261	0.490	95.5
1660.00	0.00	0.0	43.67	1.48	25.9	1.149	0.480	95.9
1512.00	0.00	0.0	39.78	1.59	27.5	1.047	0.480	96.4
1377.00	0.00	0.0	36.24	1.86	29.4	0.953	0.480	96.9
1255.00	0.00	0.0	33.01	2.16	31.5	0.868	0.470	97.4
1143.00	0.00	0.0	30.07	2.36	33.9	0.791	0.460	97.8
1041.00	0.00	0.0	27.39	2.43	36.3	0.721	0.430	98.3
948.30	0.00	0.0	24.95	2.40	38.7	0.656	0.400	98.7
863.90	0.00	0.0	22.73	2.35	41.1	0.598	0.360	99.0
786.90	0.00	0.0	20.70	2.36	43.4	0.545	0.320	99.3
716.80	0.00	0.0	18.86	2.45	45.9	0.496	0.260	99.6
653.00	0.00	0.0	17.18	2.59	48.5	0.452	0.180	99.8
594.90	0.00	0.0	15.65	2.74	51.2	**TOTALS:**	**99.79**	**99.8**
541.90	0.00	0.0	14.26	2.85	54.1			
493.60	0.00	0.0	12.99	2.89	57.0			
449.70	0.00	0.0	11.83	2.89	59.8			
409.60	0.00	0.0	10.78	2.86	62.7			
373.10	0.00	0.0	9.82	2.80	65.5			
339.90	0.00	0.0	8.94	2.72	68.2			
309.60	0.00	0.0	8.15	2.61	70.8			
282.10	0.00	0.0	7.42	2.48	73.3			
256.90	0.00	0.0	6.76	2.34	75.7			
234.10	0.00	0.0	6.16	2.19	77.8			
213.20	0.00	0.0	5.61	2.04	79.9			
194.20	0.00	0.0	5.11	1.88	81.8			
176.90	0.01	0.0	4.66	1.72	83.5			
161.20	0.04	0.0	4.24	1.56	85.0			
146.80	0.13	0.2	3.86	1.40	86.4			
133.70	0.31	0.5	3.52	1.26	87.7			
121.80	0.58	1.1	3.21	1.12	88.8			
111.00	0.98	2.0	2.92	1.00	89.8			
101.10	1.53	3.6	2.66	0.89	90.7			
92.09	2.20	5.8	2.42	0.79	91.5			
83.89	2.85	8.6	2.21	0.71	92.2			
76.42	3.29	11.9	2.01	0.64	92.9			
69.61	3.36	15.3	1.83	0.58	93.4			

Measure	Trask	Inman
Median, mm	0.0119	0.0119
Median, micron	11.873	11.873
Mean, mm	0.0215	0.0101
Mean, micron	21.480	10.060
Sorting	3.1781	2.506
Skewness	1.0359	0.095
Kurtosis	0.2626	0.358

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	81.183	0.0812
10	68.257	0.0683
16	57.159	0.0572
25	39.089	0.0391
40	19.020	0.0190
50	11.873	0.0119
60	8.383	0.0084
75	3.870	0.0039
84	1.771	0.0018
90	1.210	0.0012
95	0.725	0.0007

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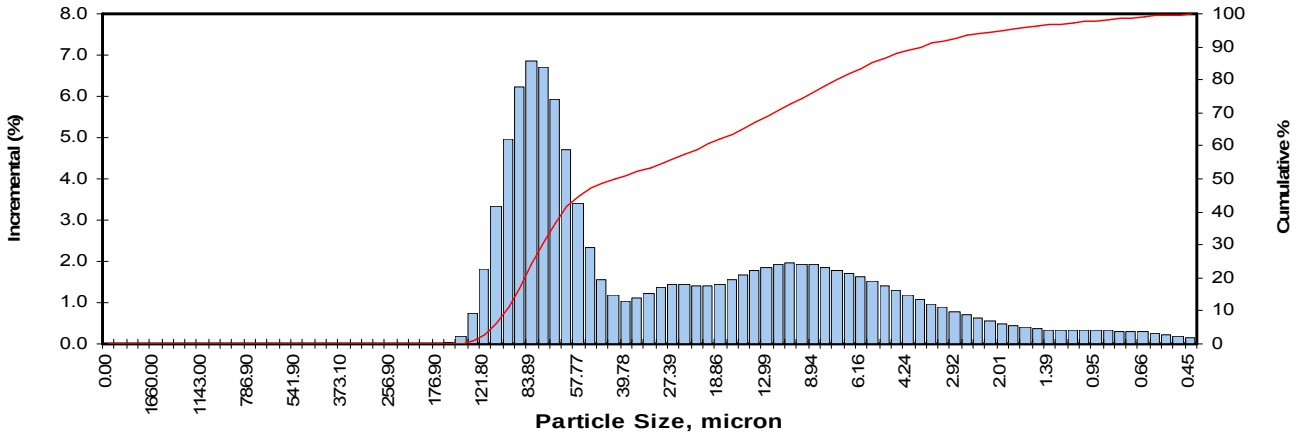
Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48048
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	LBMP0003-20180302 (440-204619-10)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	4.71	41.5	1.668	0.390	95.8
0.00	0.00	0.0	57.77	3.42	44.9	1.520	0.370	96.2
2000.00	0.00	0.0	52.62	2.32	47.2	1.385	0.350	96.6
1822.00	0.00	0.0	47.94	1.57	48.8	1.261	0.340	96.9
1660.00	0.00	0.0	43.67	1.17	50.0	1.149	0.330	97.2
1512.00	0.00	0.0	39.78	1.05	51.0	1.047	0.330	97.6
1377.00	0.00	0.0	36.24	1.11	52.1	0.953	0.320	97.9
1255.00	0.00	0.0	33.01	1.24	53.4	0.868	0.320	98.2
1143.00	0.00	0.0	30.07	1.37	54.8	0.791	0.310	98.5
1041.00	0.00	0.0	27.39	1.43	56.2	0.721	0.300	98.8
948.30	0.00	0.0	24.95	1.43	57.6	0.656	0.280	99.1
863.90	0.00	0.0	22.73	1.41	59.0	0.598	0.250	99.3
786.90	0.00	0.0	20.70	1.41	60.4	0.545	0.220	99.6
716.80	0.00	0.0	18.86	1.46	61.9	0.496	0.180	99.7
653.00	0.00	0.0	17.18	1.55	63.4	0.452	0.130	99.9
594.90	0.00	0.0	15.65	1.67	65.1	**TOTALS:**	**99.87**	**99.9**
541.90	0.00	0.0	14.26	1.79	66.9			
493.60	0.00	0.0	12.99	1.87	68.8			
449.70	0.00	0.0	11.83	1.93	70.7			
409.60	0.00	0.0	10.78	1.95	72.7			
373.10	0.00	0.0	9.82	1.94	74.6			
339.90	0.00	0.0	8.94	1.91	76.5			
309.60	0.00	0.0	8.15	1.86	78.4			
282.10	0.00	0.0	7.42	1.79	80.2			
256.90	0.00	0.0	6.76	1.71	81.9			
234.10	0.00	0.0	6.16	1.62	83.5			
213.20	0.00	0.0	5.61	1.52	85.0			
194.20	0.00	0.0	5.11	1.42	86.4			
176.90	0.00	0.0	4.66	1.31	87.7			
161.20	0.02	0.0	4.24	1.20	88.9			
146.80	0.18	0.2	3.86	1.09	90.0			
133.70	0.74	0.9	3.52	0.98	91.0			
121.80	1.83	2.8	3.21	0.88	91.9			
111.00	3.35	6.1	2.92	0.79	92.7			
101.10	4.95	11.1	2.66	0.70	93.4			
92.09	6.22	17.3	2.42	0.62	94.0			
83.89	6.86	24.2	2.21	0.55	94.5			
76.42	6.72	30.9	2.01	0.48	95.0			
69.61	5.92	36.8	1.83	0.43	95.5			

Measure	Trask	Inman
Median, mm	0.0369	0.0369
Median, micron	36.941	36.941
Mean, mm	0.0381	0.0149
Mean, micron	38.137	14.944
Sorting	3.2537	2.412
Skewness	0.5798	0.541
Kurtosis	0.3684	0.370

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	98.090	0.0981
10	87.162	0.0872
16	79.520	0.0795
25	69.692	0.0697
40	54.673	0.0547
50	36.941	0.0369
60	16.916	0.0169
75	6.583	0.0066
84	2.808	0.0028
90	1.517	0.0015
95	1.006	0.0010

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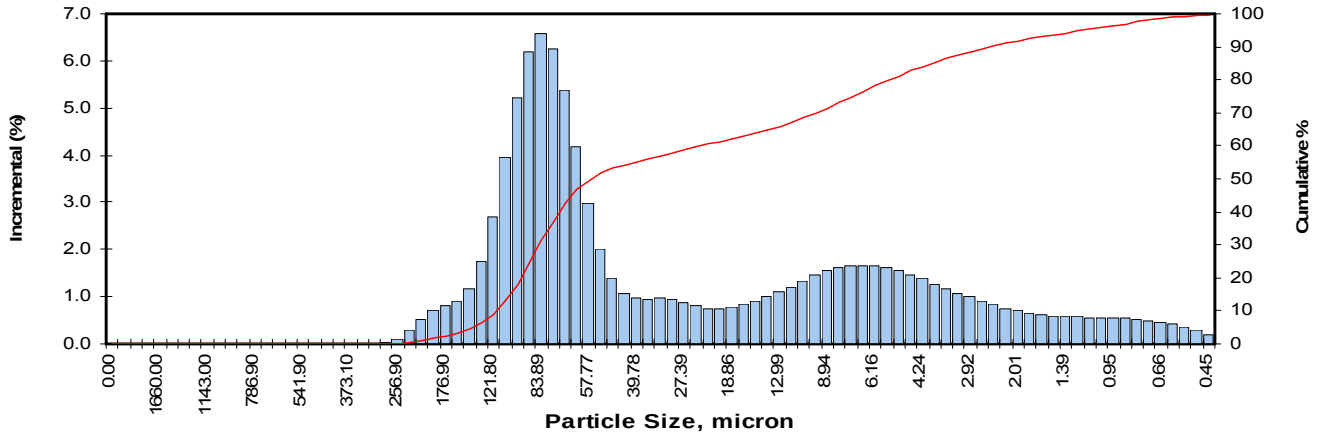
PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48048
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	LBMP0004-20180302 (440-204619-11)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.02	0.0
256.90	0.11	0.1
234.10	0.30	0.4
213.20	0.53	1.0
194.20	0.70	1.7
176.90	0.80	2.5
161.20	0.91	3.4
146.80	1.18	4.6
133.70	1.75	6.3
121.80	2.69	9.0
111.00	3.94	12.9
101.10	5.23	18.2
92.09	6.20	24.4
83.89	6.58	30.9
76.42	6.27	37.2
69.61	5.38	42.6

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	4.18	46.8
57.77	2.98	49.8
52.62	2.02	51.8
47.94	1.40	53.2
43.67	1.08	54.3
39.78	0.97	55.2
36.24	0.95	56.2
33.01	0.96	57.1
30.07	0.93	58.1
27.39	0.88	58.9
24.95	0.81	59.8
22.73	0.76	60.5
20.70	0.75	61.3
18.86	0.78	62.0
17.18	0.84	62.9
15.65	0.92	63.8
14.26	1.00	64.8
12.99	1.10	65.9
11.83	1.21	67.1
10.78	1.33	68.4
9.82	1.45	69.9
8.94	1.55	71.4
8.15	1.62	73.1
7.42	1.65	74.7
6.76	1.66	76.4
6.16	1.64	78.0
5.61	1.61	79.6
5.11	1.55	81.2
4.66	1.47	82.6
4.24	1.38	84.0
3.86	1.28	85.3
3.52	1.18	86.5
3.21	1.08	87.6
2.92	0.99	88.6
2.66	0.90	89.5
2.42	0.83	90.3
2.21	0.76	91.0
2.01	0.70	91.7
1.83	0.65	92.4

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.620	93.0
1.520	0.590	93.6
1.385	0.580	94.2
1.261	0.570	94.8
1.149	0.560	95.3
1.047	0.560	95.9
0.953	0.550	96.4
0.868	0.550	97.0
0.791	0.530	97.5
0.721	0.500	98.0
0.656	0.460	98.5
0.598	0.420	98.9
0.545	0.360	99.2
0.496	0.300	99.5
0.452	0.210	99.8
TOTALS:	**99.75**	**99.8**

Measure	Trask	Inman
Median, mm	0.0477	0.0477
Median, micron	47.718	47.718
Mean, mm	0.0408	0.0123
Mean, micron	40.842	12.265
Sorting	4.1382	2.853
Skewness	0.3908	0.687
Kurtosis	0.3630	0.328

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	121.763	0.1218
10	101.237	0.1012
16	88.612	0.0886
25	77.177	0.0772
40	61.254	0.0613
50	47.718	0.0477
60	20.015	0.0200
75	4.507	0.0045
84	1.698	0.0017
90	1.140	0.0011
95	0.639	0.0006

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Chain of Custody Record

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THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-119840.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 2
Company: PTS laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 440-204619-1
Address: 5730 Central Crest Street, ,	Due Date Requested: 3/14/2018			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77092	PO #:			
Phone: 713-316-1800(Tel)	WO #:			
Email:	Project #: 44009815			
Project Name: Boeing SSFL ISRA and BMP	SSOW#:			
Site:				

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:

48048

Special Instructions/Note:

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)	SUB (Particle Size)/ Particle Size	Total Number of containers
			Preservation Code:					
B1BMP0009_20180302 (440-204619-1)	3/2/18	08:10 Pacific		Water			X	1
B1BMP0010_20180302 (440-204619-2)	3/2/18	08:30 Pacific		Water			X	1
B1BMP0011_20180302 (440-204619-3)	3/2/18	08:15 Pacific		Water			X	1
ILBMP0002_20180302 (440-204619-4)	3/2/18	09:50 Pacific		Water			X	1
ILBMP0004_20180302 (440-204619-5)	3/2/18	08:00 Pacific		Water			X	1
ILBMP0005_20180302 (440-204619-6)	3/2/18	08:50 Pacific		Water			X	1
ILBMP0008_20180302 (440-204619-8)	3/2/18	07:00 Pacific		Water			X	1
LPBMP0002_20180302 (440-204619-9)	3/2/18	07:25 Pacific		Water			X	1
LPBMP0003_20180302 (440-204619-10)	3/2/18	07:28 Pacific		Water			X	1

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 complicance 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: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		3/5/18 0700	FAIR		3/6/18 1000	PTS LABS INC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	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

3/21/2018

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-119840.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 2 of 2
Company: PTS laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 440-204619-1
Address: 5730 Central Crest Street, ,	Due Date Requested: 3/14/2018			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77092				
Phone: 713-316-1800(Tel)	PO #:			
Email:	WO #:			
Project Name: Boeing SSFL ISRA and BMP	Project #: 44009815			
Site:	SSOW#:			

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:

48048

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)	SUB (Particle Size)/ Particle Size	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
LPBMP0004_20180302 (440-204619-11)	3/2/18	07:45 Pacific		Water			X	1	

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. I

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: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:		Method of Shipment:	
Relinquished by:	Date/Time: 3/5/18 0700	Company TAIR	Received by:	Date/Time: 3/6/18 1000	Company PTS LABS. INC	
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

3/21/2018

17461 Derian Avenue, Suite 100
Irvine, CA 92614
phone (949) 261-1022 fax (949) 260-3299

Chain of Custody Record for Haley & Aldrich, Inc. Blanket Service Agreement #2015-18-TestAmerica

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc..

TestAmerica Laboratories, Inc.

Client Contact	H&A Project Manager: Katherine Miller	H&A Site Contact: Matt Birney (818) 466-8782	Date: 03/02/2018	COC No:
Haley & Aldrich, Inc.	Tel/Fax: (520) 289-8606	Lab Contact: Urvashi Patel (949) 333-9055	Carrier:	1 of 1 COCs
5333 Mission Center Road, Suite 300	Analysis Turnaround Time			Sampler:
San Diego, California 92108	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(619) 280-9210 Phone	TAT if different from Below _____			Walk-in Client:
(619) 280-9415 FAX	☑ 2 weeks			Lab Sampling:
H&A Project Number : 129095-002 SID 5.2	☐ 1 week			Job / SDG No.:
Site: BMP Performance OF 009 Watershed	☐ 2 days			
H&A P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Dissolved)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Recoverable)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)	Sample Specific Notes:
								1-250mL P	1-250mL P	2-1L A	1-1L P	1-1L P	1-250mL P	
B1BMP0009_20180302	3/2/2018	810	G	WM	7		N	X	X	X	X	X		Field Staff Notes: Lab may substitute 250mL Poly for 500mL for metals. Only need to fill half of 500mL. Must fill TSS to the top.
B1BMP0010_20180302	3/2/2018	830	G	WM	7		N	X	X	X	X	X		extra 1L poly collected; B-1 Upper Parking Lot; Media Filter; Gunite swale conveying road runoff
B1BMP0011_20180302	3/2/2018	815	G	WM	7		N	X	X	X	X	X		extra 1L poly collected; B-1 Upper Parking Lot; Media Filter; Culvert outlet from upper parking lot area
ILBMP0002_20180302	3/2/2018	950	G	WM	7		N	X	X	X	X	X		extra 1L poly collected; B-1 Upper Parking Lot; Underdrains
ILBMP0004_20180302	3/2/2018	800	G	WM	7		N	X	X	X	X	X		extra 1L poly collected; Upstream (East), CM-9 BMPs; culvert inlet off Area II Road
ILBMP0005_20180302	3/2/2018	850	G	WM	7		N	X	X	X	X	X		extra 1L poly collected; Upstream, B1436 southern detention bioswale (concrete swale diverting sheet flow into rock crib-west)
ILQW0005_20180302	3/2/2018	855	G	WM	4		N	H	H	H				extra 1L poly collected; Downstream, B1436 southern detention bioswale; 12-inch underdrain
ILBMP0008_20180302	3/2/2018	700	G	WM	7		N	X	X	X	X	X		HOLD: EB from sample cup and funnel used to collect ILBMP0005
LPBMP0002_20180302	3/2/2018	725	G	WM	7		N	X	X	X	X	X		extra 1L poly collected; Upstream, B1436 southern detention bioswale (concrete swale diverting sheet flow into rock crib - east)
LPBMP0003_20180302	3/2/2018	728	G	WM	7		N	X	X	X	X	X		extra 1L poly collected; Lower Parking Lot (sample port in cestern discharge pipe)
LPBMP0004_20180302	3/2/2018	745	G	WM	7		N	X	X	X	X	X		extra 1L poly collected; Lower Parking Lot (Sediment Basin outlet box)
FBQW0049_20180302	3/2/2018	1140	G	WM	2		N				H	H (1)		extra 1L poly collected; Lower Parking Lot (discharge from Biofilter effluent pipe)
														Hold
								1	4	1	1	1	1	

440-204619 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☑ Archive for 6 Months

Special Instructions/QC Requirements & Comments:
Please email data to kmiller@haleyaldrich.com and post to Total Access; Bill to Haley & Aldrich, San Diego at AP@haleyaldrich.com; Report Level II Data Package and provide EDD; All dissolved metal samples are to be filtered within 24 hours of receipt, even those placed on hold. (excl = excluding); * = analyze metals by either 200.7or 200.8 as communicated to Urvashi on 02/01/2017

OO 3/2/18

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

	Company	Date/Time		Company	Date/Time
Relinquished by:	JHA	3-2-18 1430	Received by:		
Relinquished by:	TA-IRV	3/2/18 1715	Received by:		Company: TA-IRV Date/Time: 3/2/18 1400
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: Olga Omelas	Company: TA IRV	Date/Time: 3/2/18 17:15

Form No. CA-C-WI-045, Rev. 1.2, dated 1/8/2016

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3/21/2018

IK-6 6

4.4 4.9 2.5 3.0 1.9 2.4 1.7 2.7

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-119826.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-204619-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 3/14/2018			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Boeing SSFL ISRA and BMP	Project #: 44009815			
Site:	SSOW#:			

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 - 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)	1613B/1613B_Sox_Sep_P Standard List w/ Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
B1BMP0009_20180302 (440-204619-1)	3/2/18	08:10 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
B1BMP0010_20180302 (440-204619-2)	3/2/18	08:30 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
B1BMP0011_20180302 (440-204619-3)	3/2/18	08:15 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
ILBMP0002_20180302 (440-204619-4)	3/2/18	09:50 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
ILBMP0004_20180302 (440-204619-5)	3/2/18	08:00 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
ILBMP0005_20180302 (440-204619-6)	3/2/18	08:50 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
ILBMP0008_20180302 (440-204619-8)	3/2/18	07:00 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
LPBMP0002_20180302 (440-204619-9)	3/2/18	07:25 Pacific		Water			X	2	See QAS, Boeing_w/u to zero
LPBMP0003_20180302 (440-204619-10)	3/2/18	07:28 Pacific		Water			X	2	See QAS, Boeing_w/u to zero

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 complicance 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: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6/5/18 1700	TAL-IRV		3-6-18 0948	TA W-Sac
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.0 °C

Ver: 09/20/2016

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-119826.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-204619-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 3/14/2018			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Boeing SSFL ISRA and BMP	Project #: 44009815			
Site:	SSOW#:			

Analysis Requested

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)	1613B/1613B_Sox_Sep_P Standard List w/ Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
LPBMP0004_20180302 (440-204619-11)	3/2/18	07:45 Pacific		Water			X	2	See QAS, Boeing_w/u to zero

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:

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. I

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: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		3/5/18 @ 1700	TAIRV		3-6-18 0940	TA WSac
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	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: 1.0 °C

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-204619-1

Login Number: 204619
List Number: 1
Creator: Soderblom, Tim

List Source: TestAmerica Irvine

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.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	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: Haley & Aldrich, Inc.

Job Number: 440-204619-1

Login Number: 204619
List Number: 2
Creator: Her, David A

List Source: TestAmerica Sacramento
List Creation: 03/07/18 06:40 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.	N/A	
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	1.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	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	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL ISRA and BMP

TestAmerica Job ID: 440-204619-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
440-204619-1	B1BMP0009_20180302	77	82	75	81	80	75	76	67
440-204619-2	B1BMP0010_20180302	73	79	73	78	78	72	75	66
440-204619-3	B1BMP0011_20180302	76	81	72	76	76	72	72	63
440-204619-4	ILBMP0002_20180302	70	75	67	71	71	64	66	58
440-204619-5	ILBMP0004_20180302	71	74	67	72	73	64	68	58
440-204619-5 - RA	ILBMP0004_20180302		58						
440-204619-6	ILBMP0005_20180302	86	91	84	90	90	83	88	76
440-204619-8	ILBMP0008_20180302	51	53	47	51	52	47	51	43
440-204619-8 - RA	ILBMP0008_20180302		42						
440-204619-9	LPBMP0002_20180302	72	75	76	72	72	75	78	81
440-204619-10	LPBMP0003_20180302	79	81	81	80	79	84	81	86
440-204619-11	LPBMP0004_20180302	76	79	81	77	78	79	79	84
MB 320-211843/1-A	Method Blank	62	67	60	65	65	58	62	54

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-204619-1	B1BMP0009_20180302	69	72	69	68	73	72	68
440-204619-2	B1BMP0010_20180302	66	71	67	66	70	71	66
440-204619-3	B1BMP0011_20180302	65	69	65	63	68	68	62
440-204619-4	ILBMP0002_20180302	59	62	59	55	61	59	55
440-204619-5	ILBMP0004_20180302	60	62	59	56	60	61	56
440-204619-5 - RA	ILBMP0004_20180302							
440-204619-6	ILBMP0005_20180302	79	83	79	77	82	83	75
440-204619-8	ILBMP0008_20180302	45	46	46	43	47	45	40
440-204619-8 - RA	ILBMP0008_20180302							
440-204619-9	LPBMP0002_20180302	79	81	83	74	66	71	81
440-204619-10	LPBMP0003_20180302	84	86	87	78	60	74	85
440-204619-11	LPBMP0004_20180302	82	84	84	75	57	69	84
MB 320-211843/1-A	Method Blank	54	57	56	53	56	56	52

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL ISRA and BMP

TestAmerica Job ID: 440-204619-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-211843/2-A	Lab Control Sample	70	76	67	72	72	64	65	58
LCSD 320-211843/3-A	Lab Control Sample Dup	75	80	72	77	77	69	69	61

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-211843/2-A	Lab Control Sample	59	62	60	57	61	60	56
LCSD 320-211843/3-A	Lab Control Sample Dup	63	67	63	61	67	65	59

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

TestAmerica

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440-204619 Field Sheet

Job:_____

Tracking #4176 2740 1280 SO / PO / FO

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes:_____

Therm. ID: **AK-2 / AK-3 / AK-4 / AK-5 / HACCP / Other**____

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: _____

Sample Custody Seal: _____

Cooler ID: _____

Temp: Observed 1.0 °c

From: Temp Blank ☐ Sample ☐

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☑
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Cooler compromised/tampered with?	☐	☑	☐
Samples compromised/tampered with?	☐	☑	☐
Samples w/o discrepancies?	☑	☐	☐
Sample containers have legible labels?	☑	☐	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided.	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
Sample temp OK?	☑	☐	☐
Sample out of temp?	☐	☑	☐

Initials: _____ Date: 3-16-18 Time 0940

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-206527-1
Client Project/Site: BMP Performance OF 009 Watershed

For:
Haley & Aldrich, Inc.
400 E Van Buren St.
Suite 545
Phoenix, Arizona 85004

Attn: Katherine Miller

Authorized for release by:
4/3/2018 9:10:11 PM

Urvashi Patel, Manager of Project Management
(949)261-1022
urvashi.patel@testamericainc.com

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206527-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-206527-1	ILBMP0001_20180321	Water	03/21/18 10:30	03/21/18 17:57

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206527-1

Job ID: 440-206527-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-206527-1

Comments
No additional comments.

Receipt
The samples were received on 3/21/2018 5:57 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

Dioxin
Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: ILBMP0001_20180321 (440-206527-1), (CCV 320-215705/2), (LCS 320-215317/2-A), (LCSD 320-215317/3-A) and (MB 320-215317/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD associated with the following samples run on instrument 11D2 exceeded this criteria: (CCV 320-215889/2) and (MB 320-215317/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

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

Metals
Method(s) 200.8: The following samples requested dissolved metals and were not filtered in the field: ILBMP0001_20180321 (440-206527-1). These samples were filtered and preserved upon receipt to the laboratory.

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

General Chemistry
Method(s) 180.1: The following sample was added in after the holding time had expired.: ILBMP0001_20180321 (440-206527-1).

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

Subcontract non-Sister
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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

Subcontract Work
Method Particle Size: This method was subcontracted to PTS Laboratories, Inc. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample ID: ILBMP0001_20180321
Date Collected: 03/21/18 10:30
Date Received: 03/21/18 17:57

Lab Sample ID: 440-206527-1
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000057	ug/L		03/29/18 07:29	03/30/18 18:02	1
2,3,7,8-TCDF	ND		0.000011	0.00000057	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,7,8-PeCDD	**0.0000043**	**J,DX MB**	0.000055	0.00000092	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,7,8-PeCDF	ND		0.000055	0.00000067	ug/L		03/29/18 07:29	03/30/18 18:02	1
2,3,4,7,8-PeCDF	ND		0.000055	0.00000074	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,4,7,8-HxCDD	**0.0000070**	**J,DX MB**	0.000055	0.00000087	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,6,7,8-HxCDD	**0.000012**	**J,DX MB**	0.000055	0.00000081	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,7,8,9-HxCDD	**0.000013**	**J,DX MB**	0.000055	0.00000079	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,4,7,8-HxCDF	ND		0.000055	0.0000022	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,6,7,8-HxCDF	ND		0.000055	0.0000023	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,7,8,9-HxCDF	ND		0.000055	0.0000014	ug/L		03/29/18 07:29	03/30/18 18:02	1
2,3,4,6,7,8-HxCDF	**0.0000039**	**J,DX q MB**	0.000055	0.0000016	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,4,6,7,8-HpCDD	**0.00022**	**MB**	0.000055	0.0000026	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,4,6,7,8-HpCDF	**0.000075**	**MB**	0.000055	0.00000098	ug/L		03/29/18 07:29	03/30/18 18:02	1
1,2,3,4,7,8,9-HpCDF	**0.0000031**	**J,DX MB**	0.000055	0.0000013	ug/L		03/29/18 07:29	03/30/18 18:02	1
OCDD	**0.0019**	**MB**	0.00011	0.0000017	ug/L		03/29/18 07:29	03/30/18 18:02	1
OCDF	**0.000074**	**J,DX MB**	0.00011	0.00000061	ug/L		03/29/18 07:29	03/30/18 18:02	1
Total TCDD	ND		0.000011	0.00000057	ug/L		03/29/18 07:29	03/30/18 18:02	1
Total TCDF	**0.0000013**	**J,DX q MB**	0.000011	0.00000057	ug/L		03/29/18 07:29	03/30/18 18:02	1
Total PeCDD	**0.0000065**	**J,DX q MB**	0.000055	0.00000092	ug/L		03/29/18 07:29	03/30/18 18:02	1
Total PeCDF	**0.000022**	**J,DX q MB**	0.000055	0.00000070	ug/L		03/29/18 07:29	03/30/18 18:02	1
Total HxCDD	**0.000074**	**J,DX q MB**	0.000055	0.00000082	ug/L		03/29/18 07:29	03/30/18 18:02	1
Total HxCDF	**0.000056**	**J,DX q MB**	0.000055	0.0000019	ug/L		03/29/18 07:29	03/30/18 18:02	1
Total HpCDD	**0.00047**	**MB**	0.000055	0.0000026	ug/L		03/29/18 07:29	03/30/18 18:02	1
Total HpCDF	**0.00013**	**J,DX MB**	0.000055	0.0000011	ug/L		03/29/18 07:29	03/30/18 18:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*86*		*25 - 164*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-2,3,7,8-TCDF	*81*		*24 - 169*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-1,2,3,7,8-PeCDD	*82*		*25 - 181*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-1,2,3,7,8-PeCDF	*84*		*24 - 185*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-2,3,4,7,8-PeCDF	*84*		*21 - 178*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-1,2,3,4,7,8-HxCDD	*83*		*32 - 141*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-1,2,3,6,7,8-HxCDD	*87*		*28 - 130*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-1,2,3,4,7,8-HxCDF	*78*		*26 - 152*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-1,2,3,6,7,8-HxCDF	*80*		*26 - 123*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-1,2,3,7,8,9-HxCDF	*78*		*29 - 147*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-2,3,4,6,7,8-HxCDF	*76*		*28 - 136*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*73*		*23 - 140*	*03/29/18 07:29*	*03/30/18 18:02*	*1*

Client Sample ID: ILBMP0001_20180321
Date Collected: 03/21/18 10:30
Date Received: 03/21/18 17:57

Lab Sample ID: 440-206527-1
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDF	*76*		*28 - 143*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*72*		*26 - 138*	*03/29/18 07:29*	*03/30/18 18:02*	*1*
13C-OCDD	*66*		*17 - 157*	*03/29/18 07:29*	*03/30/18 18:02*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*105*		*35 - 197*	*03/29/18 07:29*	*03/30/18 18:02*	*1*

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 10:44	03/27/18 17:12	1
Copper	**7.1**		2.0	0.50	ug/L		03/27/18 10:44	03/27/18 17:12	1
Lead	**5.4**		1.0	0.50	ug/L		03/27/18 10:44	03/27/18 17:12	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/22/18 15:04	03/22/18 18:01	1
Copper	**3.8**		2.0	0.50	ug/L		03/22/18 15:04	03/22/18 18:01	1
Lead	ND		1.0	0.50	ug/L		03/22/18 15:04	03/22/18 18:01	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/22/18 12:56	03/23/18 02:19	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/23/18 13:33	03/23/18 21:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	**27**	**BU**	0.40	0.16	NTU			03/26/18 13:01	4
Total Suspended Solids	**38**		5.0	2.5	mg/L			03/27/18 10:37	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206527-1

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
Particle Size	General Sub Contract Method	NONE	SC0028

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
EPA = US Environmental Protection Agency
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
NONE = NONE
SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

SC0028 = PTS Laboratories, Inc, 5730 Central Crest Street, Houston, TX 77092, TEL (713)316-1800
TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022
TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206527-1

Client Sample ID: ILBMP0001_20180321
Date Collected: 03/21/18 10:30
Date Received: 03/21/18 17:57

Lab Sample ID: 440-206527-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			915.3 mL	20.0 uL	215317	03/29/18 07:29	KQT	TAL SAC
Total/NA	Analysis	1613B		1			215705	03/30/18 18:02	ALM	TAL SAC
Dissolved	Filtration	FILTRATION			240 mL	240 mL	465278	03/22/18 14:24	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	465387	03/22/18 15:04	MN1	TAL IRV
Dissolved	Analysis	200.8		1			465452	03/22/18 18:01	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	466293	03/27/18 10:44	MN1	TAL IRV
Total Recoverable	Analysis	200.8		1			466437	03/27/18 17:12	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			240 mL	240 mL	465278	03/22/18 14:24	MN1	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	465646	03/23/18 13:33	DB	TAL IRV
Dissolved	Analysis	245.1		1			465778	03/23/18 21:37	P1P	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	465336	03/22/18 12:56	DB	TAL IRV
Total/NA	Analysis	245.1		1			465595	03/23/18 02:19	DB	TAL IRV
Total/NA	Analysis	180.1		4			466035	03/26/18 13:01	CMM	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	466286	03/27/18 10:37	XL	TAL IRV

Laboratory References:

SC0028 = PTS Laboratories, Inc, 5730 Central Crest Street, Houston, TX 77092, TEL (713)316-1800

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-215317/1-A
Matrix: Water
Analysis Batch: 215705

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 215317

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.00000274	J,DX	0.000010	0.00000051	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,7,8-PeCDD	0.00000397	J,DX	0.000050	0.00000053	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,7,8-PeCDF	0.00000309	J,DX q	0.000050	0.00000044	ug/L		03/29/18 07:29	03/30/18 15:44	1
2,3,4,7,8-PeCDF	0.00000255	J,DX q	0.000050	0.00000046	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,4,7,8-HxCDD	0.00000383	J,DX	0.000050	0.00000043	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,6,7,8-HxCDD	0.00000290	J,DX	0.000050	0.00000041	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,7,8,9-HxCDD	0.00000271	J,DX q	0.000050	0.00000039	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,4,7,8-HxCDF	0.00000255	J,DX	0.000050	0.00000076	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,6,7,8-HxCDF	0.00000235	J,DX	0.000050	0.00000078	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,7,8,9-HxCDF	0.00000281	J,DX	0.000050	0.00000047	ug/L		03/29/18 07:29	03/30/18 15:44	1
2,3,4,6,7,8-HxCDF	0.00000191	J,DX	0.000050	0.00000055	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,4,6,7,8-HpCDD	0.00000451	J,DX	0.000050	0.00000044	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,4,6,7,8-HpCDF	0.00000290	J,DX	0.000050	0.00000030	ug/L		03/29/18 07:29	03/30/18 15:44	1
1,2,3,4,7,8,9-HpCDF	0.00000269	J,DX q	0.000050	0.00000039	ug/L		03/29/18 07:29	03/30/18 15:44	1
OCDD	0.0000211	J,DX	0.00010	0.00000040	ug/L		03/29/18 07:29	03/30/18 15:44	1
OCDF	0.00000629	J,DX	0.00010	0.00000055	ug/L		03/29/18 07:29	03/30/18 15:44	1
Total TCDD	0.00000274	J,DX	0.000010	0.00000051	ug/L		03/29/18 07:29	03/30/18 15:44	1
Total TCDF	0.00000168	J,DX	0.000010	0.00000037	ug/L		03/29/18 07:29	03/30/18 15:44	1
Total PeCDD	0.00000397	J,DX	0.000050	0.00000053	ug/L		03/29/18 07:29	03/30/18 15:44	1
Total PeCDF	0.00000564	J,DX q	0.000050	0.00000045	ug/L		03/29/18 07:29	03/30/18 15:44	1
Total HxCDD	0.00000943	J,DX q	0.000050	0.00000041	ug/L		03/29/18 07:29	03/30/18 15:44	1
Total HxCDF	0.00000963	J,DX	0.000050	0.00000064	ug/L		03/29/18 07:29	03/30/18 15:44	1
Total HpCDD	0.00000711	J,DX	0.000050	0.00000044	ug/L		03/29/18 07:29	03/30/18 15:44	1
Total HpCDF	0.00000559	J,DX q	0.000050	0.00000035	ug/L		03/29/18 07:29	03/30/18 15:44	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*78*		*25 - 164*	*03/29/18 07:29*	*03/30/18 15:44*	*1*
13C-2,3,7,8-TCDF	*78*		*24 - 169*	*03/29/18 07:29*	*03/30/18 15:44*	*1*
13C-1,2,3,7,8-PeCDD	*79*		*25 - 181*	*03/29/18 07:29*	*03/30/18 15:44*	*1*
13C-1,2,3,7,8-PeCDF	*78*		*24 - 185*	*03/29/18 07:29*	*03/30/18 15:44*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-215317/1-A
Matrix: Water
Analysis Batch: 215705

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 215317

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	81		21 - 178	03/29/18 07:29	03/30/18 15:44	1
13C-1,2,3,4,7,8-HxCDD	80		32 - 141	03/29/18 07:29	03/30/18 15:44	1
13C-1,2,3,6,7,8-HxCDD	85		28 - 130	03/29/18 07:29	03/30/18 15:44	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	03/29/18 07:29	03/30/18 15:44	1
13C-1,2,3,6,7,8-HxCDF	76		26 - 123	03/29/18 07:29	03/30/18 15:44	1
13C-1,2,3,7,8,9-HxCDF	75		29 - 147	03/29/18 07:29	03/30/18 15:44	1
13C-2,3,4,6,7,8-HxCDF	73		28 - 136	03/29/18 07:29	03/30/18 15:44	1
13C-1,2,3,4,6,7,8-HpCDD	72		23 - 140	03/29/18 07:29	03/30/18 15:44	1
13C-1,2,3,4,6,7,8-HpCDF	74		28 - 143	03/29/18 07:29	03/30/18 15:44	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138	03/29/18 07:29	03/30/18 15:44	1
13C-OCDD	65		17 - 157	03/29/18 07:29	03/30/18 15:44	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197	03/29/18 07:29	03/30/18 15:44	1

Lab Sample ID: LCS 320-215317/2-A
Matrix: Water
Analysis Batch: 215705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 215317

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000197	MB	ug/L		99	67 - 158
2,3,7,8-TCDF	0.000200	0.000191	MB	ug/L		95	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00106	MB	ug/L		106	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000966	MB	ug/L		97	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000971	MB	ug/L		97	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000953	MB	ug/L		95	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000888	MB	ug/L		89	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000942	MB	ug/L		94	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000962	MB	ug/L		96	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000970	MB	ug/L		97	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000961	MB	ug/L		96	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000983	MB	ug/L		98	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00102	MB	ug/L		102	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000935	MB	ug/L		94	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000920	MB	ug/L		92	78 - 138
OCDD	0.00200	0.00185	MB	ug/L		92	78 - 144
OCDF	0.00200	0.00181	MB	ug/L		91	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	81		20 - 175
13C-2,3,7,8-TCDF	80		22 - 152
13C-1,2,3,7,8-PeCDD	78		21 - 227
13C-1,2,3,7,8-PeCDF	79		21 - 192
13C-2,3,4,7,8-PeCDF	81		13 - 328
13C-1,2,3,4,7,8-HxCDD	80		21 - 193
13C-1,2,3,6,7,8-HxCDD	85		25 - 163
13C-1,2,3,4,7,8-HxCDF	75		19 - 202
13C-1,2,3,6,7,8-HxCDF	76		21 - 159

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-215317/2-A
Matrix: Water
Analysis Batch: 215705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 215317

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,7,8,9-HxCDF	77		17 - 205
13C-2,3,4,6,7,8-HxCDF	74		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	73		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	78		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	74		20 - 186
13C-OCDD	67		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	104		31 - 191

Lab Sample ID: LCSD 320-215317/3-A
Matrix: Water
Analysis Batch: 215705

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 215317

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD			0.000200	0.000197	MB	ug/L		99	67 - 158	0	50
2,3,7,8-TCDF			0.000200	0.000188	MB	ug/L		94	75 - 158	1	50
1,2,3,7,8-PeCDD			0.00100	0.00108	MB	ug/L		108	70 - 142	1	50
1,2,3,7,8-PeCDF			0.00100	0.000964	MB	ug/L		96	80 - 134	0	50
2,3,4,7,8-PeCDF			0.00100	0.000972	MB	ug/L		97	68 - 160	0	50
1,2,3,4,7,8-HxCDD			0.00100	0.000967	MB	ug/L		97	70 - 164	1	50
1,2,3,6,7,8-HxCDD			0.00100	0.000905	MB	ug/L		91	76 - 134	2	50
1,2,3,7,8,9-HxCDD			0.00100	0.000831	MB	ug/L		83	64 - 162	13	50
1,2,3,4,7,8-HxCDF			0.00100	0.000969	MB	ug/L		97	72 - 134	1	50
1,2,3,6,7,8-HxCDF			0.00100	0.000982	MB	ug/L		98	84 - 130	1	50
1,2,3,7,8,9-HxCDF			0.00100	0.000954	MB	ug/L		95	78 - 130	1	50
2,3,4,6,7,8-HxCDF			0.00100	0.000976	MB	ug/L		98	70 - 156	1	50
1,2,3,4,6,7,8-HpCDD			0.00100	0.00102	MB	ug/L		102	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF			0.00100	0.000965	MB	ug/L		97	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF			0.00100	0.000912	MB	ug/L		91	78 - 138	1	50
OCDD			0.00200	0.00195	MB	ug/L		98	78 - 144	5	50
OCDF			0.00200	0.00168	MB	ug/L		84	63 - 170	8	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-2,3,7,8-TCDD	81		20 - 175
13C-2,3,7,8-TCDF	79		22 - 152
13C-1,2,3,7,8-PeCDD	78		21 - 227
13C-1,2,3,7,8-PeCDF	79		21 - 192
13C-2,3,4,7,8-PeCDF	81		13 - 328
13C-1,2,3,4,7,8-HxCDD	95		21 - 193
13C-1,2,3,6,7,8-HxCDD	98		25 - 163
13C-1,2,3,4,7,8-HxCDF	92		19 - 202
13C-1,2,3,6,7,8-HxCDF	95		21 - 159
13C-1,2,3,7,8,9-HxCDF	65		17 - 205
13C-2,3,4,6,7,8-HxCDF	90		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	78		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	61		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	76		20 - 186

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-215317/3-A
Matrix: Water
Analysis Batch: 215705

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 215317

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-OCDD	*78*		*13 - 199*

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*104*		*31 - 191*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-215317/1-A
Matrix: Water
Analysis Batch: 215889

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 215317

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	0.00000285	J,DX	0.000010	0.00000048	ug/L		03/29/18 07:29	04/02/18 12:53	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF - RA	*74*		*24 - 169*	*03/29/18 07:29*	*04/02/18 12:53*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD - RA	*92*		*35 - 197*	*03/29/18 07:29*	*04/02/18 12:53*	*1*

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-466293/1-A
Matrix: Water
Analysis Batch: 466437

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 466293

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 10:44	03/27/18 17:08	1
Copper	ND		2.0	0.50	ug/L		03/27/18 10:44	03/27/18 17:08	1
Lead	ND		1.0	0.50	ug/L		03/27/18 10:44	03/27/18 17:08	1

Lab Sample ID: LCS 440-466293/2-A
Matrix: Water
Analysis Batch: 466437

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 466293

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	71.6		ug/L		89	85 - 115
Copper	80.0	70.7		ug/L		88	85 - 115
Lead	80.0	71.8		ug/L		90	85 - 115

Lab Sample ID: 440-206527-1 MS
Matrix: Water
Analysis Batch: 466437

Client Sample ID: ILBMP0001_20180321
Prep Type: Total Recoverable
Prep Batch: 466293

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	75.3		ug/L		94	70 - 130
Copper	7.1		80.0	81.8		ug/L		93	70 - 130

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-206527-1 MS
Matrix: Water
Analysis Batch: 466437

Client Sample ID: ILBMP0001_20180321
Prep Type: Total Recoverable
Prep Batch: 466293

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	5.4		80.0	81.2		ug/L		95	70 - 130

Lab Sample ID: 440-206527-1 MSD
Matrix: Water
Analysis Batch: 466437

Client Sample ID: ILBMP0001_20180321
Prep Type: Total Recoverable
Prep Batch: 466293

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	74.5		ug/L		93	70 - 130	1	20
Copper	7.1		80.0	82.1		ug/L		94	70 - 130	0	20
Lead	5.4		80.0	79.5		ug/L		93	70 - 130	2	20

Lab Sample ID: MB 440-465278/1-C
Matrix: Water
Analysis Batch: 465452

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 465387

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/22/18 15:04	03/22/18 17:58	1
Copper	ND		2.0	0.50	ug/L		03/22/18 15:04	03/22/18 17:58	1
Lead	ND		1.0	0.50	ug/L		03/22/18 15:04	03/22/18 17:58	1

Lab Sample ID: LCS 440-465278/2-C
Matrix: Water
Analysis Batch: 465452

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 465387

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	70.3		ug/L		88	85 - 115
Copper	80.0	70.2		ug/L		88	85 - 115
Lead	80.0	69.9		ug/L		87	85 - 115

Lab Sample ID: 440-206527-1 MS
Matrix: Water
Analysis Batch: 465452

Client Sample ID: ILBMP0001_20180321
Prep Type: Dissolved
Prep Batch: 465387

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	70.3		ug/L		88	70 - 130
Copper	3.8		80.0	74.0		ug/L		88	70 - 130
Lead	ND		80.0	70.3		ug/L		88	70 - 130

Lab Sample ID: 440-206527-1 MSD
Matrix: Water
Analysis Batch: 465452

Client Sample ID: ILBMP0001_20180321
Prep Type: Dissolved
Prep Batch: 465387

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	70.2		ug/L		88	70 - 130	0	20
Copper	3.8		80.0	75.0		ug/L		89	70 - 130	1	20
Lead	ND		80.0	70.4		ug/L		88	70 - 130	0	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-465336/1-A
Matrix: Water
Analysis Batch: 465595

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 465336

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/22/18 12:56	03/23/18 02:14	1

Lab Sample ID: LCS 440-465336/2-A
Matrix: Water
Analysis Batch: 465595

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 465336

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	7.72		ug/L		97	85 - 115

Lab Sample ID: 440-206527-1 MS
Matrix: Water
Analysis Batch: 465595

Client Sample ID: ILBMP0001_20180321
Prep Type: Total/NA
Prep Batch: 465336

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	7.43		ug/L		93	70 - 130

Lab Sample ID: 440-206527-1 MSD
Matrix: Water
Analysis Batch: 465595

Client Sample ID: ILBMP0001_20180321
Prep Type: Total/NA
Prep Batch: 465336

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	7.49		ug/L		94	70 - 130	1	20

Lab Sample ID: MB 440-465278/1-E
Matrix: Water
Analysis Batch: 465778

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 465646

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/23/18 13:33	03/23/18 21:32	1

Lab Sample ID: LCS 440-465278/2-E
Matrix: Water
Analysis Batch: 465778

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 465646

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	7.95		ug/L		99	85 - 115

Lab Sample ID: 440-206527-1 MS
Matrix: Water
Analysis Batch: 465778

Client Sample ID: ILBMP0001_20180321
Prep Type: Dissolved
Prep Batch: 465646

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	8.11		ug/L		101	70 - 130

Lab Sample ID: 440-206527-1 MSD
Matrix: Water
Analysis Batch: 465778

Client Sample ID: ILBMP0001_20180321
Prep Type: Dissolved
Prep Batch: 465646

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.09		ug/L		101	70 - 130	0	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-466035/5
Matrix: Water
Analysis Batch: 466035

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			03/26/18 13:01	1

Lab Sample ID: 440-206527-1 DU
Matrix: Water
Analysis Batch: 466035

Client Sample ID: ILBMP0001_20180321
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Turbidity	27	BU	27.0		NTU		0.1	20

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-466286/1
Matrix: Water
Analysis Batch: 466286

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			03/27/18 10:37	1

Lab Sample ID: LCS 440-466286/2
Matrix: Water
Analysis Batch: 466286

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	992		mg/L		99	85 - 115

Lab Sample ID: 440-206564-A-1 DU
Matrix: Water
Analysis Batch: 466286

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	54		53.0		mg/L		2	10

Specialty Organics

Prep Batch: 215317

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Total/NA	Water	1613B	
MB 320-215317/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-215317/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-215317/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-215317/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 215705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Total/NA	Water	1613B	215317
MB 320-215317/1-A	Method Blank	Total/NA	Water	1613B	215317
LCS 320-215317/2-A	Lab Control Sample	Total/NA	Water	1613B	215317
LCSD 320-215317/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	215317

Analysis Batch: 215889

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-215317/1-A - RA	Method Blank	Total/NA	Water	1613B	215317

Metals

Filtration Batch: 465278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Dissolved	Water	FILTRATION	
MB 440-465278/1-C	Method Blank	Dissolved	Water	FILTRATION	
MB 440-465278/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-465278/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-465278/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
440-206527-1 MS	ILBMP0001_20180321	Dissolved	Water	FILTRATION	
440-206527-1 MSD	ILBMP0001_20180321	Dissolved	Water	FILTRATION	

Prep Batch: 465336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Total/NA	Water	245.1	
MB 440-465336/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-465336/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-206527-1 MS	ILBMP0001_20180321	Total/NA	Water	245.1	
440-206527-1 MSD	ILBMP0001_20180321	Total/NA	Water	245.1	

Prep Batch: 465387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Dissolved	Water	200.2	465278
MB 440-465278/1-C	Method Blank	Dissolved	Water	200.2	465278
LCS 440-465278/2-C	Lab Control Sample	Dissolved	Water	200.2	465278
440-206527-1 MS	ILBMP0001_20180321	Dissolved	Water	200.2	465278
440-206527-1 MSD	ILBMP0001_20180321	Dissolved	Water	200.2	465278

Analysis Batch: 465452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Dissolved	Water	200.8	465387
MB 440-465278/1-C	Method Blank	Dissolved	Water	200.8	465387
LCS 440-465278/2-C	Lab Control Sample	Dissolved	Water	200.8	465387

Metals (Continued)

Analysis Batch: 465452 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1 MS	ILBMP0001_20180321	Dissolved	Water	200.8	465387
440-206527-1 MSD	ILBMP0001_20180321	Dissolved	Water	200.8	465387

Analysis Batch: 465595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Total/NA	Water	245.1	465336
MB 440-465336/1-A	Method Blank	Total/NA	Water	245.1	465336
LCS 440-465336/2-A	Lab Control Sample	Total/NA	Water	245.1	465336
440-206527-1 MS	ILBMP0001_20180321	Total/NA	Water	245.1	465336
440-206527-1 MSD	ILBMP0001_20180321	Total/NA	Water	245.1	465336

Prep Batch: 465646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Dissolved	Water	245.1	465278
MB 440-465278/1-E	Method Blank	Dissolved	Water	245.1	465278
LCS 440-465278/2-E	Lab Control Sample	Dissolved	Water	245.1	465278
440-206527-1 MS	ILBMP0001_20180321	Dissolved	Water	245.1	465278
440-206527-1 MSD	ILBMP0001_20180321	Dissolved	Water	245.1	465278

Analysis Batch: 465778

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Dissolved	Water	245.1	465646
MB 440-465278/1-E	Method Blank	Dissolved	Water	245.1	465646
LCS 440-465278/2-E	Lab Control Sample	Dissolved	Water	245.1	465646
440-206527-1 MS	ILBMP0001_20180321	Dissolved	Water	245.1	465646
440-206527-1 MSD	ILBMP0001_20180321	Dissolved	Water	245.1	465646

Prep Batch: 466293

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Total Recoverable	Water	200.2	
MB 440-466293/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-466293/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-206527-1 MS	ILBMP0001_20180321	Total Recoverable	Water	200.2	
440-206527-1 MSD	ILBMP0001_20180321	Total Recoverable	Water	200.2	

Analysis Batch: 466437

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Total Recoverable	Water	200.8	466293
MB 440-466293/1-A	Method Blank	Total Recoverable	Water	200.8	466293
LCS 440-466293/2-A	Lab Control Sample	Total Recoverable	Water	200.8	466293
440-206527-1 MS	ILBMP0001_20180321	Total Recoverable	Water	200.8	466293
440-206527-1 MSD	ILBMP0001_20180321	Total Recoverable	Water	200.8	466293

General Chemistry

Analysis Batch: 466035

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Total/NA	Water	180.1	
MB 440-466035/5	Method Blank	Total/NA	Water	180.1	
440-206527-1 DU	ILBMP0001_20180321	Total/NA	Water	180.1	

General Chemistry (Continued)

Analysis Batch: 466286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206527-1	ILBMP0001_20180321	Total/NA	Water	SM 2540D	
MB 440-466286/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-466286/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-206564-A-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Qualifiers

Dioxin

Qualifier	Qualifier Description
MB	Analyte present in the method blank
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

General Chemistry

Qualifier	Qualifier Description
BU	Analyzed out of holding time

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)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
TestAmerica Job ID: 440-206527-1
Project/Site: BMP Performance OF 009 Watershed

Laboratory: TestAmerica Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica Sacramento

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	17-020	01-20-21
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-18 *
Kansas	NELAP	7	E-10375	10-31-18
L-A-B	DoD ELAP		L2468	01-20-21
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-14-18 *
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-18
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-18 *
Texas	NELAP	6	T104704399	05-31-18
US Fish & Wildlife	Federal		LE148388-0	07-31-18
USDA	Federal		P330-11-00436	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

5730 Centralcrest St. • Houston, TX 77092
Telephone (713) 316-1800 • Fax (877) 225-9953

April 3, 2018

Patel Urvashi,
Project Manager,
TestAmerica Irvine.
17461 Derian Ave. Suite 100,
Irvine, CA 92614-5817

Re: PTS File No: 48066_b
Project Name: Boeing SSFL ISRA and BMP
Project Number: 44009815
COC No: 440-120458.1
Job Number: 440-206527-1
Laser Particle Size Analyses

Dear Patel Urvashi:

Please find enclosed report for Physical Properties analyses conducted upon samples received from the above referenced project.
All analyses were performed by ASTM D4464 methodology. The samples are currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact myself or Emeka Anazodo at (713) 316-1800.

Sincerely,
PTS Laboratories, Inc.

Rick Schweizer

Rick Schweizer
Laboratory Supervisor

Encl.

PTS Laboratories

Project Name: Boeing SSFL ISRA and BMP
Project Number: 44009815

PTS File No: 48066_b
Client: TestAmerica Irvine

TEST PROGRAM - 20180327

FLUID ID	Date	Time (Pacific)	Fluid Type	Particle Size: Microsize			Comments
			Method:	ASTM D4464			
Date Received: 20180324							
ILBMP0001_20180321(440-206527-1)	**03/22/18**	**1030**	**Water**	**X**			1-litre Plastic Bottle
TOTALS:				**1**			

Laboratory Test Program Notes
Standard TAT for basic analysis is 10-15 business days.
Water samples to be disposed 15 days after completion of analyses.

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D4464M)

PROJECT NAME: Boeing SSFL ISRA and BMP
PROJECT NO: 44009815

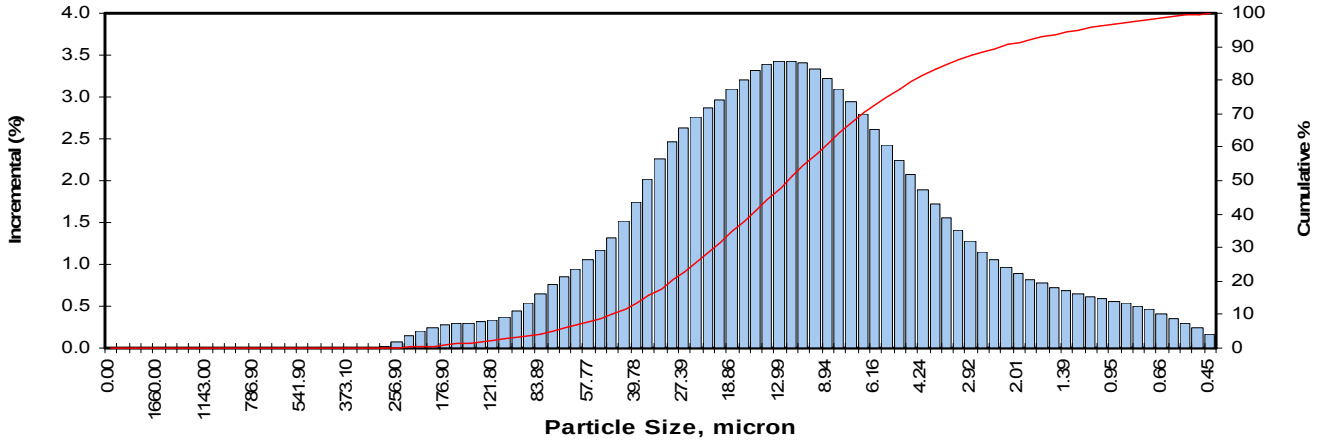
Sample ID	Matrix	Median Grain Size, micron (1)	CUMULATIVE PERCENT GREATER THAN Distribution percent, microns										
			5%	10%	16%	25%	40%	50%	60%	75%	84%	90%	95%
ILBMP0001_20180322(440-206527-1)	Aqueous	8.719	64.294	41.397	29.777	20.522	11.641	8.719	6.250	2.501	1.460	1.079	0.644

(1) Based on Trask Median

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48066_b
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	ILBMP0001_20180322(440-206527-1)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.03	0.0
256.90	0.07	0.1
234.10	0.14	0.2
213.20	0.20	0.4
194.20	0.25	0.7
176.90	0.28	1.0
161.20	0.29	1.3
146.80	0.30	1.6
133.70	0.31	1.9
121.80	0.33	2.2
111.00	0.37	2.6
101.10	0.44	3.0
92.09	0.53	3.5
83.89	0.64	4.2
76.42	0.76	4.9
69.61	0.86	5.8

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	0.95	6.8
57.77	1.05	7.8
52.62	1.16	9.0
47.94	1.31	10.3
43.67	1.51	11.8
39.78	1.75	13.5
36.24	2.01	15.5
33.01	2.26	17.8
30.07	2.47	20.3
27.39	2.63	22.9
24.95	2.76	25.7
22.73	2.87	28.5
20.70	2.97	31.5
18.86	3.09	34.6
17.18	3.20	37.8
15.65	3.31	41.1
14.26	3.38	44.5
12.99	3.43	47.9
11.83	3.43	51.3
10.78	3.40	54.7
9.82	3.33	58.1
8.94	3.23	61.3
8.15	3.10	64.4
7.42	2.95	67.4
6.76	2.79	70.1
6.16	2.61	72.8
5.61	2.43	75.2
5.11	2.25	77.4
4.66	2.07	79.5
4.24	1.89	81.4
3.86	1.72	83.1
3.52	1.56	84.7
3.21	1.41	86.1
2.92	1.27	87.4
2.66	1.15	88.5
2.42	1.05	89.6
2.21	0.96	90.5
2.01	0.88	91.4
1.83	0.82	92.2

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.770	93.0
1.520	0.720	93.7
1.385	0.690	94.4
1.261	0.650	95.0
1.149	0.620	95.7
1.047	0.590	96.3
0.953	0.560	96.8
0.868	0.530	97.3
0.791	0.500	97.8
0.721	0.460	98.3
0.656	0.410	98.7
0.598	0.360	99.1
0.545	0.300	99.4
0.496	0.240	99.6
0.452	0.170	99.8
TOTALS:	**99.78**	**99.8**

Measure	Trask	Inman
Median, mm	0.0087	0.0087
Median, micron	8.719	8.719
Mean, mm	0.0115	0.0066
Mean, micron	11.511	6.593
Sorting	2.8645	2.175
Skewness	0.8217	0.185
Kurtosis	0.2235	0.526

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	64.294	0.0643
10	41.397	0.0414
16	29.777	0.0298
25	20.522	0.0205
40	11.641	0.0116
50	8.719	0.0087
60	6.250	0.0062
75	2.501	0.0025
84	1.460	0.0015
90	1.079	0.0011
95	0.644	0.0006

Phone: (713) 316-1800

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-120458.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: PTS laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 440-206527-1
Address: 5730 Central Crest Street, ,	Due Date Requested: 4/2/2018			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77092				
Phone: 713-316-1800(Tel)	PO #:			
Email:	WO #:			
Project Name: Boeing SSFL ISRA and BMP	Project #: 44009815			
Site:	SSOW#:			

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:

48066_b

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)	SUB (Particle Size)/ Particle Size	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ILBMP0001_20180321 (440-206527-1)	3/21/18	10:30 Pacific		Water			X	1	

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 complicance 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: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 3/25/18 @ 1700	Company TALA	Received by:	Date/Time: 3/24/18 11:00	Company PTS LABS INC
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: 1.7 °C

Ver: 09/20/2016

Patel, Urvashi

From: Baluran, Dwayne <DBaluran@haleyaldrich.com>
Sent: Friday, March 23, 2018 10:53 AM
To: Patel, Urvashi
Cc: Miller, Katherine
Subject: RE: TestAmerica Sample Login Confirmation files from 440-206527 Boeing SSFL ISRA and BMP

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red Category

-External Email-

Hello Urvashi,

Upon review of the COC and Sample Receipts, could you please address the following:

- Sample ID "ILBMP001_20180321" is missing a zero. Please change to "ILBMP0001_20180321"
- ILBMP0001 on COC does not have Turbidity checked off on the COC but should have been sampled per our sampling plan. This makes it a total of 6 containers that would have been sent out since missing Turbidity, however, in the # of containers column it is listed as 7
    - If a container for Turbidity actually was not submitted could you still run the test with what you do have?
- ILBMP008 submitted to lab yesterday was actually a field blank. Please rename to "ILQW0007_20180321"

Thanks,
Dwayne Baluran, EIT, QSP
Staff Engineer

Haley & Aldrich, Inc.
5850 Canoga Avenue | Suite 400
Woodland Hills, CA 91367

T: (978) 234.5022
C: (818) 224.0704

www.haleyaldrich.com

From: Nguyen, Jocelyn <jocelyn.nguyen@testamericainc.com>
Sent: Thursday, March 22, 2018 2:56 PM
To: Hernandez, Elysse <EHernandez@haleyaldrich.com>; Kim Schultz <kim.schultz@mecx.net>; Miller, Katherine <KMiller@haleyaldrich.com>; urvashi.patel@testamericainc.com
Subject: TestAmerica Sample Login Confirmation files from 440-206527 Boeing SSFL ISRA and BMP

Hello,

Attached, please find the Sample Confirmation files for job 440-206527; Boeing SSFL ISRA and BMP

Please note that 200.8 total metals and 245.1 Hg for ILBMP0008_20180321 was marked the COC to put on hold but no container was received.

Please feel free to contact me or your PM, Urvashi Patel, if you have any questions.

Thank you.

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback

JOCELYN NGUYEN
Project Manager Assistant

TestAmerica Irvine
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 949.261,1022

Reference: [435774]
Attachments: 5

Patel, Urvashi

From: Baluran, Dwayne <DBaluran@haleyaldrich.com>
Sent: Monday, March 26, 2018 9:52 AM
To: Patel, Urvashi
Subject: RE: TestAmerica Sample Login Confirmation files from 440-206527 Boeing SSFL ISRA and BMP

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red Category

-External Email-

Urvashi,

Per our phone conversation, the ILBMP008 ID should actually be "FBQW0049_20180321". Thanks again for the help and sorry for the initial mix up!

Dwayne Baluran, EIT, QSP
Staff Engineer

Haley & Aldrich, Inc.
5850 Canoga Avenue | Suite 400
Woodland Hills, CA 91367

T: (978) 234.5022
C: (818) 224.0704

www.haleyaldrich.com

From: Patel, Urvashi <Urvashi.Patel@testamericainc.com>
Sent: Friday, March 23, 2018 10:59 AM
To: Baluran, Dwayne <DBaluran@haleyaldrich.com>; Nguyen, Jocelyn <Jocelyn.Nguyen@testamericainc.com>
Cc: Miller, Katherine <KMiller@haleyaldrich.com>
Subject: RE: TestAmerica Sample Login Confirmation files from 440-206527 Boeing SSFL ISRA and BMP

Hi Dwayne
We'll have the corrections made as indicated below.

URVASHI PATEL
Manager of Project Management

Test America

THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Ave, Suite #100
Irvine, CA 92614
TEL 949-261-1022 | FAX 949-260-3297
DIRECT 949-260-3269
CELL 949-333-9055

www.testamericainc.com

From: Baluran, Dwayne [mailto:DBaluran@haleyaldrich.com]
Sent: Friday, March 23, 2018 10:53 AM
To: Patel, Urvashi
Cc: Miller, Katherine
Subject: RE: TestAmerica Sample Login Confirmation files from 440-206527 Boeing SSFL ISRA and BMP

-External Email-

Hello Urvashi,

Upon review of the COC and Sample Receipts, could you please address the following:

- Sample ID "ILBMP001_20180321" is missing a zero. Please change to "ILBMP0001_20180321"
- ILBMP0001 on COC does not have Turbidity checked off on the COC but should have been sampled per our sampling plan. This makes it a total of 6 containers that would have been sent out since missing Turbidity, however, in the # of containers column it is listed as 7
    - If a container for Turbidity actually was not submitted could you still run the test with what you do have?
- ILBMP008 submitted to lab yesterday was actually a field blank. Please rename to "ILQW0007_20180321"

Thanks,
Dwayne Baluran, EIT, QSP
Staff Engineer

Haley & Aldrich, Inc.
5850 Canoga Avenue | Suite 400
Woodland Hills, CA 91367

T: (978) 234.5022
C: (818) 224.0704

www.haleyaldrich.com

From: Nguyen, Jocelyn <jocelyn.nguyen@testamericainc.com>
Sent: Thursday, March 22, 2018 2:56 PM
To: Hernandez, Elysse <EHernandez@haleyaldrich.com>; Kim Schultz <kim.schultz@mecx.net>; Miller, Katherine <KMiller@haleyaldrich.com>; urvashi.patel@testamericainc.com
Subject: TestAmerica Sample Login Confirmation files from 440-206527 Boeing SSFL ISRA and BMP

Hello,

Attached, please find the Sample Confirmation files for job 440-206527; Boeing SSFL ISRA and BMP

Please note that 200.8 total metals and 245.1 Hg for ILBMP0008_20180321 was marked the COC to put on hold but no container was received.

Please feel free to contact me or your PM, Urvashi Patel, if you have any questions.

Thank you.

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback

JOCELYN NGUYEN
Project Manager Assistant

TestAmerica Irvine
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 949.261,1022

Reference: [435774]
Attachments: 5

Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614
phone (949) 261-1022 fax (949) 260-3299

Chain of Custody Record for
Haley & Aldrich, Inc. Blanket Service Agreement #2015-18-TestAmerica

TestAmerica — THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc

Client Contact	H&A Project Manager: Katherine Miller	H&A Site Contact: Matt Birney (818) 466-8782	Date: 03/21/2018	COC No.
Haley & Aldrich, Inc	Tel/Fax: (520) 289-8606	Lab Contact: Urvashi Patel (949) 333-9055	Carrier:	1 of 1 COCs
5333 Mission Center Road, Suite 300	Analysis Turnaround Time			Sampler:
San Diego, California 92108	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(619) 280-9210 Phone	TAT if different from Below			Walk-in Client:
(619) 280-9415 FAX	☑ 2 weeks			Lab Sampling:
H&A Project Number : 129095-002 SID 5.2	☐ 1 week			
Site: BMP Performance OF 009 Watershed	☐ 2 days			Job / SDG No.:
H&A P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Metals (Total Recoverable) (Method 200.7/200.8/245.1)*	Metals (Total Dissolved) (Method 200.7/200.8/245.1)*	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Dissolved)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Recoverable)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)	Sample Specific Notes:
								1-250mL P	1-250mL P	1-250mL P	1-250mL P	2-1L A	1-1L P	1-1L P	1-250mL P	Field Staff Notes Lab may substitute 250mL Poly for 500mL for metals. Only need to fill half of 500mL. Must fill TSS to the top
ILBMP001_20180321	3/21/2018	1030	G	WM	7		N			X	X	X	X	X		
ILBMP0008_20180321	3/21/2018	1230	G	WM	2		N				H	H (1)				Hold
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other								4	1	4	1	1	1	1	1	

440-206527 Chain of Custody

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☑ Archive for 6 Months

Special Instructions/QC Requirements & Comments:
Please email data to kmiller@haleyaldrich.com and post to Total Access
Bill to Haley & Aldrich, San Diego at AP@haleyaldrich com
Report Level II Data Package and provide EDD
All dissolved metal samples are to be filtered within 24 hours of receipt, even those placed on hold. (excl = excluding)
* = analyze metals by either 200.7or 200.8 as communicated to Urvashi on 02/01/2017

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: Corr'd:	Therm ID No.:	
Relinquished by: [signature]	Company: JHA	Date/Time: 3/21/18 15:13	Received by: [signature]	Company: TA	Date/Time: 3-21-18 1513
Relinquished by: [signature]	Company: TA	Date/Time: 3-21-18 1757	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: Olga Quinelas	Company: TA IRV	Date/Time: 3/21/18 1757

OQ 3/21/18

IR-89 2.7/2.4

Form No. CA-C-WI-045, Rev. 1.2, dated 1/8/2016

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-120404.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-206527-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 4/2/2018			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Boeing SSFL ISRA and BMP	Project #: 44009815			
Site:	SSOW#:			

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 - 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)	1613B/1613B_Sox_Sep_P Standard List w/ Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
ILBMP001_20180321 (440-206527-1)	3/21/18	10:30 Pacific		Water			X	2	See QAS, Boeing_w/u to zero

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 complicance 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: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		3/22/18 0700	TAIR		3/23/18 849	TA-Sac
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	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: 6 4c

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-206527-1

Login Number: 206527
List Number: 1
Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

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	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	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: Haley & Aldrich, Inc.

Job Number: 440-206527-1

Login Number: 206527
List Number: 2
Creator: Her, David A

List Source: TestAmerica Sacramento
List Creation: 03/23/18 06:42 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.	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	0.9c
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	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206527-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
440-206527-1	ILBMP0001_20180321	86	81	82	84	84	83	87	78
MB 320-215317/1-A	Method Blank	78	78	79	78	81	80	85	73
MB 320-215317/1-A - RA	Method Blank		74						

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-206527-1	ILBMP0001_20180321	80	78	76	73	76	72	66
MB 320-215317/1-A	Method Blank	76	75	73	72	74	72	65
MB 320-215317/1-A - RA	Method Blank							

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-215317/2-A	Lab Control Sample	81	80	78	79	81	80	85	75
LCSD 320-215317/3-A	Lab Control Sample Dup	81	79	78	79	81	95	98	92

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-215317/2-A	Lab Control Sample	76	77	74	73	78	74	67
LCSD 320-215317/3-A	Lab Control Sample Dup	95	65	90	78	61	76	78

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206527-1

HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

440-206527 Field Sheet

Jc

Tracking # 4176 2740 8067 SO / PO / FO

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes:

Therm. ID: AK-2 / AK-3 / AK-4 / AK-5 / HACCP / Other

Ice Y Wet Y Gel Other

Cooler Custody Seal: Seal

Sample Custody Seal: —

Cooler ID: —

Temp: Observed 0.9

From: Temp Blank ☐ Sample ☐

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☐
CoC is complete w/o discrepancies?	☐	☐	☐
Samples received within holding time?	☐	☐	☐
Sample preservatives verified?	☐	☐	☐
Cooler compromised/tampered with?	☐	☐	☐
Samples compromised/tampered with?	☐	☐	☐
Samples w/o discrepancies?	☐	☐	☐
Sample containers have legible labels?	☐	☐	☐
Containers are not broken or leaking?	☐	☐	☐
Sample date/times are provided.	☐	☐	☐
Appropriate containers are used?	☐	☐	☐
Sample bottles are completely filled?	☐	☐	☐
Zero headspace?*	☐	☐	☐
Multiphasic samples are not present?	☐	☐	☐
Sample temp OK?	☐	☐	☐
Sample out of temp?	☐	☐	☐

Initials: MM Date: 3/23/18 Time 845

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-206764-1
Client Project/Site: BMP Performance OF 009 Watershed

For:
Haley & Aldrich, Inc.
400 E Van Buren St.
Suite 545
Phoenix, Arizona 85004

Attn: Katherine Miller

Authorized for release by:
4/3/2018 9:25:31 PM

Urvashi Patel, Manager of Project Management
(949)261-1022
urvashi.patel@testamericainc.com

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-206764-1	A1BMP0002_20180322	Water	03/22/18 09:30	03/22/18 20:00
440-206764-2	A1BMP0003_20180322	Water	03/22/18 09:45	03/22/18 20:00
440-206764-4	EPNDSW01_20180322	Water	03/22/18 07:15	03/22/18 20:00
440-206764-5	EPNDSW02_20180322	Water	03/22/18 07:30	03/22/18 20:00
440-206764-6	EPNDSW03_20180322	Water	03/22/18 07:45	03/22/18 20:00
440-206764-7	EPNDSW04_20180322	Water	03/22/18 08:00	03/22/18 20:00
440-206764-8	EPNDSW06_20180322	Water	03/22/18 08:30	03/22/18 20:00

Job ID: 440-206764-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-206764-1

Comments
No additional comments.

Receipt
The samples were received on 3/22/2018 8:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.3º C, 3.5º C and 3.8º C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): FBQW_20180322 (440-206764-3). Received #3 not listed on coc.

Metals
Method(s) 200.8: The following samples requested dissolved metals and were not filtered in the field: A1BMP0002_20180322 (440-206764-1), A1BMP0003_20180322 (440-206764-2), EPNDSW01_20180322 (440-206764-4), EPNDSW02_20180322 (440-206764-5), EPNDSW03_20180322 (440-206764-6), EPNDSW04_20180322 (440-206764-7) and EPNDSW06_20180322 (440-206764-8). These samples were filtered and preserved upon receipt to the laboratory.

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.

Subcontract non-Sister
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work
Method Particle Size: This method was subcontracted to PTS Laboratories, Inc. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample ID: A1BMP0002_20180322

Lab Sample ID: 440-206764-1

Date Collected: 03/22/18 09:30
Matrix: Water
Date Received: 03/22/18 20:00

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 14:25	03/28/18 12:46	1
Copper	**8.0**		2.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:46	1
Lead	ND		1.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:46	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 16:25	03/27/18 17:55	1
Copper	**7.0**		2.0	0.50	ug/L		03/27/18 16:25	03/27/18 17:55	1
Lead	ND		1.0	0.50	ug/L		03/27/18 16:25	03/27/18 17:55	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 22:23	03/27/18 19:17	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 13:15	03/27/18 16:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**6.1**		1.1	0.53	mg/L			03/28/18 18:00	1

Client Sample ID: A1BMP0003_20180322

Lab Sample ID: 440-206764-2

Date Collected: 03/22/18 09:45
Matrix: Water
Date Received: 03/22/18 20:00

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 14:25	03/28/18 12:43	1
Copper	**4.8**		2.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:43	1
Lead	**1.1**		1.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:43	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 16:25	03/27/18 18:06	1
Copper	**3.9**		2.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:06	1
Lead	ND		1.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:06	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 22:23	03/27/18 19:19	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 22:29	03/27/18 16:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	**7.1**		1.3	0.63	mg/L			03/28/18 18:00	1

Client Sample ID: EPNDSW01_20180322

Lab Sample ID: 440-206764-4

Date Collected: 03/22/18 07:15

Matrix: Water

Date Received: 03/22/18 20:00

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 14:25	03/28/18 12:31	1
Copper	**5.7**		2.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:31	1
Lead	**0.99**	**J,DX**	1.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:31	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 16:25	03/27/18 18:07	1
Copper	**5.0**		2.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:07	1
Lead	ND		1.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:07	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 22:23	03/27/18 19:22	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 13:15	03/27/18 16:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	**9.6**		0.20	0.080	NTU			03/23/18 21:10	2
Total Suspended Solids	**3.4**		1.1	0.53	mg/L			03/28/18 18:00	1

Client Sample ID: EPNDSW02_20180322

Lab Sample ID: 440-206764-5

Date Collected: 03/22/18 07:30

Matrix: Water

Date Received: 03/22/18 20:00

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 14:25	03/28/18 12:48	1
Copper	**2.6**		2.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:48	1
Lead	ND		1.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:48	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 16:25	03/27/18 18:09	1
Copper	**2.4**		2.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:09	1
Lead	ND		1.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:09	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 22:23	03/27/18 19:24	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 13:15	03/27/18 16:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	**3.9**		0.10	0.040	NTU			03/23/18 21:10	1
Total Suspended Solids	**3.5**		1.1	0.53	mg/L			03/28/18 18:00	1

Client Sample ID: EPNDSW03_20180322

Lab Sample ID: 440-206764-6

Date Collected: 03/22/18 07:45

Matrix: Water

Date Received: 03/22/18 20:00

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 14:25	03/28/18 12:51	1
Copper	**7.5**		2.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:51	1
Lead	**1.7**		1.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:51	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 16:25	03/27/18 18:11	1
Copper	**6.7**		2.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:11	1
Lead	**0.72**	**J,DX**	1.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:11	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 22:23	03/27/18 19:26	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 13:15	03/27/18 16:48	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	**15**		0.20	0.080	NTU			03/23/18 21:10	2
Total Suspended Solids	**3.4**		1.1	0.53	mg/L			03/28/18 18:00	1

Client Sample ID: EPNDSW04_20180322

Lab Sample ID: 440-206764-7

Date Collected: 03/22/18 08:00

Matrix: Water

Date Received: 03/22/18 20:00

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 14:25	03/28/18 12:53	1
Copper	**8.3**		2.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:53	1
Lead	**2.4**		1.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:53	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 16:25	03/27/18 18:13	1
Copper	**6.9**		2.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:13	1
Lead	**1.0**		1.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:13	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 22:23	03/27/18 19:29	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 13:15	03/27/18 16:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	**17**		0.20	0.080	NTU			03/23/18 21:10	2
Total Suspended Solids	**5.4**		1.1	0.53	mg/L			03/28/18 18:00	1

Client Sample ID: EPNDSW06_20180322
Date Collected: 03/22/18 08:30
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206764-8
Matrix: Water

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 14:25	03/28/18 12:33	1
Copper	**8.0**		2.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:33	1
Lead	**2.8**		1.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:33	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 16:25	03/27/18 18:15	1
Copper	**6.3**		2.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:15	1
Lead	**0.67**	**J,DX**	1.0	0.50	ug/L		03/27/18 16:25	03/27/18 18:15	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 22:24	03/27/18 19:38	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 13:15	03/27/18 16:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	**25**		0.40	0.16	NTU			03/23/18 21:10	4
Total Suspended Solids	**11**		1.3	0.63	mg/L			03/28/18 18:00	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-1

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
Particle Size	General Sub Contract Method	NONE	SC0028

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

SC0028 = PTS Laboratories, Inc, 5730 Central Crest Street, Houston, TX 77092, TEL (713)316-1800

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-1

Client Sample ID: A1BMP0002_20180322

Lab Sample ID: 440-206764-1

Date Collected: 03/22/18 09:30

Matrix: Water

Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	466399	03/27/18 16:25	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			466446	03/27/18 17:55	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	466364	03/27/18 14:25	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			466637	03/28/18 12:46	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	466055	03/26/18 13:15	DB	TAL IRV
Dissolved	Analysis	245.1		1			466636	03/27/18 16:41	DB	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	466172	03/26/18 22:23	DB	TAL IRV
Total/NA	Analysis	245.1		1			466984	03/27/18 19:17	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	950 mL	1000 mL	466617	03/28/18 18:00	XL	TAL IRV

Client Sample ID: A1BMP0003_20180322

Lab Sample ID: 440-206764-2

Date Collected: 03/22/18 09:45

Matrix: Water

Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	466399	03/27/18 16:25	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			466446	03/27/18 18:06	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	466364	03/27/18 14:25	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			466637	03/28/18 12:43	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	466176	03/26/18 22:29	DB	TAL IRV
Dissolved	Analysis	245.1		1			467028	03/27/18 16:15	DB	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	466172	03/26/18 22:23	DB	TAL IRV
Total/NA	Analysis	245.1		1			466984	03/27/18 19:19	DB	TAL IRV
Total/NA	Analysis	SM 2540D		1	800 mL	1000 mL	466617	03/28/18 18:00	XL	TAL IRV

Client Sample ID: EPNDSW01_20180322

Lab Sample ID: 440-206764-4

Date Collected: 03/22/18 07:15

Matrix: Water

Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	466399	03/27/18 16:25	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			466446	03/27/18 18:07	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	466364	03/27/18 14:25	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			466637	03/28/18 12:31	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	466055	03/26/18 13:15	DB	TAL IRV
Dissolved	Analysis	245.1		1			466636	03/27/18 16:43	DB	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	466172	03/26/18 22:23	DB	TAL IRV
Total/NA	Analysis	245.1		1			466984	03/27/18 19:22	DB	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	180.1		2			465750	03/23/18 21:10	CMM	TAL IRV
Total/NA	Analysis	SM 2540D		1	950 mL	1000 mL	466617	03/28/18 18:00	XL	TAL IRV

Client Sample ID: EPNDSW02_20180322

Lab Sample ID: 440-206764-5

Date Collected: 03/22/18 07:30

Matrix: Water

Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	466399	03/27/18 16:25	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			466446	03/27/18 18:09	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	466364	03/27/18 14:25	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			466637	03/28/18 12:48	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	466055	03/26/18 13:15	DB	TAL IRV
Dissolved	Analysis	245.1		1			466636	03/27/18 16:46	DB	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	466172	03/26/18 22:23	DB	TAL IRV
Total/NA	Analysis	245.1		1			466984	03/27/18 19:24	DB	TAL IRV
Total/NA	Analysis	180.1		1			465750	03/23/18 21:10	CMM	TAL IRV
Total/NA	Analysis	SM 2540D		1	950 mL	1000 mL	466617	03/28/18 18:00	XL	TAL IRV

Client Sample ID: EPNDSW03_20180322

Lab Sample ID: 440-206764-6

Date Collected: 03/22/18 07:45

Matrix: Water

Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	466399	03/27/18 16:25	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			466446	03/27/18 18:11	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	466364	03/27/18 14:25	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			466637	03/28/18 12:51	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	466055	03/26/18 13:15	DB	TAL IRV
Dissolved	Analysis	245.1		1			466636	03/27/18 16:48	DB	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	466172	03/26/18 22:23	DB	TAL IRV
Total/NA	Analysis	245.1		1			466984	03/27/18 19:26	DB	TAL IRV
Total/NA	Analysis	180.1		2			465750	03/23/18 21:10	CMM	TAL IRV
Total/NA	Analysis	SM 2540D		1	950 mL	1000 mL	466617	03/28/18 18:00	XL	TAL IRV

Client Sample ID: EPNDSW04_20180322

Lab Sample ID: 440-206764-7

Date Collected: 03/22/18 08:00

Matrix: Water

Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	466399	03/27/18 16:25	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			466446	03/27/18 18:13	B1H	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-1

Client Sample ID: EPNDSW04_20180322

Lab Sample ID: 440-206764-7

Date Collected: 03/22/18 08:00
Matrix: Water
Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	466364	03/27/18 14:25	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			466637	03/28/18 12:53	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	466055	03/26/18 13:15	DB	TAL IRV
Dissolved	Analysis	245.1		1			466636	03/27/18 16:50	DB	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	466172	03/26/18 22:23	DB	TAL IRV
Total/NA	Analysis	245.1		1			466984	03/27/18 19:29	DB	TAL IRV
Total/NA	Analysis	180.1		2			465750	03/23/18 21:10	CMM	TAL IRV
Total/NA	Analysis	SM 2540D		1	950 mL	1000 mL	466617	03/28/18 18:00	XL	TAL IRV

Client Sample ID: EPNDSW06_20180322

Lab Sample ID: 440-206764-8

Date Collected: 03/22/18 08:30
Matrix: Water
Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	466399	03/27/18 16:25	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			466446	03/27/18 18:15	B1H	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	466364	03/27/18 14:25	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			466637	03/28/18 12:33	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	465710	03/23/18 19:09	MN1	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	466055	03/26/18 13:15	DB	TAL IRV
Dissolved	Analysis	245.1		1			466636	03/27/18 16:53	DB	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	466172	03/26/18 22:24	DB	TAL IRV
Total/NA	Analysis	245.1		1			466984	03/27/18 19:38	DB	TAL IRV
Total/NA	Analysis	180.1		4			465750	03/23/18 21:10	CMM	TAL IRV
Total/NA	Analysis	SM 2540D		1	800 mL	1000 mL	466617	03/28/18 18:00	XL	TAL IRV

Laboratory References:

SC0028 = PTS Laboratories, Inc, 5730 Central Crest Street, Houston, TX 77092, TEL (713)316-1800

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-466364/1-A
Matrix: Water
Analysis Batch: 466637

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 466364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 14:25	03/28/18 12:41	1
Copper	ND		2.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:41	1
Lead	ND		1.0	0.50	ug/L		03/27/18 14:25	03/28/18 12:41	1

Lab Sample ID: LCS 440-466364/2-A
Matrix: Water
Analysis Batch: 466637

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 466364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	76.7		ug/L		96	85 - 115
Copper	80.0	76.2		ug/L		95	85 - 115
Lead	80.0	75.9		ug/L		95	85 - 115

Lab Sample ID: 440-206832-P-2-D MS
Matrix: Water
Analysis Batch: 466637

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 466364

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	81.3		ug/L		102	70 - 130
Copper	3.4		80.0	82.2		ug/L		99	70 - 130
Lead	0.82	J,DX	80.0	75.1		ug/L		93	70 - 130

Lab Sample ID: 440-206832-P-2-E MSD
Matrix: Water
Analysis Batch: 466637

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 466364

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	75.5		ug/L		94	70 - 130	7	20
Copper	3.4		80.0	77.3		ug/L		92	70 - 130	6	20
Lead	0.82	J,DX	80.0	73.0		ug/L		90	70 - 130	3	20

Lab Sample ID: MB 440-465710/1-F
Matrix: Water
Analysis Batch: 466446

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 466399

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 16:25	03/27/18 17:51	1
Copper	ND		2.0	0.50	ug/L		03/27/18 16:25	03/27/18 17:51	1
Lead	ND		1.0	0.50	ug/L		03/27/18 16:25	03/27/18 17:51	1

Lab Sample ID: LCS 440-465710/2-F
Matrix: Water
Analysis Batch: 466446

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 466399

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	69.9		ug/L		87	85 - 115
Copper	80.0	69.5		ug/L		87	85 - 115
Lead	80.0	68.7		ug/L		86	85 - 115

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-206764-1 MS
Matrix: Water
Analysis Batch: 466446

Client Sample ID: A1BMP0002_20180322
Prep Type: Dissolved
Prep Batch: 466399

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	68.2		ug/L		85	70 - 130
Copper	7.0		80.0	75.2		ug/L		85	70 - 130
Lead	ND		80.0	67.4		ug/L		84	70 - 130

Lab Sample ID: 440-206764-1 MSD
Matrix: Water
Analysis Batch: 466446

Client Sample ID: A1BMP0002_20180322
Prep Type: Dissolved
Prep Batch: 466399

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	73.5		ug/L		92	70 - 130	7	20
Copper	7.0		80.0	79.8		ug/L		91	70 - 130	6	20
Lead	ND		80.0	72.3		ug/L		90	70 - 130	7	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-466172/1-A
Matrix: Water
Analysis Batch: 466984

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 466172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 22:23	03/27/18 18:58	1

Lab Sample ID: LCS 440-466172/2-A
Matrix: Water
Analysis Batch: 466984

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 466172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	8.59		ug/L		107	85 - 115

Lab Sample ID: 440-206802-A-1-B MS
Matrix: Water
Analysis Batch: 466984

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 466172

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	8.68		ug/L		109	70 - 130

Lab Sample ID: 440-206802-A-1-C MSD
Matrix: Water
Analysis Batch: 466984

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 466172

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.50		ug/L		106	70 - 130	2	20

Lab Sample ID: MB 440-465710/1-D
Matrix: Water
Analysis Batch: 466636

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 466055

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 13:15	03/27/18 16:22	1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-465710/2-D
Matrix: Water
Analysis Batch: 466636

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 466055

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			8.00	8.34		ug/L		104	85 - 115		

Lab Sample ID: 440-206741-B-2-K MS
Matrix: Water
Analysis Batch: 466636

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 466055

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		8.00	8.07		ug/L		101	70 - 130		

Lab Sample ID: 440-206741-B-2-L MSD
Matrix: Water
Analysis Batch: 466636

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 466055

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.24		ug/L		103	70 - 130	2	20

Lab Sample ID: MB 440-465710/1-E
Matrix: Water
Analysis Batch: 467028

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 466176

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 22:29	03/27/18 16:11	1

Lab Sample ID: LCS 440-465710/2-E
Matrix: Water
Analysis Batch: 467028

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 466176

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			8.00	8.52		ug/L		107	85 - 115		

Lab Sample ID: 440-206764-2 MS
Matrix: Water
Analysis Batch: 467028

Client Sample ID: A1BMP0003_20180322
Prep Type: Dissolved
Prep Batch: 466176

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		8.00	8.32		ug/L		104	70 - 130		

Lab Sample ID: 440-206764-2 MSD
Matrix: Water
Analysis Batch: 467028

Client Sample ID: A1BMP0003_20180322
Prep Type: Dissolved
Prep Batch: 466176

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.33		ug/L		104	70 - 130	0	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-465750/5
Matrix: Water
Analysis Batch: 465750

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			03/23/18 21:10	1

Lab Sample ID: 440-206764-4 DU
Matrix: Water
Analysis Batch: 465750

Client Sample ID: EPNDSW01_20180322
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Turbidity	9.6			9.82		NTU				2	20

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-466617/1
Matrix: Water
Analysis Batch: 466617

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			03/28/18 18:00	1

Lab Sample ID: LCS 440-466617/2
Matrix: Water
Analysis Batch: 466617

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			1000	1010		mg/L		101	85 - 115		

Lab Sample ID: 440-206769-K-1 DU
Matrix: Water
Analysis Batch: 466617

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	25			24.0		mg/L				2	10

Metals

Filtration Batch: 465710

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Dissolved	Water	FILTRATION	
440-206764-2	A1BMP0003_20180322	Dissolved	Water	FILTRATION	
440-206764-4	EPNDSW01_20180322	Dissolved	Water	FILTRATION	
440-206764-5	EPNDSW02_20180322	Dissolved	Water	FILTRATION	
440-206764-6	EPNDSW03_20180322	Dissolved	Water	FILTRATION	
440-206764-7	EPNDSW04_20180322	Dissolved	Water	FILTRATION	
440-206764-8	EPNDSW06_20180322	Dissolved	Water	FILTRATION	
MB 440-465710/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-465710/1-E	Method Blank	Dissolved	Water	FILTRATION	
MB 440-465710/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-465710/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-465710/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-465710/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
440-206741-B-2-K MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-206741-B-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-206764-1 MS	A1BMP0002_20180322	Dissolved	Water	FILTRATION	
440-206764-1 MSD	A1BMP0002_20180322	Dissolved	Water	FILTRATION	
440-206764-2 MS	A1BMP0003_20180322	Dissolved	Water	FILTRATION	
440-206764-2 MSD	A1BMP0003_20180322	Dissolved	Water	FILTRATION	

Prep Batch: 466055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Dissolved	Water	245.1	465710
440-206764-4	EPNDSW01_20180322	Dissolved	Water	245.1	465710
440-206764-5	EPNDSW02_20180322	Dissolved	Water	245.1	465710
440-206764-6	EPNDSW03_20180322	Dissolved	Water	245.1	465710
440-206764-7	EPNDSW04_20180322	Dissolved	Water	245.1	465710
440-206764-8	EPNDSW06_20180322	Dissolved	Water	245.1	465710
MB 440-465710/1-D	Method Blank	Dissolved	Water	245.1	465710
LCS 440-465710/2-D	Lab Control Sample	Dissolved	Water	245.1	465710
440-206741-B-2-K MS	Matrix Spike	Dissolved	Water	245.1	465710
440-206741-B-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	465710

Prep Batch: 466172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Total/NA	Water	245.1	
440-206764-2	A1BMP0003_20180322	Total/NA	Water	245.1	
440-206764-4	EPNDSW01_20180322	Total/NA	Water	245.1	
440-206764-5	EPNDSW02_20180322	Total/NA	Water	245.1	
440-206764-6	EPNDSW03_20180322	Total/NA	Water	245.1	
440-206764-7	EPNDSW04_20180322	Total/NA	Water	245.1	
440-206764-8	EPNDSW06_20180322	Total/NA	Water	245.1	
MB 440-466172/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-466172/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-206802-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-206802-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Prep Batch: 466176

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-2	A1BMP0003_20180322	Dissolved	Water	245.1	465710
MB 440-465710/1-E	Method Blank	Dissolved	Water	245.1	465710

Metals (Continued)

Prep Batch: 466176 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-465710/2-E	Lab Control Sample	Dissolved	Water	245.1	465710
440-206764-2 MS	A1BMP0003_20180322	Dissolved	Water	245.1	465710
440-206764-2 MSD	A1BMP0003_20180322	Dissolved	Water	245.1	465710

Prep Batch: 466364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Total Recoverable	Water	200.2	
440-206764-2	A1BMP0003_20180322	Total Recoverable	Water	200.2	
440-206764-4	EPNDSW01_20180322	Total Recoverable	Water	200.2	
440-206764-5	EPNDSW02_20180322	Total Recoverable	Water	200.2	
440-206764-6	EPNDSW03_20180322	Total Recoverable	Water	200.2	
440-206764-7	EPNDSW04_20180322	Total Recoverable	Water	200.2	
440-206764-8	EPNDSW06_20180322	Total Recoverable	Water	200.2	
MB 440-466364/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-466364/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-206832-P-2-D MS	Matrix Spike	Total Recoverable	Water	200.2	
440-206832-P-2-E MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Prep Batch: 466399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Dissolved	Water	200.2	465710
440-206764-2	A1BMP0003_20180322	Dissolved	Water	200.2	465710
440-206764-4	EPNDSW01_20180322	Dissolved	Water	200.2	465710
440-206764-5	EPNDSW02_20180322	Dissolved	Water	200.2	465710
440-206764-6	EPNDSW03_20180322	Dissolved	Water	200.2	465710
440-206764-7	EPNDSW04_20180322	Dissolved	Water	200.2	465710
440-206764-8	EPNDSW06_20180322	Dissolved	Water	200.2	465710
MB 440-465710/1-F	Method Blank	Dissolved	Water	200.2	465710
LCS 440-465710/2-F	Lab Control Sample	Dissolved	Water	200.2	465710
440-206764-1 MS	A1BMP0002_20180322	Dissolved	Water	200.2	465710
440-206764-1 MSD	A1BMP0002_20180322	Dissolved	Water	200.2	465710

Analysis Batch: 466446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Dissolved	Water	200.8	466399
440-206764-2	A1BMP0003_20180322	Dissolved	Water	200.8	466399
440-206764-4	EPNDSW01_20180322	Dissolved	Water	200.8	466399
440-206764-5	EPNDSW02_20180322	Dissolved	Water	200.8	466399
440-206764-6	EPNDSW03_20180322	Dissolved	Water	200.8	466399
440-206764-7	EPNDSW04_20180322	Dissolved	Water	200.8	466399
440-206764-8	EPNDSW06_20180322	Dissolved	Water	200.8	466399
MB 440-465710/1-F	Method Blank	Dissolved	Water	200.8	466399
LCS 440-465710/2-F	Lab Control Sample	Dissolved	Water	200.8	466399
440-206764-1 MS	A1BMP0002_20180322	Dissolved	Water	200.8	466399
440-206764-1 MSD	A1BMP0002_20180322	Dissolved	Water	200.8	466399

Analysis Batch: 466636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Dissolved	Water	245.1	466055
440-206764-4	EPNDSW01_20180322	Dissolved	Water	245.1	466055
440-206764-5	EPNDSW02_20180322	Dissolved	Water	245.1	466055

Metals (Continued)

Analysis Batch: 466636 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-6	EPNDSW03_20180322	Dissolved	Water	245.1	466055
440-206764-7	EPNDSW04_20180322	Dissolved	Water	245.1	466055
440-206764-8	EPNDSW06_20180322	Dissolved	Water	245.1	466055
MB 440-465710/1-D	Method Blank	Dissolved	Water	245.1	466055
LCS 440-465710/2-D	Lab Control Sample	Dissolved	Water	245.1	466055
440-206741-B-2-K MS	Matrix Spike	Dissolved	Water	245.1	466055
440-206741-B-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	466055

Analysis Batch: 466637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Total Recoverable	Water	200.8	466364
440-206764-2	A1BMP0003_20180322	Total Recoverable	Water	200.8	466364
440-206764-4	EPNDSW01_20180322	Total Recoverable	Water	200.8	466364
440-206764-5	EPNDSW02_20180322	Total Recoverable	Water	200.8	466364
440-206764-6	EPNDSW03_20180322	Total Recoverable	Water	200.8	466364
440-206764-7	EPNDSW04_20180322	Total Recoverable	Water	200.8	466364
440-206764-8	EPNDSW06_20180322	Total Recoverable	Water	200.8	466364
MB 440-466364/1-A	Method Blank	Total Recoverable	Water	200.8	466364
LCS 440-466364/2-A	Lab Control Sample	Total Recoverable	Water	200.8	466364
440-206832-P-2-D MS	Matrix Spike	Total Recoverable	Water	200.8	466364
440-206832-P-2-E MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	466364

Analysis Batch: 466984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Total/NA	Water	245.1	466172
440-206764-2	A1BMP0003_20180322	Total/NA	Water	245.1	466172
440-206764-4	EPNDSW01_20180322	Total/NA	Water	245.1	466172
440-206764-5	EPNDSW02_20180322	Total/NA	Water	245.1	466172
440-206764-6	EPNDSW03_20180322	Total/NA	Water	245.1	466172
440-206764-7	EPNDSW04_20180322	Total/NA	Water	245.1	466172
440-206764-8	EPNDSW06_20180322	Total/NA	Water	245.1	466172
MB 440-466172/1-A	Method Blank	Total/NA	Water	245.1	466172
LCS 440-466172/2-A	Lab Control Sample	Total/NA	Water	245.1	466172
440-206802-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	466172
440-206802-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	466172

Analysis Batch: 467028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-2	A1BMP0003_20180322	Dissolved	Water	245.1	466176
MB 440-465710/1-E	Method Blank	Dissolved	Water	245.1	466176
LCS 440-465710/2-E	Lab Control Sample	Dissolved	Water	245.1	466176
440-206764-2 MS	A1BMP0003_20180322	Dissolved	Water	245.1	466176
440-206764-2 MSD	A1BMP0003_20180322	Dissolved	Water	245.1	466176

General Chemistry

Analysis Batch: 465750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-4	EPNDSW01_20180322	Total/NA	Water	180.1	
440-206764-5	EPNDSW02_20180322	Total/NA	Water	180.1	

General Chemistry (Continued)

Analysis Batch: 465750 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-6	EPNDSW03_20180322	Total/NA	Water	180.1	
440-206764-7	EPNDSW04_20180322	Total/NA	Water	180.1	
440-206764-8	EPNDSW06_20180322	Total/NA	Water	180.1	
MB 440-465750/5	Method Blank	Total/NA	Water	180.1	
440-206764-4 DU	EPNDSW01_20180322	Total/NA	Water	180.1	

Analysis Batch: 466617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Total/NA	Water	SM 2540D	
440-206764-2	A1BMP0003_20180322	Total/NA	Water	SM 2540D	
440-206764-4	EPNDSW01_20180322	Total/NA	Water	SM 2540D	
440-206764-5	EPNDSW02_20180322	Total/NA	Water	SM 2540D	
440-206764-6	EPNDSW03_20180322	Total/NA	Water	SM 2540D	
440-206764-7	EPNDSW04_20180322	Total/NA	Water	SM 2540D	
440-206764-8	EPNDSW06_20180322	Total/NA	Water	SM 2540D	
MB 440-466617/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-466617/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-206769-K-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-1

Qualifiers

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

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)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-1

Laboratory: TestAmerica Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

5730 Centralcrest St. • Houston, TX 77092
Telephone (713) 316-1800 • Fax (877) 225-9953

April 3, 2018

Patel Urvashi,
Project Manager,
TestAmerica Irvine.
17461 Derian Ave. Suite 100,
Irvine, CA 92614-5817

Re: PTS File No: 48066_a
Project Name: Boeing SSFL ISRA and BMP
Project Number: 44009815
COC Number: 440-120458.1
Job Number: 440-206764-1
Laser Particle Size Analyses

Dear Patel Urvashi:

Please find enclosed report for Physical Properties analyses conducted upon samples received from the above referenced project.
All analyses were performed by ASTM D4464 methodology. The samples are currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact myself or Emeka Anazodo at (713) 316-1800.

Sincerely,
PTS Laboratories, Inc.

Rick Schweizer

Rick Schweizer
Laboratory Supervisor

Encl.

PTS Laboratories

Project Name: Boeing SSFL ISRA and BMP
Project Number: 44009815

PTS File No: 48066
Client: TestAmerica Irvine

TEST PROGRAM - 20180327

FLUID ID	Date	Time (Pacific)	Fluid Type	Particle Size: Microsize			Comments
			Method:	ASTM D4464			
Date Received: 20180324							
A1BMP0002_20180322(440-206764-1)	03/22/18	0930	Water	X			1-litre Plastic Bottle
A1BMP0003_20180322(440-206764-2)	03/22/18	0945	Water	X			1-litre Plastic Bottle
EPNDSW01_20180322(440-206764-4)	03/22/18	0715	Water	X			1-litre Plastic Bottle
EPNDSW02_20180322(440-206764-5)	03/22/18	0730	Water	X			1-litre Plastic Bottle
EPNDSW03_20180322(440-206764-6)	03/22/18	0745	Water	X			1-litre Plastic Bottle
EPNDSW04_20180322(440-206764-7)	03/22/18	0800	Water	X			1-litre Plastic Bottle
EPNDSW06_20180322(440-206764-8)	03/22/18	0830	Water	X			1-litre Plastic Bottle
TOTALS:				7			

Laboratory Test Program Notes
Standard TAT for basic analysis is 10-15 business days.
Water samples to be disposed 15 days after completion of analyses.

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D4464M)

PROJECT NAME: Boeing SSFL ISRA and BMP
PROJECT NO: 44009815

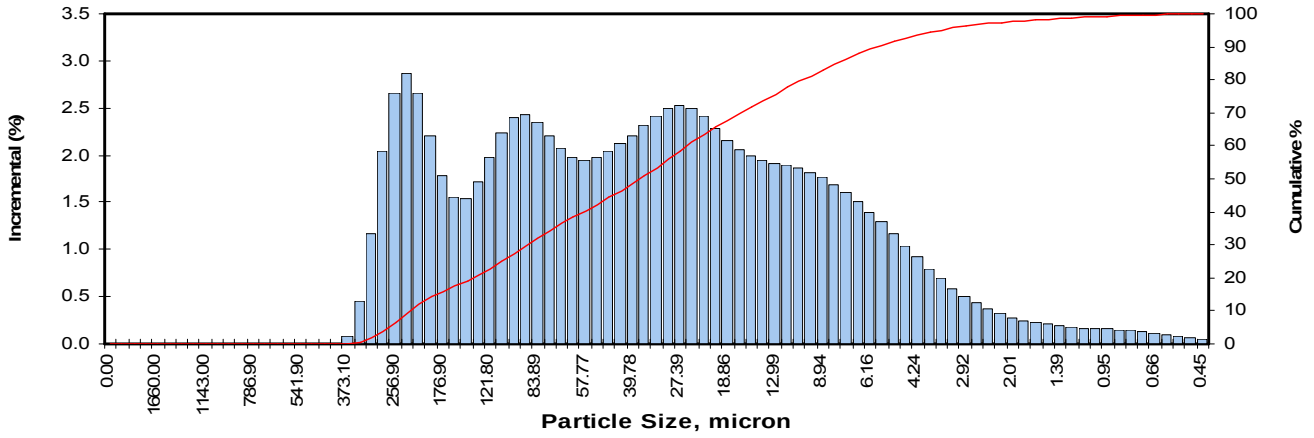
Sample ID	Matrix	Median Grain Size, micron (1)	CUMULATIVE PERCENT GREATER THAN Distribution percent, microns										
			5%	10%	16%	25%	40%	50%	60%	75%	84%	90%	95%
A1BMP0002_20180322(440-206764-1)	Aqueous	31.782	228.817	191.233	147.925	93.488	49.423	31.782	20.705	9.489	5.532	2.598	1.357
A1BMP0003_20180322(440-206764-2)	Aqueous	6.684	58.345	37.984	24.578	16.288	9.050	6.684	4.689	1.906	1.308	1.018	0.572
EPNDSW01_20180322(440-206764-4)	Aqueous	7.864	69.642	36.941	24.104	15.554	9.769	7.864	5.871	2.693	1.578	1.151	0.686
EPNDSW02_20180322(440-206764-5)	Aqueous	11.562	52.364	40.614	32.485	23.528	16.134	11.562	8.363	3.749	1.783	1.325	1.035
EPNDSW03_20180322(440-206764-6)	Aqueous	6.454	67.965	41.953	23.507	13.779	8.476	6.454	4.738	2.030	1.320	0.995	0.488
EPNDSW04_20180322(440-206764-7)	Aqueous	6.790	63.167	30.181	21.057	13.692	8.768	6.790	5.114	2.136	1.353	1.008	0.516
EPNDSW06_20180322(440-206764-8)	Aqueous	23.696	521.869	454.866	395.183	305.209	112.452	23.696	11.151	5.265	2.190	1.302	0.690

(1) Based on Trask Median

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48066_a
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	A1BMP0002_20180322(440-206764-1)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.01	0.0
373.10	0.09	0.1
339.90	0.45	0.5
309.60	1.17	1.7
282.10	2.04	3.8
256.90	2.65	6.4
234.10	2.86	9.3
213.20	2.65	11.9
194.20	2.21	14.1
176.90	1.79	15.9
161.20	1.55	17.5
146.80	1.54	19.0
133.70	1.71	20.7
121.80	1.98	22.7
111.00	2.23	24.9
101.10	2.40	27.3
92.09	2.43	29.8
83.89	2.35	32.1
76.42	2.21	34.3
69.61	2.08	36.4

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	1.98	38.4
57.77	1.95	40.3
52.62	1.98	42.3
47.94	2.04	44.3
43.67	2.12	46.5
39.78	2.21	48.7
36.24	2.31	51.0
33.01	2.41	53.4
30.07	2.49	55.9
27.39	2.52	58.4
24.95	2.50	60.9
22.73	2.41	63.3
20.70	2.29	65.6
18.86	2.16	67.8
17.18	2.06	69.8
15.65	1.99	71.8
14.26	1.95	73.8
12.99	1.92	75.7
11.83	1.89	77.6
10.78	1.86	79.4
9.82	1.81	81.2
8.94	1.76	83.0
8.15	1.69	84.7
7.42	1.61	86.3
6.76	1.51	87.8
6.16	1.40	89.2
5.61	1.29	90.5
5.11	1.16	91.7
4.66	1.04	92.7
4.24	0.92	93.6
3.86	0.80	94.4
3.52	0.69	95.1
3.21	0.59	95.7
2.92	0.50	96.2
2.66	0.43	96.6
2.42	0.37	97.0
2.21	0.32	97.3
2.01	0.28	97.6
1.83	0.25	97.9

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.230	98.1
1.520	0.210	98.3
1.385	0.200	98.5
1.261	0.180	98.7
1.149	0.170	98.8
1.047	0.170	99.0
0.953	0.160	99.2
0.868	0.150	99.3
0.791	0.140	99.5
0.721	0.130	99.6
0.656	0.110	99.7
0.598	0.098	99.8
0.545	0.083	99.9
0.496	0.066	100.0
0.452	0.047	100.0
TOTALS:	**100.00**	**100.0**

Measure	Trask	Inman
Median, mm	0.0318	0.0318
Median, micron	31.782	31.782
Mean, mm	0.0515	0.0286
Mean, micron	51.488	28.606
Sorting	3.1388	2.370
Skewness	0.9371	0.064
Kurtosis	0.2226	0.560

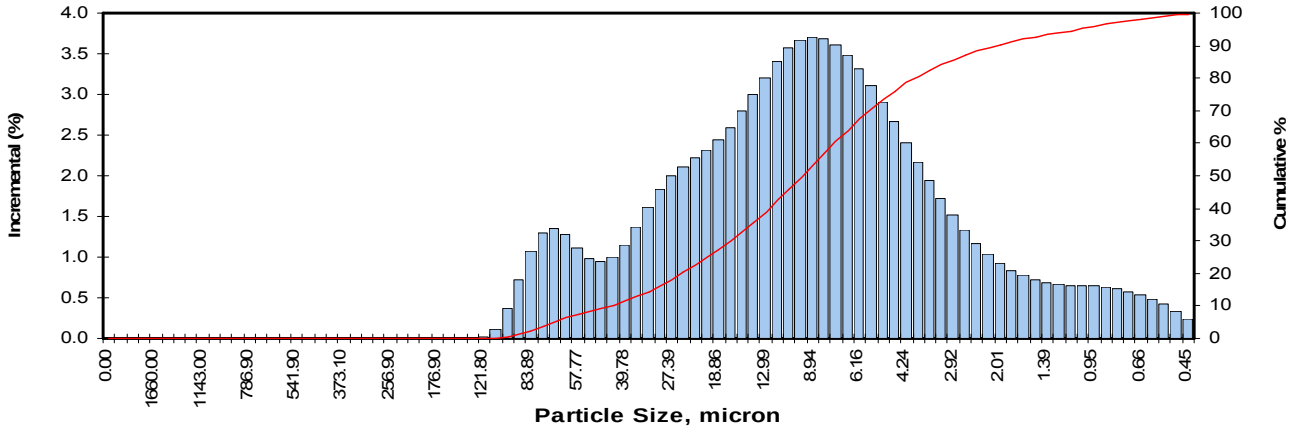
Distribution percent	Cumulative Percent greater than Particle Size	
	Micron	Millimeters
5	228.817	0.2288
10	191.233	0.1912
16	147.925	0.1479
25	93.488	0.0935
40	49.423	0.0494
50	31.782	0.0318
60	20.705	0.0207
75	9.489	0.0095
84	5.532	0.0055
90	2.598	0.0026
95	1.357	0.0014

Phone: (713) 316-1800

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48066_a
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	A1BMP0003_20180322(440-206764-2)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution Incremental percent	Particle Distribution Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.00	0.0
256.90	0.00	0.0
234.10	0.00	0.0
213.20	0.00	0.0
194.20	0.00	0.0
176.90	0.00	0.0
161.20	0.00	0.0
146.80	0.00	0.0
133.70	0.00	0.0
121.80	0.02	0.0
111.00	0.12	0.1
101.10	0.37	0.5
92.09	0.73	1.2
83.89	1.08	2.3
76.42	1.30	3.6
69.61	1.36	5.0

Particle Diameter, micron	Particle Distribution Incremental percent	Particle Distribution Cumulative percent
63.41	1.27	6.3
57.77	1.12	7.4
52.62	0.99	8.4
47.94	0.94	9.3
43.67	1.00	10.3
39.78	1.15	11.5
36.24	1.37	12.8
33.01	1.61	14.4
30.07	1.83	16.3
27.39	2.00	18.3
24.95	2.12	20.4
22.73	2.22	22.6
20.70	2.32	24.9
18.86	2.44	27.4
17.18	2.60	30.0
15.65	2.79	32.8
14.26	3.00	35.8
12.99	3.21	39.0
11.83	3.41	42.4
10.78	3.57	45.9
9.82	3.67	49.6
8.94	3.71	53.3
8.15	3.69	57.0
7.42	3.61	60.6
6.76	3.48	64.1
6.16	3.31	67.4
5.61	3.12	70.5
5.11	2.90	73.4
4.66	2.66	76.1
4.24	2.41	78.5
3.86	2.17	80.7
3.52	1.94	82.6
3.21	1.72	84.3
2.92	1.51	85.8
2.66	1.33	87.2
2.42	1.17	88.3
2.21	1.04	89.4
2.01	0.93	90.3
1.83	0.84	91.2

Particle Diameter, micron	Particle Distribution Incremental percent	Particle Distribution Cumulative percent
1.668	0.770	91.9
1.520	0.720	92.6
1.385	0.690	93.3
1.261	0.670	94.0
1.149	0.650	94.7
1.047	0.640	95.3
0.953	0.640	95.9
0.868	0.630	96.6
0.791	0.610	97.2
0.721	0.580	97.8
0.656	0.530	98.3
0.598	0.480	98.8
0.545	0.420	99.2
0.496	0.340	99.5
0.452	0.240	99.8
TOTALS:	**99.76**	**99.8**

Measure	Trask	Inman
Median, mm	0.0067	0.0067
Median, micron	6.684	6.684
Mean, mm	0.0091	0.0057
Mean, micron	9.097	5.671
Sorting	2.9229	2.116
Skewness	0.8337	0.112
Kurtosis	0.1945	0.577

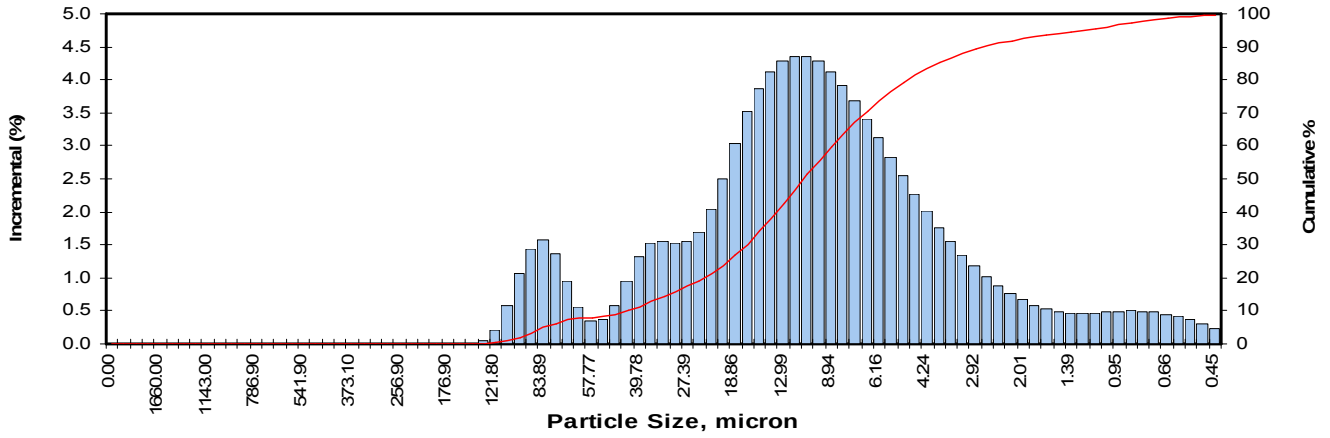
Distribution percent	Cumulative Percent greater than Particle Size Micron	Particle Size Millimeters
5	58.345	0.0583
10	37.984	0.0380
16	24.578	0.0246
25	16.288	0.0163
40	9.050	0.0090
50	6.684	0.0067
60	4.689	0.0047
75	1.906	0.0019
84	1.308	0.0013
90	1.018	0.0010
95	0.572	0.0006

Phone: (713) 316-1800

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48066_a
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	EPNDSW01_20180322(440-206764-4)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	0.55	7.7	1.668	0.530	93.7
0.00	0.00	0.0	57.77	0.34	8.1	1.520	0.490	94.1
2000.00	0.00	0.0	52.62	0.36	8.4	1.385	0.470	94.6
1822.00	0.00	0.0	47.94	0.58	9.0	1.261	0.470	95.1
1660.00	0.00	0.0	43.67	0.95	10.0	1.149	0.470	95.6
1512.00	0.00	0.0	39.78	1.31	11.3	1.047	0.480	96.0
1377.00	0.00	0.0	36.24	1.52	12.8	0.953	0.490	96.5
1255.00	0.00	0.0	33.01	1.55	14.3	0.868	0.500	97.0
1143.00	0.00	0.0	30.07	1.52	15.9	0.791	0.490	97.5
1041.00	0.00	0.0	27.39	1.54	17.4	0.721	0.480	98.0
948.30	0.00	0.0	24.95	1.70	19.1	0.656	0.450	98.4
863.90	0.00	0.0	22.73	2.04	21.1	0.598	0.420	98.9
786.90	0.00	0.0	20.70	2.51	23.7	0.545	0.370	99.2
716.80	0.00	0.0	18.86	3.03	26.7	0.496	0.300	99.5
653.00	0.00	0.0	17.18	3.51	30.2	0.452	0.220	99.8
594.90	0.00	0.0	15.65	3.87	34.1	**TOTALS:**	**99.76**	**99.8**
541.90	0.00	0.0	14.26	4.12	38.2			
493.60	0.00	0.0	12.99	4.28	42.5			
449.70	0.00	0.0	11.83	4.35	46.8			
409.60	0.00	0.0	10.78	4.36	51.2			
373.10	0.00	0.0	9.82	4.28	55.5			
339.90	0.00	0.0	8.94	4.13	59.6			
309.60	0.00	0.0	8.15	3.92	63.5			
282.10	0.00	0.0	7.42	3.67	67.2			
256.90	0.00	0.0	6.76	3.40	70.6			
234.10	0.00	0.0	6.16	3.12	73.7			
213.20	0.00	0.0	5.61	2.83	76.5			
194.20	0.00	0.0	5.11	2.54	79.1			
176.90	0.00	0.0	4.66	2.27	81.3			
161.20	0.00	0.0	4.24	2.01	83.3			
146.80	0.00	0.0	3.86	1.77	85.1			
133.70	0.04	0.0	3.52	1.55	86.7			
121.80	0.21	0.2	3.21	1.35	88.0			
111.00	0.57	0.8	2.92	1.18	89.2			
101.10	1.06	1.9	2.66	1.02	90.2			
92.09	1.44	3.3	2.42	0.88	91.1			
83.89	1.57	4.9	2.21	0.77	91.9			
76.42	1.36	6.2	2.01	0.67	92.5			
69.61	0.94	7.2	1.83	0.59	93.1			

Measure	Trask	Inman
Median, mm	0.0079	0.0079
Median, micron	7.864	7.864
Mean, mm	0.0091	0.0062
Mean, micron	9.124	6.168
Sorting	2.4032	1.967
Skewness	0.8230	0.178
Kurtosis	0.1797	0.695

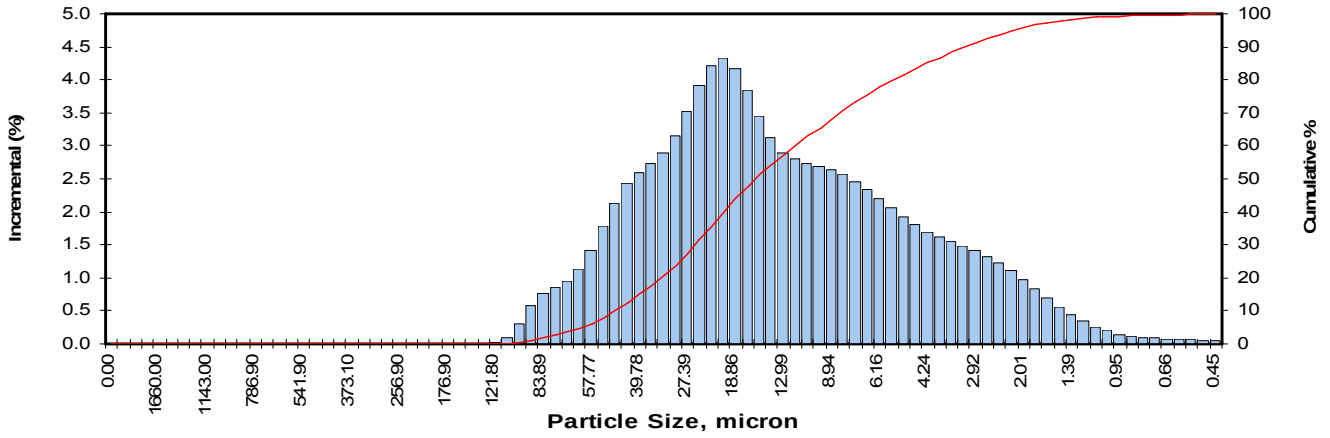
Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	69.642	0.0696
10	36.941	0.0369
16	24.104	0.0241
25	15.554	0.0156
40	9.769	0.0098
50	7.864	0.0079
60	5.871	0.0059
75	2.693	0.0027
84	1.578	0.0016
90	1.151	0.0012
95	0.686	0.0007

Phone: (713) 316-1800

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48066_a
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	EPNDSW02_20180322(440-206764-5)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	1.13	4.7	1.668	0.690	97.3
0.00	0.00	0.0	57.77	1.41	6.1	1.520	0.560	97.9
2000.00	0.00	0.0	52.62	1.78	7.9	1.385	0.450	98.3
1822.00	0.00	0.0	47.94	2.14	10.0	1.261	0.340	98.7
1660.00	0.00	0.0	43.67	2.42	12.5	1.149	0.260	98.9
1512.00	0.00	0.0	39.78	2.60	15.1	1.047	0.200	99.1
1377.00	0.00	0.0	36.24	2.73	17.8	0.953	0.150	99.3
1255.00	0.00	0.0	33.01	2.89	20.7	0.868	0.120	99.4
1143.00	0.00	0.0	30.07	3.15	23.8	0.791	0.100	99.5
1041.00	0.00	0.0	27.39	3.52	27.4	0.721	0.089	99.6
948.30	0.00	0.0	24.95	3.92	31.3	0.656	0.079	99.7
863.90	0.00	0.0	22.73	4.22	35.5	0.598	0.071	99.7
786.90	0.00	0.0	20.70	4.32	39.8	0.545	0.063	99.8
716.80	0.00	0.0	18.86	4.16	44.0	0.496	0.054	99.9
653.00	0.00	0.0	17.18	3.84	47.8	0.452	0.040	99.9
594.90	0.00	0.0	15.65	3.45	51.3	**TOTALS:**	**99.90**	**99.9**
541.90	0.00	0.0	14.26	3.12	54.4			
493.60	0.00	0.0	12.99	2.90	57.3			
449.70	0.00	0.0	11.83	2.79	60.1			
409.60	0.00	0.0	10.78	2.73	62.8			
373.10	0.00	0.0	9.82	2.69	65.5			
339.90	0.00	0.0	8.94	2.63	68.1			
309.60	0.00	0.0	8.15	2.56	70.7			
282.10	0.00	0.0	7.42	2.45	73.1			
256.90	0.00	0.0	6.76	2.33	75.5			
234.10	0.00	0.0	6.16	2.19	77.7			
213.20	0.00	0.0	5.61	2.05	79.7			
194.20	0.00	0.0	5.11	1.91	81.6			
176.90	0.00	0.0	4.66	1.80	83.4			
161.20	0.00	0.0	4.24	1.70	85.1			
146.80	0.00	0.0	3.86	1.62	86.7			
133.70	0.00	0.0	3.52	1.55	88.3			
121.80	0.02	0.0	3.21	1.49	89.8			
111.00	0.10	0.1	2.92	1.41	91.2			
101.10	0.31	0.4	2.66	1.33	92.5			
92.09	0.58	1.0	2.42	1.22	93.7			
83.89	0.77	1.8	2.21	1.10	94.8			
76.42	0.86	2.6	2.01	0.97	95.8			
69.61	0.95	3.6	1.83	0.83	96.6			

Measure	Trask	Inman
Median, mm	0.0116	0.0116
Median, micron	11.562	11.562
Mean, mm	0.0136	0.0076
Mean, micron	13.638	7.611
Sorting	2.5052	2.094
Skewness	0.8123	0.288
Kurtosis	0.2517	0.352

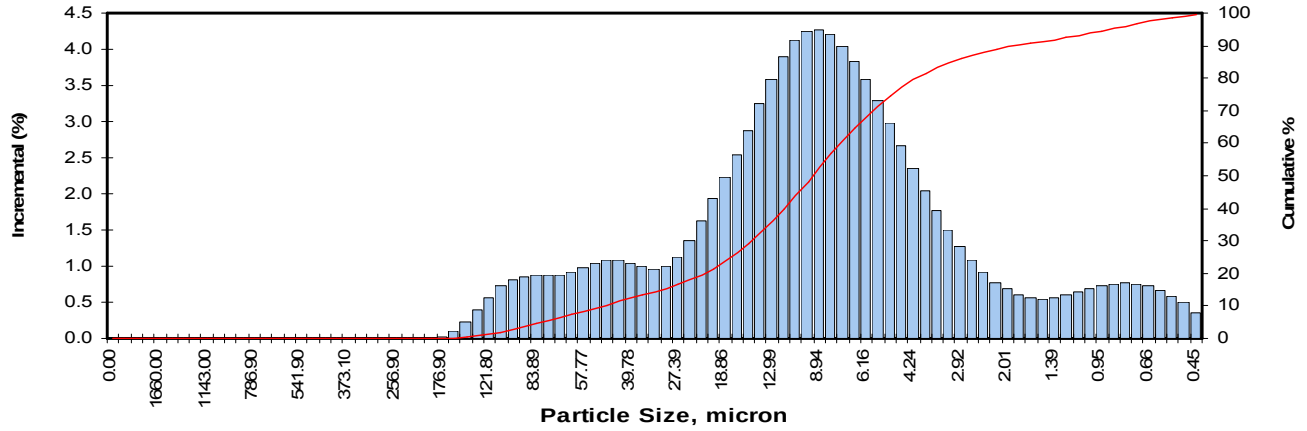
Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	52.364	0.0524
10	40.614	0.0406
16	32.485	0.0325
25	23.528	0.0235
40	16.134	0.0161
50	11.562	0.0116
60	8.363	0.0084
75	3.749	0.0037
84	1.783	0.0018
90	1.325	0.0013
95	1.035	0.0010

Phone: (713) 316-1800

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48066_a
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	EPNDSW03_20180322(440-206764-6)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.00	0.0
256.90	0.00	0.0
234.10	0.00	0.0
213.20	0.00	0.0
194.20	0.00	0.0
176.90	0.03	0.0
161.20	0.10	0.1
146.80	0.23	0.4
133.70	0.40	0.8
121.80	0.57	1.3
111.00	0.72	2.1
101.10	0.81	2.9
92.09	0.86	3.7
83.89	0.87	4.6
76.42	0.87	5.5
69.61	0.88	6.3

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	0.92	7.3
57.77	0.98	8.2
52.62	1.05	9.3
47.94	1.09	10.4
43.67	1.09	11.5
39.78	1.05	12.5
36.24	0.99	13.5
33.01	0.96	14.5
30.07	1.00	15.5
27.39	1.13	16.6
24.95	1.35	18.0
22.73	1.62	19.6
20.70	1.93	21.5
18.86	2.23	23.7
17.18	2.55	26.3
15.65	2.88	29.2
14.26	3.24	32.4
12.99	3.59	36.0
11.83	3.90	39.9
10.78	4.13	44.0
9.82	4.26	48.3
8.94	4.28	52.6
8.15	4.20	56.8
7.42	4.05	60.8
6.76	3.84	64.7
6.16	3.58	68.2
5.61	3.29	71.5
5.11	2.98	74.5
4.66	2.67	77.2
4.24	2.35	79.5
3.86	2.05	81.6
3.52	1.77	83.3
3.21	1.51	84.9
2.92	1.28	86.1
2.66	1.08	87.2
2.42	0.91	88.1
2.21	0.78	88.9
2.01	0.68	89.6
1.83	0.60	90.2

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.560	90.7
1.520	0.550	91.3
1.385	0.570	91.9
1.261	0.600	92.5
1.149	0.640	93.1
1.047	0.680	93.8
0.953	0.720	94.5
0.868	0.760	95.3
0.791	0.770	96.0
0.721	0.760	96.8
0.656	0.720	97.5
0.598	0.670	98.2
0.545	0.590	98.8
0.496	0.490	99.3
0.452	0.350	99.6
TOTALS:	**99.62**	**99.6**

Measure	Trask	Inman
Median, mm	0.0065	0.0065
Median, micron	6.454	6.454
Mean, mm	0.0079	0.0056
Mean, micron	7.905	5.570
Sorting	2.6055	2.077
Skewness	0.8194	0.102
Kurtosis	0.1434	0.714

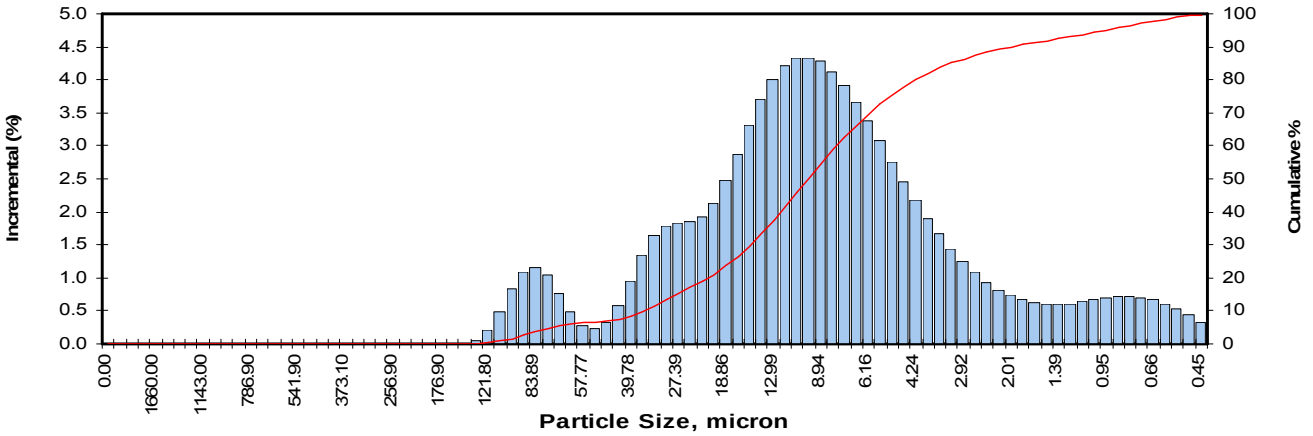
Distribution percent	Cumulative Percent greater than Particle Size	
	Micron	Millimeters
5	67.965	0.0680
10	41.953	0.0420
16	23.507	0.0235
25	13.779	0.0138
40	8.476	0.0085
50	6.454	0.0065
60	4.738	0.0047
75	2.030	0.0020
84	1.320	0.0013
90	0.995	0.0010
95	0.488	0.0005

Phone: (713) 316-1800

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48066_a
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	EPNDSW04_20180322(440-206764-7)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
0.00	0.00	0.0
0.00	0.00	0.0
2000.00	0.00	0.0
1822.00	0.00	0.0
1660.00	0.00	0.0
1512.00	0.00	0.0
1377.00	0.00	0.0
1255.00	0.00	0.0
1143.00	0.00	0.0
1041.00	0.00	0.0
948.30	0.00	0.0
863.90	0.00	0.0
786.90	0.00	0.0
716.80	0.00	0.0
653.00	0.00	0.0
594.90	0.00	0.0
541.90	0.00	0.0
493.60	0.00	0.0
449.70	0.00	0.0
409.60	0.00	0.0
373.10	0.00	0.0
339.90	0.00	0.0
309.60	0.00	0.0
282.10	0.00	0.0
256.90	0.00	0.0
234.10	0.00	0.0
213.20	0.00	0.0
194.20	0.00	0.0
176.90	0.00	0.0
161.20	0.00	0.0
146.80	0.00	0.0
133.70	0.05	0.1
121.80	0.20	0.3
111.00	0.49	0.7
101.10	0.83	1.6
92.09	1.08	2.7
83.89	1.16	3.8
76.42	1.04	4.9
69.61	0.77	5.6

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
63.41	0.48	6.1
57.77	0.28	6.4
52.62	0.23	6.6
47.94	0.32	6.9
43.67	0.58	7.5
39.78	0.96	8.5
36.24	1.35	9.8
33.01	1.64	11.5
30.07	1.79	13.3
27.39	1.84	15.1
24.95	1.85	16.9
22.73	1.93	18.9
20.70	2.14	21.0
18.86	2.47	23.5
17.18	2.88	26.4
15.65	3.32	29.7
14.26	3.71	33.4
12.99	4.01	37.4
11.83	4.21	41.6
10.78	4.32	45.9
9.82	4.34	50.3
8.94	4.28	54.6
8.15	4.13	58.7
7.42	3.92	62.6
6.76	3.66	66.3
6.16	3.37	69.6
5.61	3.07	72.7
5.11	2.76	75.5
4.66	2.46	77.9
4.24	2.17	80.1
3.86	1.90	82.0
3.52	1.66	83.7
3.21	1.44	85.1
2.92	1.24	86.3
2.66	1.08	87.4
2.42	0.93	88.3
2.21	0.82	89.2
2.01	0.73	89.9
1.83	0.66	90.6

Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent
1.668	0.620	91.2
1.520	0.600	91.8
1.385	0.600	92.4
1.261	0.610	93.0
1.149	0.640	93.6
1.047	0.660	94.3
0.953	0.690	95.0
0.868	0.710	95.7
0.791	0.720	96.4
0.721	0.700	97.1
0.656	0.660	97.8
0.598	0.610	98.4
0.545	0.540	98.9
0.496	0.440	99.4
0.452	0.320	99.7
TOTALS:	**99.67**	**99.7**

Measure	Trask	Inman
Median, mm	0.0068	0.0068
Median, micron	6.790	6.790
Mean, mm	0.0079	0.0053
Mean, micron	7.914	5.337
Sorting	2.5318	1.980
Skewness	0.7965	0.175
Kurtosis	0.1981	0.751

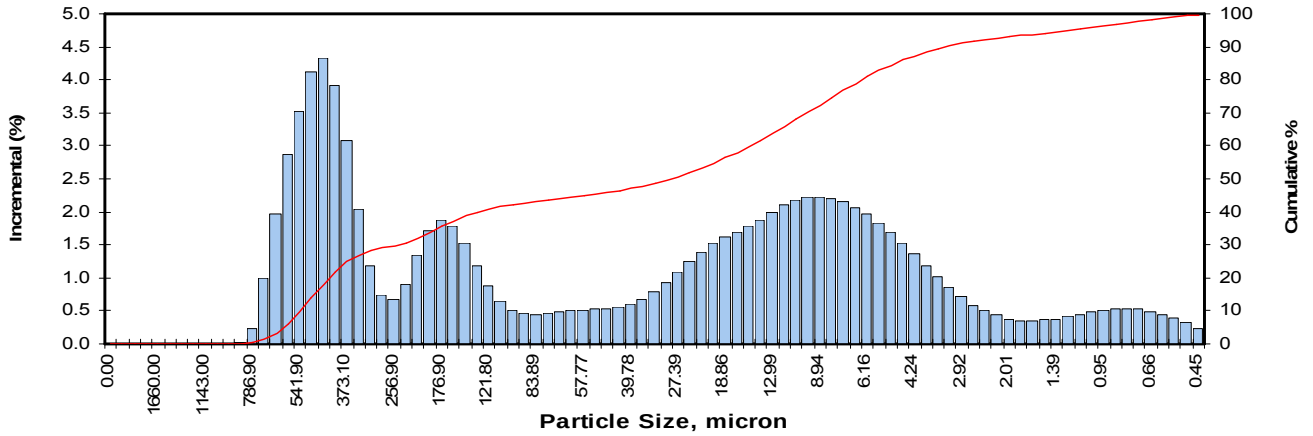
Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	63.167	0.0632
10	30.181	0.0302
16	21.057	0.0211
25	13.692	0.0137
40	8.768	0.0088
50	6.790	0.0068
60	5.114	0.0051
75	2.136	0.0021
84	1.353	0.0014
90	1.008	0.0010
95	0.516	0.0005

Phone: (713) 316-1800

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D4464M

Client:	TestAmerica Irvine	**PTS File No:**	48066_a
Project:	Boeing SSFL ISRA and BMP	**Sample ID:**	EPNDSW06_20180322(440-206764-8)
Project No:	44009815	**Matrix:**	Aqueous



Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution		Particle Diameter, micron	Particle Distribution	
	Incremental percent	Cumulative percent		Incremental percent	Cumulative percent		Incremental percent	Cumulative percent
0.00	0.00	0.0	63.41	0.50	44.4	1.668	0.350	93.6
0.00	0.00	0.0	57.77	0.52	44.9	1.520	0.360	94.0
2000.00	0.00	0.0	52.62	0.53	45.4	1.385	0.380	94.4
1822.00	0.00	0.0	47.94	0.54	46.0	1.261	0.420	94.8
1660.00	0.00	0.0	43.67	0.56	46.5	1.149	0.450	95.3
1512.00	0.00	0.0	39.78	0.60	47.1	1.047	0.480	95.7
1377.00	0.00	0.0	36.24	0.67	47.8	0.953	0.510	96.2
1255.00	0.00	0.0	33.01	0.78	48.6	0.868	0.530	96.8
1143.00	0.00	0.0	30.07	0.92	49.5	0.791	0.540	97.3
1041.00	0.00	0.0	27.39	1.09	50.6	0.721	0.530	97.8
948.30	0.00	0.0	24.95	1.26	51.8	0.656	0.490	98.3
863.90	0.03	0.0	22.73	1.40	53.2	0.598	0.450	98.8
786.90	0.24	0.3	20.70	1.52	54.8	0.545	0.400	99.2
716.80	1.00	1.3	18.86	1.61	56.4	0.496	0.330	99.5
653.00	1.96	3.2	17.18	1.69	58.1	0.452	0.240	99.8
594.90	2.86	6.1	15.65	1.78	59.8	**TOTALS:**	**99.76**	**99.8**
541.90	3.52	9.6	14.26	1.88	61.7			
493.60	4.11	13.7	12.99	1.99	63.7			
449.70	4.32	18.0	11.83	2.10	65.8			
409.60	3.92	22.0	10.78	2.18	68.0			
373.10	3.07	25.0	9.82	2.22	70.2			
339.90	2.03	27.1	8.94	2.23	72.4			
309.60	1.18	28.2	8.15	2.21	74.6			
282.10	0.73	29.0	7.42	2.16	76.8			
256.90	0.67	29.6	6.76	2.07	78.9			
234.10	0.91	30.5	6.16	1.97	80.8			
213.20	1.34	31.9	5.61	1.84	82.7			
194.20	1.71	33.6	5.11	1.69	84.4			
176.90	1.88	35.5	4.66	1.53	85.9			
161.20	1.79	37.3	4.24	1.36	87.3			
146.80	1.52	38.8	3.86	1.19	88.5			
133.70	1.18	40.0	3.52	1.02	89.5			
121.80	0.87	40.8	3.21	0.86	90.3			
111.00	0.65	41.5	2.92	0.71	91.0			
101.10	0.52	42.0	2.66	0.59	91.6			
92.09	0.46	42.5	2.42	0.50	92.1			
83.89	0.45	42.9	2.21	0.43	92.6			
76.42	0.46	43.4	2.01	0.38	92.9			
69.61	0.49	43.9	1.83	0.35	93.3			

Measure	Trask	Inman
Median, mm	0.0237	0.0237
Median, micron	23.696	23.696
Mean, mm	0.1552	0.0294
Mean, micron	155.237	29.422
Sorting	7.6137	3.748
Skewness	1.6917	-0.083
Kurtosis	0.3307	0.276

Cumulative Percent greater than		
Distribution percent	Particle Size	
	Micron	Millimeters
5	521.869	0.5219
10	454.866	0.4549
16	395.183	0.3952
25	305.209	0.3052
40	112.452	0.1125
50	23.696	0.0237
60	11.151	0.0112
75	5.265	0.0053
84	2.190	0.0022
90	1.302	0.0013
95	0.690	0.0007

Phone: (713) 316-1800

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-120458.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: PTS laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 440-206764-1
Address: 5730 Central Crest Street,	Due Date Requested: 4/3/2018			
City: Houston	TAT Requested (days):			
State, Zip: TX, 77092				
Phone: 713-316-1800(Tel)	PO #:			
Email:	WO #:			
Project Name: Boeing SSFL ISRA and BMP	Project #: 44009815			
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:

48066-a

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)	SUB (Particle Size)/ Particle Size	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
A1BMP0002_20180322 (440-206764-1)	3/22/18	09:30 Pacific		Water			X	1	
A1BMP0003_20180322 (440-206764-2)	3/22/18	09:45 Pacific		Water			X	1	
EPNDSW01_20180322 (440-206764-4)	3/22/18	07:15 Pacific		Water			X	1	
EPNDSW02_20180322 (440-206764-5)	3/22/18	07:30 Pacific		Water			X	1	
EPNDSW03_20180322 (440-206764-6)	3/22/18	07:45 Pacific		Water			X	1	
EPNDSW04_20180322 (440-206764-7)	3/22/18	08:00 Pacific		Water			X	1	
EPNDSW06_20180322 (440-206764-8)	3/22/18	08:30 Pacific		Water			X	1	

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 complicance 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: 2	Special Instructions/QC Requirements:
Empty Kit Relinquished by: Date:	Time: Method of Shipment:

Relinquished by:	Date/Time: 3/24/18 1100	Company: PTS LABS. INC	Received by:	Date/Time: 3/24/18 11:00	Company: PTS LABS. INC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.7°C

Ver: 09/20/2016

Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614
phone (949) 261-1022 fax (949) 260-3299

Chain of Custody Record for
Haley & Aldrich, Inc. Blanket Service Agreement #2015-18-TestAmerica

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc

Client Contact	H&A Project Manager: Katherine Miller	H&A Site Contact: Matt Birney (818) 466-8782	Date: 3/22/2018	COC No:
Haley & Aldrich, Inc.	Tel/Fax: (520) 289-8606	Lab Contact: Urvashi Patel (949) 333-9055	Carrier:	1 of 1 COCs
5333 Mission Center Road, Suite 300	Analysis Turnaround Time			Sampler:
San Diego, California 92108	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(619) 280-9210 Phone	TAT if different from Below ____			Walk-in Client:
(619) 280-9415 FAX	☑ 2 weeks			Lab Sampling:
H&A Project Number : 129095-003 SID 5.2	☐ 1 week			
Site: BMP Performance OF 009 Watershed	☐ 2 days			Job / SDG No.:
H&A P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Dissolved)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Recoverable)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540D)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)	Sample Specific Notes:
								1-250mL P	1-250mL P	2-1L A	1-1L P	1-1L P	1-250mL P	Field Staff Notes: Lab may substitute 250mL Poly for 500mL for metals. Only need to fill half of 500mL. Must fill TSS to the top.
A1BMP0002_20180322	3/22/18	930	G	WM	7		N	X	X	X	X	X		extra 250mL poly collected; Upstream (South), CM-9 BMPs
A1BMP0003_20180322	3/22/18	0945	G	WM	7		N	X	X	X	X	X		extra 250mL poly collected; Downstream, CM-9 BMPs; CM-9 underdrains
FBQW__20180322	3/22/18	1330	G	WM	2		N				H	H (1)		Hold
EPNDSW01_20180322	3/22/18	0715	G	WM	7		N	x	x	x	x	x	x	Northern Drainage above confluence with Area II drainage
EPNDSW02_20180322	3/22/18	0730	G	WM	7		N	x	x	x	x	x	x	Area II drainage above confluence with Northern Drainage
EPNDSW03_20180322	3/22/18	0745	G	WM	7		N	x	x	x	x	x	x	Dirt access road adjacent to Northern Drainage
EPNDSW04_20180322	3/22/18	0800	G	WM	7		N	x	x	x	x	x	x	Dirt road crossing at box culvert
EPNDSW06_20180322	3/22/18	0830	G	WM	7		N	x	x	x	x	x	x	Downstream of 24" stormdrain outlet discharge
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other								1	4	1	1	1	1	

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☑ Archive for 6 Months

Special Instructions/QC Requirements & Comments:
Please email data to kmiller@haleyaldrich.com and post to Total Access; Bill to Haley & Aldrich at AP@haleyaldrich.com; Report Level II Data Package and provide EDD; All dissolved metal samples are to be filtered within 24 hours of receipt, even those placed on hold.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Relinquished by:	Company: H&A	Date/Time: 3.22.18 1730	Received by:	Company: DCS	Date/Time: 3-22-18 1730
Relinquished by:	Company: DCS	Date/Time: 3-22-18 2000	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: 3/22/18	Company:	Date/Time:

2000
1266

1.8/2.3
3.0/3.5
3.3/3.8

Form No. CA-C-WI-045, Rev. 1.2, dated 1/8/2016

440-206764 Chain of Custody

4/3/2018

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-206764-1

Login Number: 206764
List Number: 1
Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

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.	N/A	
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.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-206764-2
Client Project/Site: BMP Performance OF 009 Watershed

For:
Haley & Aldrich, Inc.
400 E Van Buren St.
Suite 545
Phoenix, Arizona 85004

Attn: Katherine Miller

Authorized for release by:
4/9/2018 3:37:42 PM

Urvashi Patel, Manager of Project Management
(949)261-1022
urvashi.patel@testamericainc.com

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-206764-1	A1BMP0002_20180322	Water	03/22/18 09:30	03/22/18 20:00
440-206764-2	A1BMP0003_20180322	Water	03/22/18 09:45	03/22/18 20:00
440-206764-4	EPNDSW01_20180322	Water	03/22/18 07:15	03/22/18 20:00
440-206764-5	EPNDSW02_20180322	Water	03/22/18 07:30	03/22/18 20:00
440-206764-6	EPNDSW03_20180322	Water	03/22/18 07:45	03/22/18 20:00
440-206764-7	EPNDSW04_20180322	Water	03/22/18 08:00	03/22/18 20:00
440-206764-8	EPNDSW06_20180322	Water	03/22/18 08:30	03/22/18 20:00

Job ID: 440-206764-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-206764-2

Comments
No additional comments.

Receipt
The samples were received on 3/22/2018 8:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.3º C, 3.5º C and 3.8º C.

Dioxin
Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 4D5 exceeded this criteria: A1BMP0002_20180322 (440-206764-1), A1BMP0003_20180322 (440-206764-2), EPNDSW01_20180322 (440-206764-4), EPNDSW02_20180322 (440-206764-5), EPNDSW03_20180322 (440-206764-6), EPNDSW04_20180322 (440-206764-7), EPNDSW06_20180322 (440-206764-8), (CCV 320-216681/2), (LCS 320-216203/2-A), (LCSD 320-216203/3-A) and (MB 320-216203/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

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

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

Client Sample ID: A1BMP0002_20180322
Date Collected: 03/22/18 09:30
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206764-1
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000039	ug/L		04/04/18 07:21	04/06/18 00:13	1
2,3,7,8-TCDF	ND		0.000011	0.00000039	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,7,8-PeCDD	ND		0.000053	0.00000062	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,7,8-PeCDF	ND		0.000053	0.00000059	ug/L		04/04/18 07:21	04/06/18 00:13	1
2,3,4,7,8-PeCDF	ND		0.000053	0.00000065	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,4,7,8-HxCDD	**0.0000047**	**J,DX MB**	0.000053	0.00000048	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,6,7,8-HxCDD	ND		0.000053	0.00000045	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,7,8,9-HxCDD	ND		0.000053	0.00000040	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,4,7,8-HxCDF	**0.00000079**	**J,DX q MB**	0.000053	0.00000030	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,6,7,8-HxCDF	**0.00000055**	**J,DX q MB**	0.000053	0.00000029	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,7,8,9-HxCDF	**0.0000012**	**J,DX q**	0.000053	0.00000028	ug/L		04/04/18 07:21	04/06/18 00:13	1
2,3,4,6,7,8-HxCDF	**0.00000059**	**J,DX q MB**	0.000053	0.00000027	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,4,6,7,8-HpCDD	**0.0000055**	**J,DX MB**	0.000053	0.00000039	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,4,6,7,8-HpCDF	**0.0000030**	**J,DX MB**	0.000053	0.00000071	ug/L		04/04/18 07:21	04/06/18 00:13	1
1,2,3,4,7,8,9-HpCDF	ND		0.000053	0.00000093	ug/L		04/04/18 07:21	04/06/18 00:13	1
OCDD	**0.000037**	**J,DX MB**	0.00011	0.00000066	ug/L		04/04/18 07:21	04/06/18 00:13	1
OCDF	**0.0000057**	**J,DX**	0.00011	0.00000051	ug/L		04/04/18 07:21	04/06/18 00:13	1
Total TCDD	ND		0.000011	0.00000039	ug/L		04/04/18 07:21	04/06/18 00:13	1
Total TCDF	ND		0.000011	0.00000039	ug/L		04/04/18 07:21	04/06/18 00:13	1
Total PeCDD	ND		0.000053	0.00000062	ug/L		04/04/18 07:21	04/06/18 00:13	1
Total PeCDF	ND		0.000053	0.00000059	ug/L		04/04/18 07:21	04/06/18 00:13	1
Total HxCDD	**0.0000047**	**J,DX MB**	0.000053	0.00000044	ug/L		04/04/18 07:21	04/06/18 00:13	1
Total HxCDF	**0.0000043**	**J,DX q MB**	0.000053	0.00000029	ug/L		04/04/18 07:21	04/06/18 00:13	1
Total HpCDD	**0.000013**	**J,DX MB**	0.000053	0.00000039	ug/L		04/04/18 07:21	04/06/18 00:13	1
Total HpCDF	**0.0000030**	**J,DX MB**	0.000053	0.00000082	ug/L		04/04/18 07:21	04/06/18 00:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*89*		*25 - 164*	*04/04/18 07:21*	*04/06/18 00:13*	*1*
13C-2,3,7,8-TCDF	*92*		*24 - 169*	*04/04/18 07:21*	*04/06/18 00:13*	*1*
13C-1,2,3,7,8-PeCDD	*117*		*25 - 181*	*04/04/18 07:21*	*04/06/18 00:13*	*1*
13C-1,2,3,7,8-PeCDF	*92*		*24 - 185*	*04/04/18 07:21*	*04/06/18 00:13*	*1*

Client Sample ID: A1BMP0002_20180322

Lab Sample ID: 440-206764-1

Date Collected: 03/22/18 09:30

Matrix: Water

Date Received: 03/22/18 20:00

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	94		21 - 178	04/04/18 07:21	04/06/18 00:13	1
13C-1,2,3,4,7,8-HxCDD	91		32 - 141	04/04/18 07:21	04/06/18 00:13	1
13C-1,2,3,6,7,8-HxCDD	90		28 - 130	04/04/18 07:21	04/06/18 00:13	1
13C-1,2,3,4,7,8-HxCDF	101		26 - 152	04/04/18 07:21	04/06/18 00:13	1
13C-1,2,3,6,7,8-HxCDF	93		26 - 123	04/04/18 07:21	04/06/18 00:13	1
13C-1,2,3,7,8,9-HxCDF	89		29 - 147	04/04/18 07:21	04/06/18 00:13	1
13C-2,3,4,6,7,8-HxCDF	96		28 - 136	04/04/18 07:21	04/06/18 00:13	1
13C-1,2,3,4,6,7,8-HpCDD	65		23 - 140	04/04/18 07:21	04/06/18 00:13	1
13C-1,2,3,4,6,7,8-HpCDF	75		28 - 143	04/04/18 07:21	04/06/18 00:13	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138	04/04/18 07:21	04/06/18 00:13	1
13C-OCDD	74		17 - 157	04/04/18 07:21	04/06/18 00:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	100		35 - 197	04/04/18 07:21	04/06/18 00:13	1

Client Sample ID: A1BMP0003_20180322

Lab Sample ID: 440-206764-2

Date Collected: 03/22/18 09:45

Matrix: Water

Date Received: 03/22/18 20:00

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000044	ug/L		04/04/18 07:21	04/06/18 00:55	1
2,3,7,8-TCDF	ND		0.000011	0.00000050	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,7,8-PeCDD	ND		0.000057	0.00000075	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,7,8-PeCDF	ND		0.000057	0.00000076	ug/L		04/04/18 07:21	04/06/18 00:55	1
2,3,4,7,8-PeCDF	ND		0.000057	0.00000084	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,4,7,8-HxCDD	**0.0000031**	**J,DX MB**	0.000057	0.00000066	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,6,7,8-HxCDD	**0.0000014**	**J,DX q**	0.000057	0.00000060	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,7,8,9-HxCDD	**0.0000011**	**J,DX q**	0.000057	0.00000054	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,4,7,8-HxCDF	**0.00000086**	**J,DX q MB**	0.000057	0.00000042	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,6,7,8-HxCDF	**0.0000017**	**J,DX q MB**	0.000057	0.00000041	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,7,8,9-HxCDF	**0.0000012**	**J,DX**	0.000057	0.00000042	ug/L		04/04/18 07:21	04/06/18 00:55	1
2,3,4,6,7,8-HxCDF	**0.00000063**	**J,DX q MB**	0.000057	0.00000038	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,4,6,7,8-HpCDD	**0.000023**	**J,DX MB**	0.000057	0.00000068	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,4,6,7,8-HpCDF	**0.000012**	**J,DX MB**	0.000057	0.00000083	ug/L		04/04/18 07:21	04/06/18 00:55	1
1,2,3,4,7,8,9-HpCDF	ND		0.000057	0.0000010	ug/L		04/04/18 07:21	04/06/18 00:55	1
OCDD	**0.00024**	**MB**	0.00011	0.0000015	ug/L		04/04/18 07:21	04/06/18 00:55	1
OCDF	**0.000011**	**J,DX**	0.00011	0.00000070	ug/L		04/04/18 07:21	04/06/18 00:55	1

Client Sample ID: A1BMP0003_20180322

Lab Sample ID: 440-206764-2

Date Collected: 03/22/18 09:45

Matrix: Water

Date Received: 03/22/18 20:00

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TCDD	ND		0.000011	0.00000044	ug/L		04/04/18 07:21	04/06/18 00:55	1
Total TCDF	ND		0.000011	0.00000050	ug/L		04/04/18 07:21	04/06/18 00:55	1
Total PeCDD	ND		0.000057	0.00000075	ug/L		04/04/18 07:21	04/06/18 00:55	1
Total PeCDF	**0.0000019**	**J,DX q**	0.000057	0.00000080	ug/L		04/04/18 07:21	04/06/18 00:55	1
Total HxCDD	**0.000011**	**J,DX q MB**	0.000057	0.00000060	ug/L		04/04/18 07:21	04/06/18 00:55	1
Total HxCDF	**0.0000088**	**J,DX q MB**	0.000057	0.00000041	ug/L		04/04/18 07:21	04/06/18 00:55	1
Total HpCDD	**0.000051**	**J,DX MB**	0.000057	0.00000068	ug/L		04/04/18 07:21	04/06/18 00:55	1
Total HpCDF	**0.000022**	**J,DX q MB**	0.000057	0.00000094	ug/L		04/04/18 07:21	04/06/18 00:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*82*		*25 - 164*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-2,3,7,8-TCDF	*85*		*24 - 169*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-1,2,3,7,8-PeCDD	*113*		*25 - 181*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-1,2,3,7,8-PeCDF	*91*		*24 - 185*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-2,3,4,7,8-PeCDF	*90*		*21 - 178*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-1,2,3,4,7,8-HxCDD	*92*		*32 - 141*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-1,2,3,6,7,8-HxCDD	*94*		*28 - 130*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-1,2,3,4,7,8-HxCDF	*102*		*26 - 152*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-1,2,3,6,7,8-HxCDF	*95*		*26 - 123*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-1,2,3,7,8,9-HxCDF	*89*		*29 - 147*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-2,3,4,6,7,8-HxCDF	*99*		*28 - 136*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*69*		*23 - 140*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*76*		*28 - 143*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*74*		*26 - 138*	*04/04/18 07:21*	*04/06/18 00:55*	*1*
13C-OCDD	*72*		*17 - 157*	*04/04/18 07:21*	*04/06/18 00:55*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*95*		*35 - 197*	*04/04/18 07:21*	*04/06/18 00:55*	*1*

Client Sample ID: EPNDSW01_20180322

Lab Sample ID: 440-206764-4

Date Collected: 03/22/18 07:15

Matrix: Water

Date Received: 03/22/18 20:00

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000041	ug/L		04/04/18 07:21	04/06/18 01:38	1
2,3,7,8-TCDF	ND		0.000011	0.00000046	ug/L		04/04/18 07:21	04/06/18 01:38	1
1,2,3,7,8-PeCDD	ND		0.000053	0.00000055	ug/L		04/04/18 07:21	04/06/18 01:38	1
1,2,3,7,8-PeCDF	ND		0.000053	0.00000069	ug/L		04/04/18 07:21	04/06/18 01:38	1
2,3,4,7,8-PeCDF	ND		0.000053	0.00000076	ug/L		04/04/18 07:21	04/06/18 01:38	1

Client Sample ID: EPNDSW01_20180322
Date Collected: 03/22/18 07:15
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206764-4
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDD	0.0000026	J,DX q MB	0.000053	0.00000043	ug/L		04/04/18 07:21	04/06/18 01:38	1
1,2,3,6,7,8-HxCDD	0.00000057	J,DX q	0.000053	0.00000042	ug/L		04/04/18 07:21	04/06/18 01:38	1
1,2,3,7,8,9-HxCDD	0.0000014	J,DX	0.000053	0.00000036	ug/L		04/04/18 07:21	04/06/18 01:38	1
1,2,3,4,7,8-HxCDF	0.00000063	J,DX MB	0.000053	0.00000040	ug/L		04/04/18 07:21	04/06/18 01:38	1
1,2,3,6,7,8-HxCDF	0.00000064	J,DX q MB	0.000053	0.00000042	ug/L		04/04/18 07:21	04/06/18 01:38	1
1,2,3,7,8,9-HxCDF	0.00000056	J,DX q	0.000053	0.00000038	ug/L		04/04/18 07:21	04/06/18 01:38	1
2,3,4,6,7,8-HxCDF	0.00000045	J,DX q MB	0.000053	0.00000034	ug/L		04/04/18 07:21	04/06/18 01:38	1
1,2,3,4,6,7,8-HpCDD	0.000012	J,DX MB	0.000053	0.00000053	ug/L		04/04/18 07:21	04/06/18 01:38	1
1,2,3,4,6,7,8-HpCDF	0.0000042	J,DX MB	0.000053	0.00000085	ug/L		04/04/18 07:21	04/06/18 01:38	1
1,2,3,4,7,8,9-HpCDF	ND		0.000053	0.0000011	ug/L		04/04/18 07:21	04/06/18 01:38	1
OCDD	0.00012	MB	0.00011	0.0000010	ug/L		04/04/18 07:21	04/06/18 01:38	1
OCDF	0.000011	J,DX q	0.00011	0.00000070	ug/L		04/04/18 07:21	04/06/18 01:38	1
Total TCDD	0.0000012	J,DX MB	0.000011	0.00000041	ug/L		04/04/18 07:21	04/06/18 01:38	1
Total TCDF	ND		0.000011	0.00000046	ug/L		04/04/18 07:21	04/06/18 01:38	1
Total PeCDD	ND		0.000053	0.00000055	ug/L		04/04/18 07:21	04/06/18 01:38	1
Total PeCDF	ND		0.000053	0.00000069	ug/L		04/04/18 07:21	04/06/18 01:38	1
Total HxCDD	0.0000069	J,DX q MB	0.000053	0.00000040	ug/L		04/04/18 07:21	04/06/18 01:38	1
Total HxCDF	0.0000034	J,DX q MB	0.000053	0.00000038	ug/L		04/04/18 07:21	04/06/18 01:38	1
Total HpCDD	0.000025	J,DX MB	0.000053	0.00000053	ug/L		04/04/18 07:21	04/06/18 01:38	1
Total HpCDF	0.000010	J,DX MB	0.000053	0.00000098	ug/L		04/04/18 07:21	04/06/18 01:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*82*		*25 - 164*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-2,3,7,8-TCDF	*83*		*24 - 169*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-1,2,3,7,8-PeCDD	*107*		*25 - 181*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-1,2,3,7,8-PeCDF	*84*		*24 - 185*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-2,3,4,7,8-PeCDF	*84*		*21 - 178*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-1,2,3,4,7,8-HxCDD	*86*		*32 - 141*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-1,2,3,6,7,8-HxCDD	*83*		*28 - 130*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-1,2,3,4,7,8-HxCDF	*93*		*26 - 152*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-1,2,3,6,7,8-HxCDF	*81*		*26 - 123*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-1,2,3,7,8,9-HxCDF	*79*		*29 - 147*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-2,3,4,6,7,8-HxCDF	*91*		*28 - 136*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*28 - 143*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*65*		*26 - 138*	*04/04/18 07:21*	*04/06/18 01:38*	*1*
13C-OCDD	*63*		*17 - 157*	*04/04/18 07:21*	*04/06/18 01:38*	*1*

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	*95*		*35 - 197*	*04/04/18 07:21*	*04/06/18 01:38*	*1*

Client Sample ID: EPNDSW02_20180322

Date Collected: 03/22/18 07:30
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206764-5

Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.00000051	ug/L		04/04/18 07:21	04/06/18 02:21	1
2,3,7,8-TCDF	ND		0.000011	0.00000054	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,7,8-PeCDD	ND		0.000054	0.00000069	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,7,8-PeCDF	ND		0.000054	0.00000093	ug/L		04/04/18 07:21	04/06/18 02:21	1
2,3,4,7,8-PeCDF	ND		0.000054	0.0000011	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,4,7,8-HxCDD	**0.0000019**	**J,DX q MB**	0.000054	0.00000058	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,6,7,8-HxCDD	**0.0000012**	**J,DX**	0.000054	0.00000061	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,7,8,9-HxCDD	**0.0000018**	**J,DX**	0.000054	0.00000051	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,4,7,8-HxCDF	**0.00000069**	**J,DX q MB**	0.000054	0.00000056	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,6,7,8-HxCDF	**0.0000027**	**J,DX q MB**	0.000054	0.00000056	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,7,8,9-HxCDF	ND		0.000054	0.00000050	ug/L		04/04/18 07:21	04/06/18 02:21	1
2,3,4,6,7,8-HxCDF	ND		0.000054	0.00000052	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,4,6,7,8-HpCDD	**0.0000073**	**J,DX q MB**	0.000054	0.00000053	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,4,6,7,8-HpCDF	**0.0000026**	**J,DX q MB**	0.000054	0.00000091	ug/L		04/04/18 07:21	04/06/18 02:21	1
1,2,3,4,7,8,9-HpCDF	ND		0.000054	0.0000013	ug/L		04/04/18 07:21	04/06/18 02:21	1
OCDD	**0.00011**	**MB**	0.00011	0.0000013	ug/L		04/04/18 07:21	04/06/18 02:21	1
OCDF	**0.0000046**	**J,DX**	0.00011	0.00000074	ug/L		04/04/18 07:21	04/06/18 02:21	1
Total TCDD	**0.0000019**	**J,DX q MB**	0.000011	0.00000051	ug/L		04/04/18 07:21	04/06/18 02:21	1
Total TCDF	ND		0.000011	0.00000054	ug/L		04/04/18 07:21	04/06/18 02:21	1
Total PeCDD	ND		0.000054	0.00000069	ug/L		04/04/18 07:21	04/06/18 02:21	1
Total PeCDF	ND		0.000054	0.00000093	ug/L		04/04/18 07:21	04/06/18 02:21	1
Total HxCDD	**0.0000049**	**J,DX q MB**	0.000054	0.00000057	ug/L		04/04/18 07:21	04/06/18 02:21	1
Total HxCDF	**0.0000034**	**J,DX q MB**	0.000054	0.00000054	ug/L		04/04/18 07:21	04/06/18 02:21	1
Total HpCDD	**0.000016**	**J,DX q MB**	0.000054	0.00000053	ug/L		04/04/18 07:21	04/06/18 02:21	1
Total HpCDF	**0.0000026**	**J,DX q MB**	0.000054	0.0000011	ug/L		04/04/18 07:21	04/06/18 02:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	*73*		*25 - 164*	*04/04/18 07:21*	*04/06/18 02:21*	*1*
13C-2,3,7,8-TCDF	*76*		*24 - 169*	*04/04/18 07:21*	*04/06/18 02:21*	*1*
13C-1,2,3,7,8-PeCDD	*93*		*25 - 181*	*04/04/18 07:21*	*04/06/18 02:21*	*1*
13C-1,2,3,7,8-PeCDF	*76*		*24 - 185*	*04/04/18 07:21*	*04/06/18 02:21*	*1*

Client Sample ID: EPNDSW02_20180322

Lab Sample ID: 440-206764-5

Date Collected: 03/22/18 07:30

Matrix: Water

Date Received: 03/22/18 20:00

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	74		21 - 178	04/04/18 07:21	04/06/18 02:21	1
13C-1,2,3,4,7,8-HxCDD	77		32 - 141	04/04/18 07:21	04/06/18 02:21	1
13C-1,2,3,6,7,8-HxCDD	71		28 - 130	04/04/18 07:21	04/06/18 02:21	1
13C-1,2,3,4,7,8-HxCDF	83		26 - 152	04/04/18 07:21	04/06/18 02:21	1
13C-1,2,3,6,7,8-HxCDF	75		26 - 123	04/04/18 07:21	04/06/18 02:21	1
13C-1,2,3,7,8,9-HxCDF	73		29 - 147	04/04/18 07:21	04/06/18 02:21	1
13C-2,3,4,6,7,8-HxCDF	77		28 - 136	04/04/18 07:21	04/06/18 02:21	1
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	04/04/18 07:21	04/06/18 02:21	1
13C-1,2,3,4,6,7,8-HpCDF	55		28 - 143	04/04/18 07:21	04/06/18 02:21	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	04/04/18 07:21	04/06/18 02:21	1
13C-OCDD	53		17 - 157	04/04/18 07:21	04/06/18 02:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	04/04/18 07:21	04/06/18 02:21	1

Client Sample ID: EPNDSW03_20180322

Lab Sample ID: 440-206764-6

Date Collected: 03/22/18 07:45

Matrix: Water

Date Received: 03/22/18 20:00

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000050	ug/L		04/04/18 07:21	04/06/18 03:04	1
2,3,7,8-TCDF	ND		0.000010	0.00000050	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,7,8-PeCDD	ND		0.000052	0.00000068	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,7,8-PeCDF	ND		0.000052	0.00000061	ug/L		04/04/18 07:21	04/06/18 03:04	1
2,3,4,7,8-PeCDF	ND		0.000052	0.00000067	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,4,7,8-HxCDD	**0.0000030**	**J,DX q MB**	0.000052	0.00000053	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,6,7,8-HxCDD	**0.0000013**	**J,DX q**	0.000052	0.00000054	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,7,8,9-HxCDD	**0.0000015**	**J,DX q**	0.000052	0.00000046	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,4,7,8-HxCDF	**0.00000077**	**J,DX MB**	0.000052	0.00000047	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,6,7,8-HxCDF	**0.0000010**	**J,DX q MB**	0.000052	0.00000046	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,7,8,9-HxCDF	**0.00000083**	**J,DX q**	0.000052	0.00000045	ug/L		04/04/18 07:21	04/06/18 03:04	1
2,3,4,6,7,8-HxCDF	**0.00000043**	**J,DX q MB**	0.000052	0.00000042	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,4,6,7,8-HpCDD	**0.000012**	**J,DX q MB**	0.000052	0.00000055	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,4,6,7,8-HpCDF	**0.0000048**	**J,DX MB**	0.000052	0.0000011	ug/L		04/04/18 07:21	04/06/18 03:04	1
1,2,3,4,7,8,9-HpCDF	ND		0.000052	0.0000014	ug/L		04/04/18 07:21	04/06/18 03:04	1
OCDD	**0.00015**	**MB**	0.00010	0.0000011	ug/L		04/04/18 07:21	04/06/18 03:04	1
OCDF	**0.0000095**	**J,DX**	0.00010	0.00000072	ug/L		04/04/18 07:21	04/06/18 03:04	1
Total TCDD	**0.00000081**	**J,DX q MB**	0.000010	0.00000050	ug/L		04/04/18 07:21	04/06/18 03:04	1

Client Sample ID: EPNDSW03_20180322

Date Collected: 03/22/18 07:45
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206764-6

Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TCDF	**0.00000099**	**J,DX q**	0.000010	0.00000050	ug/L		04/04/18 07:21	04/06/18 03:04	1
Total PeCDD	ND		0.000052	0.00000068	ug/L		04/04/18 07:21	04/06/18 03:04	1
Total PeCDF	ND		0.000052	0.00000061	ug/L		04/04/18 07:21	04/06/18 03:04	1
Total HxCDD	**0.0000067**	**J,DX q MB**	0.000052	0.00000051	ug/L		04/04/18 07:21	04/06/18 03:04	1
Total HxCDF	**0.0000049**	**J,DX q MB**	0.000052	0.00000045	ug/L		04/04/18 07:21	04/06/18 03:04	1
Total HpCDD	**0.000028**	**J,DX q MB**	0.000052	0.00000055	ug/L		04/04/18 07:21	04/06/18 03:04	1
Total HpCDF	**0.0000088**	**J,DX q MB**	0.000052	0.0000013	ug/L		04/04/18 07:21	04/06/18 03:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*79*		*25 - 164*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-2,3,7,8-TCDF	*78*		*24 - 169*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-1,2,3,7,8-PeCDD	*99*		*25 - 181*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-1,2,3,7,8-PeCDF	*79*		*24 - 185*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-2,3,4,7,8-PeCDF	*81*		*21 - 178*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-1,2,3,4,7,8-HxCDD	*86*		*32 - 141*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-1,2,3,6,7,8-HxCDD	*82*		*28 - 130*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-1,2,3,4,7,8-HxCDF	*92*		*26 - 152*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-1,2,3,6,7,8-HxCDF	*83*		*26 - 123*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-1,2,3,7,8,9-HxCDF	*80*		*29 - 147*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-2,3,4,6,7,8-HxCDF	*84*		*28 - 136*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*60*		*23 - 140*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*65*		*28 - 143*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*60*		*26 - 138*	*04/04/18 07:21*	*04/06/18 03:04*	*1*
13C-OCDD	*60*		*17 - 157*	*04/04/18 07:21*	*04/06/18 03:04*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*97*		*35 - 197*	*04/04/18 07:21*	*04/06/18 03:04*	*1*

Client Sample ID: EPNDSW04_20180322

Date Collected: 03/22/18 08:00
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206764-7

Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000046	ug/L		04/04/18 07:21	04/06/18 03:47	1
2,3,7,8-TCDF	ND		0.000010	0.00000049	ug/L		04/04/18 07:21	04/06/18 03:47	1
1,2,3,7,8-PeCDD	**0.00000097**	**J,DX q**	0.000051	0.00000063	ug/L		04/04/18 07:21	04/06/18 03:47	1
1,2,3,7,8-PeCDF	**0.0000013**	**J,DX q**	0.000051	0.00000069	ug/L		04/04/18 07:21	04/06/18 03:47	1
2,3,4,7,8-PeCDF	**0.0000012**	**J,DX q**	0.000051	0.00000080	ug/L		04/04/18 07:21	04/06/18 03:47	1
1,2,3,4,7,8-HxCDD	**0.0000036**	**J,DX q MB**	0.000051	0.00000060	ug/L		04/04/18 07:21	04/06/18 03:47	1
1,2,3,6,7,8-HxCDD	**0.0000014**	**J,DX**	0.000051	0.00000060	ug/L		04/04/18 07:21	04/06/18 03:47	1

Client Sample ID: EPNDSW04_20180322
Date Collected: 03/22/18 08:00
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206764-7
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDD	0.0000020	J,DX	0.000051	0.00000052	ug/L		04/04/18 07:21	04/06/18 03:47	1
1,2,3,4,7,8-HxCDF	0.0000016	J,DX q MB	0.000051	0.00000033	ug/L		04/04/18 07:21	04/06/18 03:47	1
1,2,3,6,7,8-HxCDF	0.0000021	J,DX q MB	0.000051	0.00000036	ug/L		04/04/18 07:21	04/06/18 03:47	1
1,2,3,7,8,9-HxCDF	0.0000022	J,DX	0.000051	0.00000030	ug/L		04/04/18 07:21	04/06/18 03:47	1
2,3,4,6,7,8-HxCDF	0.0000017	J,DX q MB	0.000051	0.00000032	ug/L		04/04/18 07:21	04/06/18 03:47	1
1,2,3,4,6,7,8-HpCDD	0.000014	J,DX MB	0.000051	0.00000042	ug/L		04/04/18 07:21	04/06/18 03:47	1
1,2,3,4,6,7,8-HpCDF	0.0000053	J,DX MB	0.000051	0.00000079	ug/L		04/04/18 07:21	04/06/18 03:47	1
1,2,3,4,7,8,9-HpCDF	0.0000022	J,DX q	0.000051	0.0000011	ug/L		04/04/18 07:21	04/06/18 03:47	1
OCDD	0.000092	J,DX MB	0.00010	0.00000093	ug/L		04/04/18 07:21	04/06/18 03:47	1
OCDF	0.0000075	J,DX q	0.00010	0.00000068	ug/L		04/04/18 07:21	04/06/18 03:47	1
Total TCDD	0.00000096	J,DX MB	0.000010	0.00000046	ug/L		04/04/18 07:21	04/06/18 03:47	1
Total TCDF	ND		0.000010	0.0000016	ug/L		04/04/18 07:21	04/06/18 03:47	1
Total PeCDD	0.00000097	J,DX q MB	0.000051	0.00000063	ug/L		04/04/18 07:21	04/06/18 03:47	1
Total PeCDF	0.0000035	J,DX q	0.000051	0.00000074	ug/L		04/04/18 07:21	04/06/18 03:47	1
Total HxCDD	0.000011	J,DX q MB	0.000051	0.00000057	ug/L		04/04/18 07:21	04/06/18 03:47	1
Total HxCDF	0.000010	J,DX q MB	0.000051	0.00000033	ug/L		04/04/18 07:21	04/06/18 03:47	1
Total HpCDD	0.000028	J,DX MB	0.000051	0.00000042	ug/L		04/04/18 07:21	04/06/18 03:47	1
Total HpCDF	0.000012	J,DX q MB	0.000051	0.00000093	ug/L		04/04/18 07:21	04/06/18 03:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*72*		*25 - 164*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-2,3,7,8-TCDF	*73*		*24 - 169*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-1,2,3,7,8-PeCDD	*93*		*25 - 181*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-1,2,3,7,8-PeCDF	*75*		*24 - 185*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-2,3,4,7,8-PeCDF	*73*		*21 - 178*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-1,2,3,4,7,8-HxCDD	*78*		*32 - 141*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-1,2,3,6,7,8-HxCDD	*70*		*28 - 130*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-1,2,3,4,7,8-HxCDF	*80*		*26 - 152*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-1,2,3,6,7,8-HxCDF	*69*		*26 - 123*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-1,2,3,7,8,9-HxCDF	*72*		*29 - 147*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-2,3,4,6,7,8-HxCDF	*72*		*28 - 136*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*54*		*23 - 140*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*60*		*28 - 143*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*58*		*26 - 138*	*04/04/18 07:21*	*04/06/18 03:47*	*1*
13C-OCDD	*56*		*17 - 157*	*04/04/18 07:21*	*04/06/18 03:47*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*99*		*35 - 197*	*04/04/18 07:21*	*04/06/18 03:47*	*1*

Client Sample ID: EPNDSW06_20180322
Date Collected: 03/22/18 08:30
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206764-8
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000043	ug/L		04/04/18 07:21	04/06/18 04:30	1
2,3,7,8-TCDF	ND		0.000010	0.00000052	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,7,8-PeCDD	ND		0.000052	0.00000063	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,7,8-PeCDF	ND		0.000052	0.00000069	ug/L		04/04/18 07:21	04/06/18 04:30	1
2,3,4,7,8-PeCDF	ND		0.000052	0.00000078	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,4,7,8-HxCDD	**0.0000037**	**J,DX q MB**	0.000052	0.00000065	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,6,7,8-HxCDD	**0.0000013**	**J,DX q**	0.000052	0.00000061	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,7,8,9-HxCDD	**0.0000018**	**J,DX q**	0.000052	0.00000054	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,4,7,8-HxCDF	**0.0000015**	**J,DX MB**	0.000052	0.00000061	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,6,7,8-HxCDF	**0.0000011**	**J,DX q MB**	0.000052	0.00000058	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,7,8,9-HxCDF	ND		0.000052	0.00000054	ug/L		04/04/18 07:21	04/06/18 04:30	1
2,3,4,6,7,8-HxCDF	**0.0000012**	**J,DX MB**	0.000052	0.00000052	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,4,6,7,8-HpCDD	**0.000032**	**J,DX MB**	0.000052	0.00000091	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,4,6,7,8-HpCDF	**0.0000073**	**J,DX MB**	0.000052	0.0000010	ug/L		04/04/18 07:21	04/06/18 04:30	1
1,2,3,4,7,8,9-HpCDF	**0.0000024**	**J,DX**	0.000052	0.0000014	ug/L		04/04/18 07:21	04/06/18 04:30	1
OCDD	**0.00034**	**MB**	0.00010	0.0000014	ug/L		04/04/18 07:21	04/06/18 04:30	1
OCDF	**0.000014**	**J,DX**	0.00010	0.00000086	ug/L		04/04/18 07:21	04/06/18 04:30	1
Total TCDD	**0.0000022**	**J,DX MB**	0.000010	0.00000043	ug/L		04/04/18 07:21	04/06/18 04:30	1
Total TCDF	ND		0.000010	0.00000052	ug/L		04/04/18 07:21	04/06/18 04:30	1
Total PeCDD	ND		0.000052	0.00000063	ug/L		04/04/18 07:21	04/06/18 04:30	1
Total PeCDF	ND		0.000052	0.00000069	ug/L		04/04/18 07:21	04/06/18 04:30	1
Total HxCDD	**0.000013**	**J,DX q MB**	0.000052	0.00000060	ug/L		04/04/18 07:21	04/06/18 04:30	1
Total HxCDF	**0.0000038**	**J,DX q MB**	0.000052	0.00000056	ug/L		04/04/18 07:21	04/06/18 04:30	1
Total HpCDD	**0.000068**	**MB**	0.000052	0.00000091	ug/L		04/04/18 07:21	04/06/18 04:30	1
Total HpCDF	**0.000020**	**J,DX q MB**	0.000052	0.0000012	ug/L		04/04/18 07:21	04/06/18 04:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*72*		*25 - 164*	*04/04/18 07:21*	*04/06/18 04:30*	*1*
13C-2,3,7,8-TCDF	*73*		*24 - 169*	*04/04/18 07:21*	*04/06/18 04:30*	*1*
13C-1,2,3,7,8-PeCDD	*89*		*25 - 181*	*04/04/18 07:21*	*04/06/18 04:30*	*1*
13C-1,2,3,7,8-PeCDF	*72*		*24 - 185*	*04/04/18 07:21*	*04/06/18 04:30*	*1*
13C-2,3,4,7,8-PeCDF	*73*		*21 - 178*	*04/04/18 07:21*	*04/06/18 04:30*	*1*
13C-1,2,3,4,7,8-HxCDD	*71*		*32 - 141*	*04/04/18 07:21*	*04/06/18 04:30*	*1*
13C-1,2,3,6,7,8-HxCDD	*71*		*28 - 130*	*04/04/18 07:21*	*04/06/18 04:30*	*1*

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-2

Client Sample ID: EPNDSW06_20180322
Date Collected: 03/22/18 08:30
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206764-8
Matrix: Water

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,7,8-HxCDF	76		26 - 152	04/04/18 07:21	04/06/18 04:30	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123	04/04/18 07:21	04/06/18 04:30	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147	04/04/18 07:21	04/06/18 04:30	1
13C-2,3,4,6,7,8-HxCDF	75		28 - 136	04/04/18 07:21	04/06/18 04:30	1
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	04/04/18 07:21	04/06/18 04:30	1
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143	04/04/18 07:21	04/06/18 04:30	1
13C-1,2,3,4,7,8,9-HpCDF	54		26 - 138	04/04/18 07:21	04/06/18 04:30	1
13C-OCDD	54		17 - 157	04/04/18 07:21	04/06/18 04:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	94		35 - 197	04/04/18 07:21	04/06/18 04:30	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-2

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

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

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-2

Client Sample ID: A1BMP0002_20180322
Lab Sample ID: 440-206764-1
Date Collected: 03/22/18 09:30
Matrix: Water
Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			947.8 mL	20.0 uL	216203	04/04/18 07:21	KQT	TAL SAC
Total/NA	Analysis	1613B		1			216681	04/06/18 00:13	KSS	TAL SAC

Client Sample ID: A1BMP0003_20180322
Lab Sample ID: 440-206764-2
Date Collected: 03/22/18 09:45
Matrix: Water
Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			874.2 mL	20.0 uL	216203	04/04/18 07:21	KQT	TAL SAC
Total/NA	Analysis	1613B		1			216681	04/06/18 00:55	KSS	TAL SAC

Client Sample ID: EPNDSW01_20180322
Lab Sample ID: 440-206764-4
Date Collected: 03/22/18 07:15
Matrix: Water
Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			939.3 mL	20.0 uL	216203	04/04/18 07:21	KQT	TAL SAC
Total/NA	Analysis	1613B		1			216681	04/06/18 01:38	KSS	TAL SAC

Client Sample ID: EPNDSW02_20180322
Lab Sample ID: 440-206764-5
Date Collected: 03/22/18 07:30
Matrix: Water
Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			922.1 mL	20.0 uL	216203	04/04/18 07:21	KQT	TAL SAC
Total/NA	Analysis	1613B		1			216681	04/06/18 02:21	KSS	TAL SAC

Client Sample ID: EPNDSW03_20180322
Lab Sample ID: 440-206764-6
Date Collected: 03/22/18 07:45
Matrix: Water
Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			957.9 mL	20.0 uL	216203	04/04/18 07:21	KQT	TAL SAC
Total/NA	Analysis	1613B		1			216681	04/06/18 03:04	KSS	TAL SAC

Client Sample ID: EPNDSW04_20180322
Lab Sample ID: 440-206764-7
Date Collected: 03/22/18 08:00
Matrix: Water
Date Received: 03/22/18 20:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			973.2 mL	20.0 uL	216203	04/04/18 07:21	KQT	TAL SAC
Total/NA	Analysis	1613B		1			216681	04/06/18 03:47	KSS	TAL SAC

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-2

Client Sample ID: EPNDSW06_20180322
Date Collected: 03/22/18 08:30
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206764-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			962.4 mL	20.0 uL	216203	04/04/18 07:21	KQT	TAL SAC
Total/NA	Analysis	1613B		1			216681	04/06/18 04:30	KSS	TAL SAC

Laboratory References:

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

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-216203/1-A
Matrix: Water
Analysis Batch: 216681

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 216203

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.00000044	ug/L		04/04/18 07:21	04/05/18 22:04	1
2,3,7,8-TCDF	ND		0.000010	0.00000047	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,7,8-PeCDD	ND		0.000050	0.00000050	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,7,8-PeCDF	ND		0.000050	0.00000064	ug/L		04/04/18 07:21	04/05/18 22:04	1
2,3,4,7,8-PeCDF	ND		0.000050	0.00000071	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,4,7,8-HxCDD	0.00000240	J,DX q	0.000050	0.00000049	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.00000045	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.00000040	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,4,7,8-HxCDF	0.000000590	J,DX	0.000050	0.00000021	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,6,7,8-HxCDF	0.000000310	J,DX q	0.000050	0.00000022	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.00000020	ug/L		04/04/18 07:21	04/05/18 22:04	1
2,3,4,6,7,8-HxCDF	0.000000414	J,DX q	0.000050	0.00000019	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,4,6,7,8-HpCDD	0.00000155	J,DX	0.000050	0.00000037	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,4,6,7,8-HpCDF	0.00000107	J,DX q	0.000050	0.00000055	ug/L		04/04/18 07:21	04/05/18 22:04	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.00000072	ug/L		04/04/18 07:21	04/05/18 22:04	1
OCDD	0.00000700	J,DX q	0.00010	0.00000045	ug/L		04/04/18 07:21	04/05/18 22:04	1
OCDF	ND		0.00010	0.00000051	ug/L		04/04/18 07:21	04/05/18 22:04	1
Total TCDD	0.00000123	J,DX	0.000010	0.00000044	ug/L		04/04/18 07:21	04/05/18 22:04	1
Total TCDF	ND		0.000010	0.00000047	ug/L		04/04/18 07:21	04/05/18 22:04	1
Total PeCDD	0.000000655	J,DX	0.000050	0.00000050	ug/L		04/04/18 07:21	04/05/18 22:04	1
Total PeCDF	ND		0.000050	0.00000064	ug/L		04/04/18 07:21	04/05/18 22:04	1
Total HxCDD	0.00000240	J,DX q	0.000050	0.00000044	ug/L		04/04/18 07:21	04/05/18 22:04	1
Total HxCDF	0.00000131	J,DX q	0.000050	0.00000020	ug/L		04/04/18 07:21	04/05/18 22:04	1
Total HpCDD	0.00000314	J,DX	0.000050	0.00000037	ug/L		04/04/18 07:21	04/05/18 22:04	1
Total HpCDF	0.00000107	J,DX q	0.000050	0.00000064	ug/L		04/04/18 07:21	04/05/18 22:04	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*83*		*25 - 164*	*04/04/18 07:21*	*04/05/18 22:04*	*1*
13C-2,3,7,8-TCDF	*84*		*24 - 169*	*04/04/18 07:21*	*04/05/18 22:04*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-216203/1-A
Matrix: Water
Analysis Batch: 216681

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 216203

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,7,8-PeCDD	111		25 - 181	04/04/18 07:21	04/05/18 22:04	1
13C-1,2,3,7,8-PeCDF	86		24 - 185	04/04/18 07:21	04/05/18 22:04	1
13C-2,3,4,7,8-PeCDF	86		21 - 178	04/04/18 07:21	04/05/18 22:04	1
13C-1,2,3,4,7,8-HxCDD	83		32 - 141	04/04/18 07:21	04/05/18 22:04	1
13C-1,2,3,6,7,8-HxCDD	87		28 - 130	04/04/18 07:21	04/05/18 22:04	1
13C-1,2,3,4,7,8-HxCDF	98		26 - 152	04/04/18 07:21	04/05/18 22:04	1
13C-1,2,3,6,7,8-HxCDF	89		26 - 123	04/04/18 07:21	04/05/18 22:04	1
13C-1,2,3,7,8,9-HxCDF	87		29 - 147	04/04/18 07:21	04/05/18 22:04	1
13C-2,3,4,6,7,8-HxCDF	96		28 - 136	04/04/18 07:21	04/05/18 22:04	1
13C-1,2,3,4,6,7,8-HpCDD	66		23 - 140	04/04/18 07:21	04/05/18 22:04	1
13C-1,2,3,4,6,7,8-HpCDF	74		28 - 143	04/04/18 07:21	04/05/18 22:04	1
13C-1,2,3,4,7,8,9-HpCDF	68		26 - 138	04/04/18 07:21	04/05/18 22:04	1
13C-OCDD	66		17 - 157	04/04/18 07:21	04/05/18 22:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	04/04/18 07:21	04/05/18 22:04	1

Lab Sample ID: LCS 320-216203/2-A
Matrix: Water
Analysis Batch: 216681

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 216203

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000218		ug/L		109	67 - 158
2,3,7,8-TCDF	0.000200	0.000229		ug/L		114	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000834		ug/L		83	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00102		ug/L		102	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00110		ug/L		110	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00106	MB	ug/L		106	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000943		ug/L		94	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00101		ug/L		101	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000932	MB	ug/L		93	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000945	MB	ug/L		94	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000863		ug/L		86	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000954	MB	ug/L		95	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000940	MB	ug/L		94	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00105	MB	ug/L		105	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00104		ug/L		104	78 - 138
OCDD	0.00200	0.00176	MB	ug/L		88	78 - 144
OCDF	0.00200	0.00172		ug/L		86	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	83		20 - 175
13C-2,3,7,8-TCDF	84		22 - 152
13C-1,2,3,7,8-PeCDD	112		21 - 227
13C-1,2,3,7,8-PeCDF	87		21 - 192
13C-2,3,4,7,8-PeCDF	89		13 - 328
13C-1,2,3,4,7,8-HxCDD	88		21 - 193
13C-1,2,3,6,7,8-HxCDD	87		25 - 163

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-216203/2-A
Matrix: Water
Analysis Batch: 216681

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 216203

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,7,8-HxCDF	100		19 - 202
13C-1,2,3,6,7,8-HxCDF	91		21 - 159
13C-1,2,3,7,8,9-HxCDF	89		17 - 205
13C-2,3,4,6,7,8-HxCDF	93		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	69		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	77		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	71		20 - 186
13C-OCDD	72		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	95		31 - 191

Lab Sample ID: LCSD 320-216203/3-A
Matrix: Water
Analysis Batch: 216681

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 216203

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD			0.000200	0.000222		ug/L		111	67 - 158	2	50
2,3,7,8-TCDF			0.000200	0.000232		ug/L		116	75 - 158	1	50
1,2,3,7,8-PeCDD			0.00100	0.000817		ug/L		82	70 - 142	2	50
1,2,3,7,8-PeCDF			0.00100	0.00101		ug/L		101	80 - 134	1	50
2,3,4,7,8-PeCDF			0.00100	0.00106		ug/L		106	68 - 160	4	50
1,2,3,4,7,8-HxCDD			0.00100	0.00102	MB	ug/L		102	70 - 164	4	50
1,2,3,6,7,8-HxCDD			0.00100	0.000972		ug/L		97	76 - 134	3	50
1,2,3,7,8,9-HxCDD			0.00100	0.000938		ug/L		94	64 - 162	7	50
1,2,3,4,7,8-HxCDF			0.00100	0.000885	MB	ug/L		89	72 - 134	5	50
1,2,3,6,7,8-HxCDF			0.00100	0.000912	MB	ug/L		91	84 - 130	4	50
1,2,3,7,8,9-HxCDF			0.00100	0.000868		ug/L		87	78 - 130	1	50
2,3,4,6,7,8-HxCDF			0.00100	0.000940	MB	ug/L		94	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD			0.00100	0.000923	MB	ug/L		92	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF			0.00100	0.00103	MB	ug/L		103	82 - 122	2	50
1,2,3,4,7,8,9-HpCDF			0.00100	0.000998		ug/L		100	78 - 138	4	50
OCDD			0.00200	0.00176	MB	ug/L		88	78 - 144	0	50
OCDF			0.00200	0.00175		ug/L		88	63 - 170	2	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-2,3,7,8-TCDD	82		20 - 175
13C-2,3,7,8-TCDF	82		22 - 152
13C-1,2,3,7,8-PeCDD	113		21 - 227
13C-1,2,3,7,8-PeCDF	87		21 - 192
13C-2,3,4,7,8-PeCDF	87		13 - 328
13C-1,2,3,4,7,8-HxCDD	88		21 - 193
13C-1,2,3,6,7,8-HxCDD	87		25 - 163
13C-1,2,3,4,7,8-HxCDF	98		19 - 202
13C-1,2,3,6,7,8-HxCDF	94		21 - 159
13C-1,2,3,7,8,9-HxCDF	88		17 - 205
13C-2,3,4,6,7,8-HxCDF	93		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	67		26 - 166

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-216203/3-A
Matrix: Water
Analysis Batch: 216681

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 216203

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	76		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	74		20 - 186
13C-OCDD	70		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	96		31 - 191

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-2

Specialty Organics

Prep Batch: 216203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Total/NA	Water	1613B	
440-206764-2	A1BMP0003_20180322	Total/NA	Water	1613B	
440-206764-4	EPNDSW01_20180322	Total/NA	Water	1613B	
440-206764-5	EPNDSW02_20180322	Total/NA	Water	1613B	
440-206764-6	EPNDSW03_20180322	Total/NA	Water	1613B	
440-206764-7	EPNDSW04_20180322	Total/NA	Water	1613B	
440-206764-8	EPNDSW06_20180322	Total/NA	Water	1613B	
MB 320-216203/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-216203/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-216203/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 216681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206764-1	A1BMP0002_20180322	Total/NA	Water	1613B	216203
440-206764-2	A1BMP0003_20180322	Total/NA	Water	1613B	216203
440-206764-4	EPNDSW01_20180322	Total/NA	Water	1613B	216203
440-206764-5	EPNDSW02_20180322	Total/NA	Water	1613B	216203
440-206764-6	EPNDSW03_20180322	Total/NA	Water	1613B	216203
440-206764-7	EPNDSW04_20180322	Total/NA	Water	1613B	216203
440-206764-8	EPNDSW06_20180322	Total/NA	Water	1613B	216203
MB 320-216203/1-A	Method Blank	Total/NA	Water	1613B	216203
LCS 320-216203/2-A	Lab Control Sample	Total/NA	Water	1613B	216203
LCSD 320-216203/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	216203

Qualifiers

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

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)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
TestAmerica Job ID: 440-206764-2
Project/Site: BMP Performance OF 009 Watershed

Laboratory: TestAmerica Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica Sacramento

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	17-020	01-20-21
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
L-A-B	DoD ELAP		L2468	01-20-21
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-14-18 *
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-18
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-18
US Fish & Wildlife	Federal		LE148388-0	07-31-18
USDA	Federal		P330-11-00436	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614
phone (949) 261-1022 fax (949) 260-3299

Chain of Custody Record for
Haley & Aldrich, Inc. Blanket Service Agreement #2015-18-TestAmerica

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.

Client Contact	H&A Project Manager: Katherine Miller	H&A Site Contact: Matt Birney (818) 466-8782	Date: 3/22/2018	COC No:
Haley & Aldrich, Inc.	Tel/Fax: (520) 289-8606	Lab Contact: Urvashi Patel (949) 333-9055	Carrier:	1 of 1 COCs
5333 Mission Center Road, Suite 300	Analysis Turnaround Time			Sampler:
San Diego, California 92108	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(619) 260-9210 Phone	TAT if different from Below _____			Walk-in Client:
(619) 260-9415 FAX	☑ 2 weeks			Lab Sampling:
H&A Project Number : 129095-003 SID 5.2	☐ 1 week			
Site: BMP Performance OF 009 Watershed	☐ 2 days			Job / SDG No.:
H&A P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Dissolved)	Method 200.8: Cd, Cu, Pb Method 245.1: Hg (Total Recoverable)	Dioxins (Method 1613)	Total Suspended Solids (Method 2540D)	Particle Size Distribution (Method ASTM D422)	Turbidity (Method 180.1)	Sample Specific Notes:
								1-250mL P	1-250mL P	2-1L A	1-1L P	1-1L P	1-250mL P	Field Staff Notes: Lab may substitute 250mL Poly for 500mL for metals. Only need to fill half of 500mL. Must fill TSS to the top.
A1BMP0002_20180322	3/22/18	930	G	WM	7		N	X	X	X	X	X		extra 250mL poly collected; Upstream (South), CM-9 BMPs
A1BMP0003_20180322	3/22/18	0945	G	WM	7		N	X	X	X	X	X		extra 250mL poly collected; Downstream, CM-9 BMPs; CM-9 underdrains
FBQW__20180322	3/22/18	1330	G	WM	2		N				H	H (1)		Hold
EPNDSW01_20180322	3/22/18	0715	G	WM	7		N	x	x	x	x	x	x	Northern Drainage above confluence with Area II drainage
EPNDSW02_20180322	3/22/18	0730	G	WM	7		N	x	x	x	x	x	x	Area II drainage above confluence with Northern Drainage
EPNDSW03_20180322	3/22/18	0745	G	WM	7		N	x	x	x	x	x	x	Dirt access road adjacent to Northern Drainage
EPNDSW04_20180322	3/22/18	0800	G	WM	7		N	x	x	x	x	x	x	Dirt road crossing at box culvert
EPNDSW06_20180322	3/22/18	0830	G	WM	7		N	x	x	x	x	x	x	Downstream of 24" stormdrain outlet discharge
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other								1	4	1	1	1	1	

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☑ Archive for 6 Months

Special Instructions/QC Requirements & Comments:
Please email data to kmiller@haleyaldrich.com and post to Total Access; Bill to Haley & Aldrich at AP@haleyaldrich.com; Report Level II Data Package and provide EDD; All dissolved metal samples are to be filtered within 24 hours of receipt, even those placed on hold.

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company: H&A	Date/Time: 3.22.18 1730	Received by:	Company: DCS	Date/Time: 3-22-18 1730
Relinquished by:	Company: DCS	Date/Time: 3-22-18 2000	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: 3/22/18	Company:	Date/Time:

2000
1266

1.8/2.3
3.0/3.5
3.3/3.8

Form No. CA-C-WI-045, Rev. 1.2, dated 1/8/2016

440-206764 Chain of Custody

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4/9/2018

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-206764-2

Login Number: 206764
List Number: 1
Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

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.	N/A	
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.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-206764-2

Login Number: 206764
List Number: 2
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento
List Creation: 03/24/18 04:50 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.	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	2.1
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.	False	Received extra samples not listed on COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF (24-185)	PeCF (21-178)	HxCDD (32-141)	HxDD (28-130)	HxCDF (26-152)
440-206764-1	A1BMP0002_20180322	89	92	117	92	94	91	90	101
440-206764-2	A1BMP0003_20180322	82	85	113	91	90	92	94	102
440-206764-4	EPNDSW01_20180322	82	83	107	84	84	86	83	93
440-206764-5	EPNDSW02_20180322	73	76	93	76	74	77	71	83
440-206764-6	EPNDSW03_20180322	79	78	99	79	81	86	82	92
440-206764-7	EPNDSW04_20180322	72	73	93	75	73	78	70	80
440-206764-8	EPNDSW06_20180322	72	73	89	72	73	71	71	76
MB 320-216203/1-A	Method Blank	83	84	111	86	86	83	87	98

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (26-123)	HxCF (29-147)	13CHxCF (28-136)	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-206764-1	A1BMP0002_20180322	93	89	96	65	75	72	74
440-206764-2	A1BMP0003_20180322	95	89	99	69	76	74	72
440-206764-4	EPNDSW01_20180322	81	79	91	62	67	65	63
440-206764-5	EPNDSW02_20180322	75	73	77	52	55	52	53
440-206764-6	EPNDSW03_20180322	83	80	84	60	65	60	60
440-206764-7	EPNDSW04_20180322	69	72	72	54	60	58	56
440-206764-8	EPNDSW06_20180322	73	67	75	53	57	54	54
MB 320-216203/1-A	Method Blank	89	87	96	66	74	68	66

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF (21-192)	PeCF (13-328)	HxCDD (21-193)	HxDD (25-163)	HxCDF (19-202)
LCS 320-216203/2-A	Lab Control Sample	83	84	112	87	89	88	87	100
LCSD 320-216203/3-A	Lab Control Sample Dup	82	82	113	87	87	88	87	98

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxDF (21-159)	HxCF (17-205)	13CHxCF (22-176)	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-216203/2-A	Lab Control Sample	91	89	93	69	77	71	72

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: BMP Performance OF 009 Watershed

TestAmerica Job ID: 440-206764-2

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	**Client Sample ID**	**HxDF (21-159)**	**HxCF (17-205)**	**13CHxCF (22-176)**	**HpCDD (26-166)**	**HpCDF (21-158)**	**HpCDF2 (20-186)**	**OCDD (13-199)**	
LCSD 320-216203/3-A	Lab Control Sample Dup	94	88	93	67	76	74	70	

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
PeCF = 13C-2,3,4,7,8-PeCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

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Supplemental Report 1

The original report has been revised to include the Level IV deliverables package.

WORK ORDER NUMBER: 18-03-1798

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL - Gainesville

Client Project Name: SSFL CH661 / 692670.61.SW

Attention: Randy Dean
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Approved for release on 04/18/2018 by:
Virendra Patel
Project Manager

ResultLink

Email your PM

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Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1798

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Work Order Narrative

Work Order: 18-03-1798 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 03/21/18. They were assigned to Work Order 18-03-1798.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

DoD Projects:

The test results contained in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation ADE-1864.

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Sample Summary

Client:	CH2M HILL - Gainesville 3011 S.W. Williston Road Gainesville, FL 32608-3928	Work Order:	18-03-1798
		Project Name:	SSFL CH661 / 692670.61.SW
		PO Number:	
		Date/Time Received:	03/21/18 17:55
		Number of Containers:	51
Attn:	Randy Dean		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
A2BMP0009S006	18-03-1798-1	03/21/18 10:35	8	Aqueous
A2BMP0011S008	18-03-1798-2	03/21/18 11:00	8	Aqueous
CABMP0001S001	18-03-1798-3	03/21/18 08:00	8	Aqueous
CABMP0002S001	18-03-1798-4	03/21/18 08:45	8	Aqueous
CABMP0003S001	18-03-1798-5	03/21/18 08:25	8	Aqueous
EVBMP0003S022	18-03-1798-6	03/21/18 07:40	7	Aqueous
FBQW1852Q001	18-03-1798-7	03/21/18 14:00	4	Aqueous

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QC Association Summary

Work Order: 18-03-1798 Page 1 of 1

Client Sample ID	Method Name	Type	Ext Name	Instrument	MS/MSD/SDP	LCS/LCSD
A2BMP0009S006	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
A2BMP0009S006	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180326SA1	180326LA1
A2BMP0009S006	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180326SA2	180326LA2F
A2BMP0009S006	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1A	180328LA1
A2BMP0009S006	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2A	180328LA2F
A2BMP0009S006	SM 2130 B Turbidity		N/A	TUR 4	I0322TURL1	*2
A2BMP0009S006	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD1	I0327TSSL1
A2BMP0011S008	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
A2BMP0011S008	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180326SA1	180326LA1
A2BMP0011S008	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180326SA2	180326LA2F
A2BMP0011S008	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1A	180328LA1
A2BMP0011S008	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2A	180328LA2F
A2BMP0011S008	SM 2130 B Turbidity		N/A	TUR 4	I0322TURL1	*4
A2BMP0011S008	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD1	I0327TSSL1
CABMP0001S001	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
CABMP0001S001	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180326SA1	180326LA1
CABMP0001S001	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180326SA2	180326LA2F
CABMP0001S001	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1A	180328LA1
CABMP0001S001	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2A	180328LA2F
CABMP0001S001	SM 2130 B Turbidity		N/A	TUR 4	I0322TURL1	*4
CABMP0001S001	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD1	I0327TSSL1
CABMP0002S001	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
CABMP0002S001	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180326SA1	180326LA1
CABMP0002S001	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180326SA2	180326LA2F
CABMP0002S001	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1A	180328LA1
CABMP0002S001	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2A	180328LA2F
CABMP0002S001	SM 2130 B Turbidity		N/A	TUR 4	I0322TURL1	*4
CABMP0002S001	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD1	I0327TSSL1
CABMP0003S001	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
CABMP0003S001	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180326SA1	180326LA1
CABMP0003S001	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180326SA2	180326LA2F
CABMP0003S001	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1A	180328LA1
CABMP0003S001	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2A	180328LA2F
CABMP0003S001	SM 2130 B Turbidity		N/A	TUR 4	I0322TURL1	*4
CABMP0003S001	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD1	I0327TSSL1
EVBMP0003S022	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
EVBMP0003S022	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180326SA1	180326LA1
EVBMP0003S022	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180326SA2	180326LA2F
EVBMP0003S022	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1A	180328LA1
EVBMP0003S022	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2A	180328LA2F
EVBMP0003S022	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD1	I0327TSSL1
FBQW1852Q001	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180326SA1	180326LA1
FBQW1852Q001	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1A	180328LA1

2 = Limited sample received, no MS/MSD performed

4 = Per the method, no associated matrix QC

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Detections Summary

Client:	CH2M HILL - Gainesville	Work Order:	18-03-1798
	3011 S.W. Williston Road	Project Name:	SSFL CH661 / 692670.61.SW
	Gainesville, FL 32608-3928	Received:	03/21/18
Attn:	Randy Dean		

Client SampleID

Analyte	Result	Qualifiers	RL	Units	Method	Extraction
A2BMP0009S006 (18-03-1798-1)						
Clay (less than 0.00391mm)	6.07			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	50.30			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	56.37			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	18.95			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	16.39			%	ASTM D4464 (M)	N/A
Medium Sand (0.25 to 0.5mm)	7.39			%	ASTM D4464 (M)	N/A
Coarse Sand (0.5 to 1mm)	0.90			%	ASTM D4464 (M)	N/A
Copper	0.00286		0.00100	mg/L	EPA 200.8	N/A
Lead	0.00346		0.00100	mg/L	EPA 200.8	N/A
Copper	0.00138		0.00100	mg/L	EPA 200.8	Filtered
Lead	0.000297	J	0.0000898*	mg/L	EPA 200.8	Filtered
Turbidity	22		1.0	NTU	SM 2130 B	N/A
Solids, Total Suspended	44		1.0	mg/L	SM 2540 D	N/A
A2BMP0011S008 (18-03-1798-2)						
Clay (less than 0.00391mm)	9.41			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	56.73			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	66.13			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	24.23			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	9.09			%	ASTM D4464 (M)	N/A
Medium Sand (0.25 to 0.5mm)	0.55			%	ASTM D4464 (M)	N/A
Copper	0.00268		0.00100	mg/L	EPA 200.8	N/A
Lead	0.00403		0.00100	mg/L	EPA 200.8	N/A
Copper	0.00147		0.00100	mg/L	EPA 200.8	Filtered
Lead	0.000356	J	0.0000898*	mg/L	EPA 200.8	Filtered
Turbidity	28		1.0	NTU	SM 2130 B	N/A
Solids, Total Suspended	27		1.0	mg/L	SM 2540 D	N/A

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* MDL is shown

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Detections Summary

Client:	CH2M HILL - Gainesville	Work Order:	18-03-1798
	3011 S.W. Williston Road	Project Name:	SSFL CH661 / 692670.61.SW
	Gainesville, FL 32608-3928	Received:	03/21/18
Attn:	Randy Dean		

Client SampleID

Analyte	Result	Qualifiers	RL	Units	Method	Extraction
CABMP0001S001 (18-03-1798-3)						
Clay (less than 0.00391mm)	30.54			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	44.49			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	75.03			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	18.21			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	6.62			%	ASTM D4464 (M)	N/A
Medium Sand (0.25 to 0.5mm)	0.13			%	ASTM D4464 (M)	N/A
Cadmium	0.00150		0.00100	mg/L	EPA 200.8	N/A
Copper	0.0210		0.00100	mg/L	EPA 200.8	N/A
Lead	0.0948		0.00100	mg/L	EPA 200.8	N/A
Cadmium	0.000198	J	0.000128*	mg/L	EPA 200.8	Filtered
Copper	0.00518		0.00100	mg/L	EPA 200.8	Filtered
Lead	0.00148		0.00100	mg/L	EPA 200.8	Filtered
Turbidity	280		10	NTU	SM 2130 B	N/A
Solids, Total Suspended	327		1.00	mg/L	SM 2540 D	N/A
CABMP0002S001 (18-03-1798-4)						
Clay (less than 0.00391mm)	31.42			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	47.05			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	78.47			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	11.31			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	10.21			%	ASTM D4464 (M)	N/A
Medium Sand (0.25 to 0.5mm)	0.013			%	ASTM D4464 (M)	N/A
Cadmium	0.00180		0.00100	mg/L	EPA 200.8	N/A
Copper	0.0166		0.00100	mg/L	EPA 200.8	N/A
Lead	0.0687		0.00100	mg/L	EPA 200.8	N/A
Cadmium	0.000151	J	0.000128*	mg/L	EPA 200.8	Filtered
Copper	0.00152		0.00100	mg/L	EPA 200.8	Filtered
Lead	0.00161		0.00100	mg/L	EPA 200.8	Filtered
Turbidity	380		10	NTU	SM 2130 B	N/A
Solids, Total Suspended	455		1.00	mg/L	SM 2540 D	N/A

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* MDL is shown

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Detections Summary

Client:	CH2M HILL - Gainesville	Work Order:	18-03-1798
	3011 S.W. Williston Road	Project Name:	SSFL CH661 / 692670.61.SW
	Gainesville, FL 32608-3928	Received:	03/21/18
Attn:	Randy Dean		

Client SampleID

Analyte	Result	Qualifiers	RL	Units	Method	Extraction
CABMP0003S001 (18-03-1798-5)						
Clay (less than 0.00391mm)	14.80			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	56.16			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	70.96			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	14.81			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	14.22			%	ASTM D4464 (M)	N/A
Cadmium	0.000690	J	0.000128*	mg/L	EPA 200.8	N/A
Copper	0.0121		0.00100	mg/L	EPA 200.8	N/A
Lead	0.0620		0.00100	mg/L	EPA 200.8	N/A
Copper	0.00314		0.00100	mg/L	EPA 200.8	Filtered
Lead	0.00113		0.00100	mg/L	EPA 200.8	Filtered
Turbidity	180		10	NTU	SM 2130 B	N/A
Solids, Total Suspended	216		1.00	mg/L	SM 2540 D	N/A
EVBMP0003S022 (18-03-1798-6)						
Clay (less than 0.00391mm)	4.17			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	28.46			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	32.63			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	42.42			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	17.02			%	ASTM D4464 (M)	N/A
Medium Sand (0.25 to 0.5mm)	0.47			%	ASTM D4464 (M)	N/A
Coarse Sand (0.5 to 1mm)	7.32			%	ASTM D4464 (M)	N/A
Very Coarse Sand (1 to 2mm)	0.14			%	ASTM D4464 (M)	N/A
Copper	0.00530		0.00100	mg/L	EPA 200.8	N/A
Lead	0.00243		0.00100	mg/L	EPA 200.8	N/A
Copper	0.00371		0.00100	mg/L	EPA 200.8	Filtered
Lead	0.000316	J	0.0000898*	mg/L	EPA 200.8	Filtered
Solids, Total Suspended	35		1.0	mg/L	SM 2540 D	N/A
FBQW1852Q001 (18-03-1798-7)						
Copper	0.000758	J	0.000140*	mg/L	EPA 200.8	N/A

Subcontracted analyses, if any, are not included in this summary.

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* MDL is shown

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: N/A
Method: SM 2130 B
Units: NTU

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0009S006	**18-03-1798-1-C**	**03/21/18 10:35**	**Aqueous**	**TUR 4**	**N/A**	**03/22/18 16:46**	**I0322TURL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Turbidity	22	1.0	0.044	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0011S008	**18-03-1798-2-C**	**03/21/18 11:00**	**Aqueous**	**TUR 4**	**N/A**	**03/22/18 16:46**	**I0322TURL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Turbidity	28	1.0	0.044	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0001S001	**18-03-1798-3-C**	**03/21/18 08:00**	**Aqueous**	**TUR 4**	**N/A**	**03/22/18 16:46**	**I0322TURL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Turbidity	280	10	0.044	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0002S001	**18-03-1798-4-C**	**03/21/18 08:45**	**Aqueous**	**TUR 4**	**N/A**	**03/22/18 16:46**	**I0322TURL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Turbidity	380	10	0.044	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0003S001	**18-03-1798-5-C**	**03/21/18 08:25**	**Aqueous**	**TUR 4**	**N/A**	**03/22/18 16:46**	**I0322TURL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Turbidity	180	10	0.044	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: N/A
Method: SM 2540 D
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0009S006	**18-03-1798-1-G**	**03/21/18 10:35**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 13:30**	**I0327TSSL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	44	1.0	0.83	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0011S008	**18-03-1798-2-G**	**03/21/18 11:00**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 13:30**	**I0327TSSL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	27	1.0	0.83	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0001S001	**18-03-1798-3-G**	**03/21/18 08:00**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 13:30**	**I0327TSSL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	327	1.00	0.829	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0002S001	**18-03-1798-4-G**	**03/21/18 08:45**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 13:30**	**I0327TSSL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	455	1.00	0.829	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0003S001	**18-03-1798-5-G**	**03/21/18 08:25**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 13:30**	**I0327TSSL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	216	1.00	0.829	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0003S022	**18-03-1798-6-G**	**03/21/18 07:40**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 13:30**	**I0327TSSL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	35	1.0	0.83	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: N/A
Method: SM 2540 D
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-09-010-9017**	**N/A**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 13:30**	**I0327TSSL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	ND	1.0	0.83	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: N/A
Method: EPA 200.8
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0009S006	**18-03-1798-1-B**	**03/21/18 10:35**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:33**	**180326LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00286	0.00100	0.000140	1.00	
Lead	0.00346	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0011S008	**18-03-1798-2-B**	**03/21/18 11:00**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:36**	**180326LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00268	0.00100	0.000140	1.00	
Lead	0.00403	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0001S001	**18-03-1798-3-B**	**03/21/18 08:00**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:38**	**180326LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	0.00150	0.00100	0.000128	1.00	
Copper	0.0210	0.00100	0.000140	1.00	
Lead	0.0948	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0002S001	**18-03-1798-4-B**	**03/21/18 08:45**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:41**	**180326LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	0.00180	0.00100	0.000128	1.00	
Copper	0.0166	0.00100	0.000140	1.00	
Lead	0.0687	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0003S001	**18-03-1798-5-B**	**03/21/18 08:25**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:43**	**180326LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	0.000690	0.00100	0.000128	1.00	J
Copper	0.0121	0.00100	0.000140	1.00	
Lead	0.0620	0.00100	0.0000898	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: N/A
Method: EPA 200.8
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0003S022	**18-03-1798-6-B**	**03/21/18 07:40**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:46**	**180326LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00530	0.00100	0.000140	1.00	
Lead	0.00243	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
FBQW1852Q001	**18-03-1798-7-B**	**03/21/18 14:00**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:48**	**180326LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.000758	0.00100	0.000140	1.00	J
Lead	ND	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-094-2273**	**N/A**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/27/18 23:07**	**180326LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	ND	0.00100	0.000140	1.00	
Lead	ND	0.00100	0.0000898	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: Filtered
Method: EPA 200.8
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0009S006	**18-03-1798-1-C**	**03/21/18 10:35**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:04**	**180326LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00138	0.00100	0.000140	1.00	
Lead	0.000297	0.00100	0.0000898	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0011S008	**18-03-1798-2-C**	**03/21/18 11:00**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:01**	**180326LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00147	0.00100	0.000140	1.00	
Lead	0.000356	0.00100	0.0000898	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0001S001	**18-03-1798-3-C**	**03/21/18 08:00**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:06**	**180326LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	0.000198	0.00100	0.000128	1.00	J
Copper	0.00518	0.00100	0.000140	1.00	
Lead	0.00148	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0002S001	**18-03-1798-4-C**	**03/21/18 08:45**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:09**	**180326LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	0.000151	0.00100	0.000128	1.00	J
Copper	0.00152	0.00100	0.000140	1.00	
Lead	0.00161	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0003S001	**18-03-1798-5-C**	**03/21/18 08:25**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:11**	**180326LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00314	0.00100	0.000140	1.00	
Lead	0.00113	0.00100	0.0000898	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: Filtered
Method: EPA 200.8
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0003S022	**18-03-1798-6-C**	**03/21/18 07:40**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:14**	**180326LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00371	0.00100	0.000140	1.00	
Lead	0.000316	0.00100	0.0000898	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-900-200**	**N/A**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/27/18 23:10**	**180326LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	ND	0.00100	0.000140	1.00	
Lead	ND	0.00100	0.0000898	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: EPA 245.1 Total
Method: EPA 245.1
Units: mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0009S006	**18-03-1798-1-B**	**03/21/18 10:35**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:21**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0011S008	**18-03-1798-2-B**	**03/21/18 11:00**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:24**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0001S001	**18-03-1798-3-B**	**03/21/18 08:00**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:31**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0002S001	**18-03-1798-4-B**	**03/21/18 08:45**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:33**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0003S001	**18-03-1798-5-B**	**03/21/18 08:25**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:35**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0003S022	**18-03-1798-6-B**	**03/21/18 07:40**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:38**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: EPA 245.1 Total
Method: EPA 245.1
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
FBQW1852Q001	**18-03-1798-7-B**	**03/21/18 14:00**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:40**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-484-23**	**N/A**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:43**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: EPA 245.1 Filt.
Method: EPA 245.1
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0009S006	**18-03-1798-1-C**	**03/21/18 10:35**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:42**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0011S008	**18-03-1798-2-C**	**03/21/18 11:00**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:54**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0001S001	**18-03-1798-3-C**	**03/21/18 08:00**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:56**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0002S001	**18-03-1798-4-C**	**03/21/18 08:45**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:58**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0003S001	**18-03-1798-5-C**	**03/21/18 08:25**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 15:01**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0003S022	**18-03-1798-6-C**	**03/21/18 07:40**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 15:03**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: EPA 245.1 Filt.
Method: EPA 245.1
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-520-20**	**N/A**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:15**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: N/A
Method: ASTM D4464 (M)
Units: %

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0009S006	**18-03-1798-1-F**	**03/21/18 10:35**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 18:07**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	6.07	
Silt (0.00391 to 0.0625mm)	50.30	
Total Silt and Clay (0 to 0.0625mm)	56.37	
Very Fine Sand (0.0625 to 0.125mm)	18.95	
Fine Sand (0.125 to 0.25mm)	16.39	
Medium Sand (0.25 to 0.5mm)	7.39	
Coarse Sand (0.5 to 1mm)	0.90	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0011S008	**18-03-1798-2-F**	**03/21/18 11:00**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 18:14**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	9.41	
Silt (0.00391 to 0.0625mm)	56.73	
Total Silt and Clay (0 to 0.0625mm)	66.13	
Very Fine Sand (0.0625 to 0.125mm)	24.23	
Fine Sand (0.125 to 0.25mm)	9.09	
Medium Sand (0.25 to 0.5mm)	0.55	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0001S001	**18-03-1798-3-F**	**03/21/18 08:00**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 18:22**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	30.54	
Silt (0.00391 to 0.0625mm)	44.49	
Total Silt and Clay (0 to 0.0625mm)	75.03	
Very Fine Sand (0.0625 to 0.125mm)	18.21	
Fine Sand (0.125 to 0.25mm)	6.62	
Medium Sand (0.25 to 0.5mm)	0.13	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: N/A
Method: ASTM D4464 (M)
Units: %

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0002S001	**18-03-1798-4-F**	**03/21/18 08:45**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 18:28**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	31.42	
Silt (0.00391 to 0.0625mm)	47.05	
Total Silt and Clay (0 to 0.0625mm)	78.47	
Very Fine Sand (0.0625 to 0.125mm)	11.31	
Fine Sand (0.125 to 0.25mm)	10.21	
Medium Sand (0.25 to 0.5mm)	0.013	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CABMP0003S001	**18-03-1798-5-F**	**03/21/18 08:25**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 18:37**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	14.80	
Silt (0.00391 to 0.0625mm)	56.16	
Total Silt and Clay (0 to 0.0625mm)	70.96	
Very Fine Sand (0.0625 to 0.125mm)	14.81	
Fine Sand (0.125 to 0.25mm)	14.22	
Medium Sand (0.25 to 0.5mm)	ND	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0003S022	**18-03-1798-6-F**	**03/21/18 07:40**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 18:48**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	4.17	
Silt (0.00391 to 0.0625mm)	28.46	
Total Silt and Clay (0 to 0.0625mm)	32.63	
Very Fine Sand (0.0625 to 0.125mm)	42.42	
Fine Sand (0.125 to 0.25mm)	17.02	
Medium Sand (0.25 to 0.5mm)	0.47	
Coarse Sand (0.5 to 1mm)	7.32	
Very Coarse Sand (1 to 2mm)	0.14	
Gravel (greater than 2mm)	ND	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - Spike/Spike Duplicate

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: N/A
Method: EPA 200.8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
A2BMP0009S006	**Sample**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:33**	**180326SA1**
A2BMP0009S006	**Matrix Spike**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:16**	**180326SA1**
A2BMP0009S006	**Matrix Spike Duplicate**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:19**	**180326SA1**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Cadmium	ND	0.1000	0.1051	105	0.1062	106	80-120	1	0-20	
Copper	0.002858	0.1000	0.1059	103	0.1030	100	80-120	3	0-20	
Lead	0.003456	0.1000	0.1077	104	0.1091	106	80-120	1	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: Filtered
Method: EPA 200.8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
A2BMP0011S008	**Sample**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/28/18 00:01**	**180326SA2**
A2BMP0011S008	**Matrix Spike**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/27/18 23:17**	**180326SA2**
A2BMP0011S008	**Matrix Spike Duplicate**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/27/18 23:19**	**180326SA2**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Cadmium	ND	0.1000	0.1038	104	0.1038	104	80-120	0	0-20	
Copper	0.001470	0.1000	0.1045	103	0.1046	103	80-120	0	0-20	
Lead	ND	0.1000	0.1029	103	0.1051	105	80-120	2	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

CH2M HILL - Gainesville		Date Received:	03/21/18
3011 S.W. Williston Road		Work Order:	18-03-1798
Gainesville, FL 32608-3928		Preparation:	EPA 245.1 Total
		Method:	EPA 245.1
Project: SSFL CH661 / 692670.61.SW			Page 3 of 4

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
A2BMP0011S008	**Sample**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:24**	**180328SA1A**
A2BMP0011S008	**Matrix Spike**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:26**	**180328SA1A**
A2BMP0011S008	**Matrix Spike Duplicate**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:28**	**180328SA1A**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	ND	0.01000	0.009579	96	0.009316	93	75-125	3	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Spike/Spike Duplicate

CH2M HILL - Gainesville	Date Received:	03/21/18
3011 S.W. Williston Road	Work Order:	18-03-1798
Gainesville, FL 32608-3928	Preparation:	EPA 245.1 Filt.
	Method:	EPA 245.1
Project: SSFL CH661 / 692670.61.SW		Page 4 of 4

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
A2BMP0009S006	**Sample**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:42**	**180328SA2A**
A2BMP0009S006	**Matrix Spike**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:49**	**180328SA2A**
A2BMP0009S006	**Matrix Spike Duplicate**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/29/18 14:51**	**180328SA2A**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	ND	0.01000	0.009810	98	0.009465	95	75-125	4	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Sample Duplicate

CH2M HILL - Gainesville		Date Received:	03/21/18
3011 S.W. Williston Road		Work Order:	18-03-1798
Gainesville, FL 32608-3928		Preparation:	N/A
		Method:	SM 2130 B
Project: SSFL CH661 / 692670.61.SW			Page 1 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
18-03-1747-1	**Sample**	**Aqueous**	**TUR 4**	**N/A**	**03/22/18 16:46**	**I0322TURL1**
18-03-1747-1	**Sample Duplicate**	**Aqueous**	**TUR 4**	**N/A**	**03/22/18 16:46**	**I0322TURL1**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Turbidity	0.3100	0.2800	10	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Sample Duplicate

CH2M HILL - Gainesville		Date Received:	03/21/18
3011 S.W. Williston Road		Work Order:	18-03-1798
Gainesville, FL 32608-3928		Preparation:	N/A
		Method:	SM 2540 D
Project: SSFL CH661 / 692670.61.SW			Page 2 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
CABMP0001S001	**Sample**	**Aqueous**	**N/A**	**03/27/18 00:00**	**03/27/18 13:30**	**I0327TSSD1**
CABMP0001S001	**Sample Duplicate**	**Aqueous**	**N/A**	**03/27/18 00:00**	**03/27/18 13:30**	**I0327TSSD1**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Solids, Total Suspended	327.0	311.0	5	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS/LCSD

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/21/18
Work Order: 18-03-1798
Preparation: N/A
Method: SM 2540 D

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-09-010-9017	**LCS**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 13:30**	**I0327TSSL1**
099-09-010-9017	**LCSD**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 13:30**	**I0327TSSL1**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Solids, Total Suspended	100.0	92.00	92	98.00	98	80-120	6	0-20	

RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

CH2M HILL - Gainesville		Date Received:	03/21/18
3011 S.W. Williston Road		Work Order:	18-03-1798
Gainesville, FL 32608-3928		Preparation:	N/A
		Method:	EPA 200.8
Project: SSFL CH661 / 692670.61.SW			Page 2 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-16-094-2273	**LCS**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/27/18 23:12**	**180326LA1**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Cadmium	0.1000	0.1032	103	80-120	
Copper	0.1000	0.1027	103	80-120	
Lead	0.1000	0.1048	105	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

CH2M HILL - Gainesville		Date Received:	03/21/18
3011 S.W. Williston Road		Work Order:	18-03-1798
Gainesville, FL 32608-3928		Preparation:	Filtered
		Method:	EPA 200.8
Project: SSFL CH661 / 692670.61.SW			Page 3 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-12-900-200	**LCS**	**Aqueous**	**ICP/MS 03**	**03/26/18**	**03/27/18 23:14**	**180326LA2F**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Cadmium	0.1000	0.1042	104	80-120	
Copper	0.1000	0.1017	102	80-120	
Lead	0.1000	0.1038	104	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

CH2M HILL - Gainesville		Date Received:	03/21/18
3011 S.W. Williston Road		Work Order:	18-03-1798
Gainesville, FL 32608-3928		Preparation:	EPA 245.1 Total
		Method:	EPA 245.1
Project: SSFL CH661 / 692670.61.SW			Page 4 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-16-484-23	**LCS**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:46**	**180328LA1**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Mercury	0.01000	0.009463	95	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - LCS

CH2M HILL - Gainesville		Date Received:	03/21/18
3011 S.W. Williston Road		Work Order:	18-03-1798
Gainesville, FL 32608-3928		Preparation:	EPA 245.1 Filt.
		Method:	EPA 245.1
Project: SSFL CH661 / 692670.61.SW			Page 5 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-16-520-20	**LCS**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:18**	**180328LA2F**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Mercury	0.01000	0.009503	95	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

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Sample Analysis Summary Report

Work Order: 18-03-1798 Page 1 of 1

Method	Extraction	Chemist ID	Instrument	Analytical Location
ASTM D4464 (M)	N/A	1106	LPSA 1	1
EPA 200.8	N/A	598	ICP/MS 03	1
EPA 200.8	Filtered	598	ICP/MS 03	1
EPA 245.1	EPA 245.1 Total	868	Mercury 07	1
EPA 245.1	EPA 245.1 Filt.	868	Mercury 07	1
SM 2130 B	N/A	1086	TUR 4	1
SM 2540 D	N/A	1136	N/A	1

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Glossary of Terms and Qualifiers

Work Order: 18-03-1798 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Virendra Patel

From: Fesler, Mark/RDD <Mark.Fesler@CH2M.com>
Sent: Thursday, March 22, 2018 11:19 AM
To: Virendra Patel; Dean, Randy/SFL
Cc: Erick Ovalle
Subject: RE: SRC for SSFL CH661 / 692670.61.SW -- ECI WO #18-03-1798 <RESPONSE REQUESTED ASAP>

EXTERNAL EMAIL*

Virendra:

Have the sub lab combine the two bottles to get 400mL final sample volume, add 600mL DI water to get a final, total volume of 1L, and analyze the 1L of total sample.

Thanks

Mark Fesler
Environmental Scientist/Talent Supervisor
ATEN Global Environmental Solutions
D 1 530 229 3273
C 1 530 524 8041

CH2M (is now Jacobs)
2525 Airpark Dr
Redding CA 96001
mark.fesler@ch2m.com

The above step was take care of by Eurofins Calscience on 03/22/2018 prior to shipping the samples to Cape Fear Analytical.

- Virendra Patel

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From: Virendra Patel [mailto:VirendraPatel@eurofinsUS.com]
Sent: Thursday, March 22, 2018 9:51 AM
To: Fesler, Mark/RDD <Mark.Fesler@CH2M.com>; Dean, Randy/SFL <Randy.Dean@CH2M.com>
Cc: Erick Ovalle <ErickOvalle@eurofinsUS.com>
Subject: SRC for SSFL CH661 / 692670.61.SW -- ECI WO #18-03-1798 <RESPONSE REQUESTED ASAP> [EXTERNAL]
Importance: High

Sample receipt confirmation attached.

Please review and advise if we are to subcontract sample FBQW1852Q001 for Dioxins/Furans – we have limited volume received.

(-7) Received 2x unpreserved 1L amber glass bottles w/ approx. 150mL & 250mL. for Dioxins.

Please call with any questions or concerns.

Best Regards,

Virendra Patel
Project Manager

Eurofins Calscience
7440 Lincoln Way
Garden Grove, CA 92841
USA
P: +1 714 895 5494
F: +1 714 894 7501

Email: virendrapatel@eurofinsUS.com
Website: http://secure-web.cisco.com/1H3xBrX4TDiXwC34DqGOtLV8lUVYUppa7qLccVVLrgcHpuYJX_y0oUYmDgwAO-51Kgr58cpdiaXz-0Ggo88PcdWhA1rITo-WD2ZHE8ikYg_1sjOL3jjqhLjjJpWCZ7xi7f2wiASdSxOBzQDE1bmlIlQHLbb6vnScP7gOcOUq6CPE15hAmVWTCa6o8RYOO8bsQmUK-HjYwawBW1iPMUsWpbrGp2M-LN-1jm3NFVhy4Oi7w_rPyjvCuUhwitwHlpPemm1F73Teh2_Nv1eh3qzSAy-y7ZW81LanJK7Sitn9ItSbfQtHUpf7N2JDhpNiZEpaf9u8OPcx0q5eWRTdr9imf2JHUGRQSHes7dKk3EDzSUN6WobpGywMfyCBM8gs2nYwWIjvoZT3vnTZNfIKte8iD5oTMmBSI3ke3DrdSka28nepaLyK9LROplZFOatb4_3wnKoS9ZEGNIdIh7xmalqIZpoYD55Z2aj00hBrFm0zz8D0/http%3A%2F%2Fwww.eurofinsUS.com%2FCalscience

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Chain of Custody Record

COC Number: CALS03211801

JACOBS ch2m. 3/21/2018 1:04:00 PM

Project Name SSFL **Location** Santa Susana Field Lab
Project CH661 PO 100067108373
Project Number 692670.61.SW **Task Order** 661
Project Manager Randy Dean
Sample Manager Jamie Beckett 530 570 5084
Turnaround Time 10 Days
PO Number 100067108373

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
(1) **A2BMP0009S006**	21-Mar-18 10:35	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		**8**						
(2) **A2BMP0011S008**	21-Mar-18 11:00	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		**8**						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by		3/21/18
Relinquished by		3/21/18 1400
Received by	E.C	3/21/18 1400
Relinquished by		3/21/18 1755
Received by		3/21/18 1755

Shipping Details
Shipment Method: FedEx
Airbill No:
Lab Name: CalScience
Lab Phone: (949) 870-8766
On Ice: yes / no **Cooler Temp** _____

ATTN:
Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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Chain of Custody Record

COC Number: CALS03211801

JACOBS ch2m

3/21/2018 1:04:01 PM

Project Name	SSFL	**Location**	Santa Susana Field Lab
Project	CH661 PO 100067108373		
Project Number	692670.61.SW	**Task Order**	661
Project Manager	Randy Dean		
Sample Manager	Jamie Beckett		530 570 5084
Turnaround Time	10 Days		
PO Number	100067108373		

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
(3) **CABMP0001S001**	21-Mar-18 8:00	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		8						
(4) **CABMP0002S001**	21-Mar-18 8:45	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		8						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by		3/21/18
Relinquished by		3/21/18 1400
Received by	EC	3/21/18 1400
Relinquished by		3/21/18 1758
Received by	EC	3/21/18 1758

Shipping Details

Shipment Method: FedEx

Airbill No:

Lab Name: CalScience

Lab Phone: (949) 870-8766

On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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Chain of Custody Record

COC Number: CALS03211801

JACOBS ch2m

3/21/2018 1:04:01 PM

Project Name	SSFL	**Location**	Santa Susana Field Lab
Project	CH661 PO 100067108373		
Project Number	692670.61.SW	**Task Order**	661
Project Manager	Randy Dean		
Sample Manager	Jamie Beckett		530 570 5084
Turnaround Time	10 Days		
PO Number	100067108373		

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
(5) **CABMP0003S001**	21-Mar-18 8:25	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		8						
(6) **EVBMP0003S022**	21-Mar-18 7:40	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
				Total Containers:		7						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by		3/21/18
Relinquished by		3/21/18 1400
Received by	E.C	3/21/18 1400
Relinquished by		3/21/18 1755
Received by	E.C	3/21/18 1755

Shipping Details

Shipment Method: FedEx

Airbill No:

Lab Name: CalScience

Lab Phone: (949) 870-8766

On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

Return to Contents

Chain of Custody Record

COC Number: CALS03211801

JACOBS ch2m

3/21/2018 1:04:01 PM

Project Name	SSFL	**Location**	Santa Susana Field Lab
Project	CH661 PO 100067108373		
Project Number	692670.61.SW	**Task Order**	661
Project Manager	Randy Dean		
Sample Manager	Jamie Beckett		530 570 5084
Turnaround Time	10 Days		
PO Number	100067108373		

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
(7) **FBQW1852Q001**	21-Mar-18 14:00	EB	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
				Total Containers:		4						

MS = Matrix Spike SD = Matrix Spike Duplicate

	Signatures	Date/Time
Sampled by		3/21/18
Relinquished by		3/21/18 14.00
Received by	E.C	3/21/18 14.00
Relinquished by		3/21/18 17.55
Received by		3/21/18 17:55

Shipping Details

Shipment Method: FedEx

Airbill No:

Lab Name: CalScience

Lab Phone: (949) 870-8766

On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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WORK ORDER NUMBER: 18-03-1998

SAMPLE RECEIPT CHECKLIST

COOLER 1 **OF** 3

CLIENT: CH2M HILL **DATE:** 03/21/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.6 °C (w/ CF): 2.8 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: BDY

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: BDY

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1140

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☐	☑	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: **(Trip Blank Lot Number:** _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☑ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH 2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☐ 500PB

☑ 1AGB (2) ☐ 1AGB**na$_2$** ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☐ 1PB ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 1140

Reviewed by: LB

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WORK ORDER NUMBER: 18-03-1798

SAMPLE RECEIPT CHECKLIST

COOLER 2 OF 3

CLIENT: CH2M HILL

DATE: 03/21/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.7 °C (w/ CF): 2.9 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: BDY

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: BDY

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1140

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOAh ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH 2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☑ 500PB

☑ 1AGB ☐ 1AGB**na$_2$** ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☑ 1PB ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 1140

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: MR

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WORK ORDER NUMBER: 18-03-1798

SAMPLE RECEIPT CHECKLIST

COOLER 3 OF 3

CLIENT: CH2M HILL

DATE: 03/21/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.5 °C (w/ CF): 2.7 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: BDY

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: BDY

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1040

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH__2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☑ 500PB

☑ 1AGB ☐ 1AGB**na$_2$** ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☑ 1PB ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 1040

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: BDY

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WORK ORDER NUMBER: 18-03-1798

SAMPLE ANOMALY REPORT

DATE: 03 / 21 / 2018

SAMPLES, CONTAINERS, AND LABELS:	Comments
☐ Sample(s) NOT RECEIVED but listed on COC	
☐ Sample(s) received but NOT LISTED on COC	
☐ Holding time expired (list client or ECI sample ID and analysis)	
☑ Insufficient sample amount for requested analysis (list analysis)	(-7) Received 2x unpresereved 1L
☐ Improper container(s) used (list analysis)	amber glass bottles w/ approx.
☐ Improper preservative used (list analysis)	150mL & 250mL. for Dioxins.
☐ pH outside acceptable range (list analysis)	
☐ No preservative noted on COC or label (list analysis and notify lab)	
☐ Sample container(s) not labeled	
☐ Client sample label(s) illegible (list container type and analysis)	
☐ Client sample label(s) do not match COC (comment)	
☐ Project information	
☐ Client sample ID	
☐ Sampling date and/or time	
☐ Number of container(s)	
☐ Requested analysis	
☐ Sample container(s) compromised (comment)	
☐ Broken	
☐ Water present in sample container	
☐ Air sample container(s) compromised (comment)	
☐ Flat	
☐ Very low in volume	
☐ Leaking (not transferred; duplicate bag submitted)	
☐ Leaking (transferred into ECI Tedlar™ bags*)	
☐ Leaking (transferred into client's Tedlar™ bags*)	

* Transferred at client's request.

MISCELLANEOUS: (Describe) **Comments**

HEADSPACE:

(Containers with bubble > 6 mm or ¼ inch for volatile organic or dissolved gas analysis)

ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**

(Containers with bubble for other analysis)

ECI Sample ID	ECI Container ID	Total Number**	Requested Analysis

Comments:

Reported by: 1140

Reviewed by: 4m

** Record the total number of containers (i.e., vials or bottles) for the affected sample.

2017-08-29 Revision

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Subcontractor Analysis Report

Work Order: 18-03-1798 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

1. Cape Fear Analytical - Wilmington,NC
   EPA 1613B

Subcontract analyses pending and will be sent as a supplemental report package.

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Case Narrative

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1798

CONDITION UPON RECEIPT:

Eurofins Calscience received seven aqueous samples on March 21st, 2018. A total of 51 containers were received in good condition at temperatures of 2.8°C, 2.9°C, and 2.7°C, which were within the recommended temperature criteria of 0°C – 6°C.

Client Sample ID	Lab Sample ID	Date & Time Sampled	Date & Time Received
A2BMP0009S006	18-03-1798-1	03/21/18 10:35	03/21/18 17:55
A2BMP0011S008	18-03-1798-2	03/21/18 11:00	03/21/18 17:55
CABMP0001S001	18-03-1798-3	03/21/18 08:00	03/21/18 17:55
CABMP0002S001	18-03-1798-4	03/21/18 08:45	03/21/18 17:55
CABMP0003S001	18-03-1798-5	03/21/18 08:25	03/21/18 17:55
EVBMP0003S022	18-03-1798-6	03/21/18 07:40	03/21/18 17:55
FBQW1852Q001	18-03-1798-7	03/21/18 14:00	03/21/18 17:55

DATA SUMMARY:

As per the chain of custody (COC), the samples were analyzed using one or more of the following methodologies:

- ASTM D4464 (M) Particle Size Laser
- EPA 200.8 ICP/MS Metals (Filtered)
- EPA 200.8 ICP/MS Metals (Total)
- EPA 245.1 Mercury (Filtered)
- EPA 245.1 Mercury (Total)
- SM 2130 B Turbidity
- SM 2540 D Total Suspended Solids

Additionally, the samples were subcontracted to Cape Fear Analytical for Dioxins/Furans by EPA 1613B. This data package only narrates the analytical data performed by Eurofins Calscience, Inc.

The samples were analyzed within the suggested EPA holding time for the requested methods unless otherwise noted.

Sample results were reported down to the MDL. A "J" flag was applied to the data where an analyte was detected at a concentration between the RL and MDL, indicating an estimated value.

Any dilutions made to the sample(s) and/or QC will be noted in the following narrative. Reporting limits have been adjusted accordingly.

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Case Narrative

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1798

Manual integrations made to the data will be noted in the following narrative. The before and amended chromatograms have been included in the data package.

All samples and analytical QC are within acceptance criteria unless otherwise noted.

ASTM D4464 (M) Particle Size Laser:

Samples -1 through -6 were analyzed for Particle Size by ASTM D4464 (M) on 03/26/18 on LPSA 1.

Initial and Daily Performance Verification:

All values were within acceptance criteria.

Sample and QC:

A sample from a different work order was used as the sample duplicate for quality control.

EPA 200.8 ICP/MS Metals (Filtered):

Samples -1 through -6 were analyzed for dissolved Metals by EPA 200.8. The samples were prepared on 03/26/18 and analyzed on 03/28/18 in batch #s 180326LA2F / 180326SA2 on ICP/MS 03.

Initial Calibration, Initial Calibration Verification and Initial Calibration Blank:

All values were within acceptance criteria.

Continuing Calibration Verification and Continuing Calibration Blank:

All values were within acceptance criteria.

ICS A/AB:

All values were within acceptance criteria.

Sample and QC:

Sample -2 was used for the MS/MSD. The method blank was non-detect; the LCS and MS/MSD were within acceptance criteria for all project-specific analytes.

EPA 200.8 ICP/MS Metals (Total):

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Case Narrative

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1798

Samples -1 through -7 were analyzed for total Metals by EPA 200.8. The samples were prepared on 03/26/18 and analyzed on 03/28/18 in batch #s 180326LA1 / 180326SA1 on ICP/MS 03.

Initial Calibration, Initial Calibration Verification and Initial Calibration Blank:

All values were within acceptance criteria.

Continuing Calibration Verification and Continuing Calibration Blank:

All values were within acceptance criteria.

ICS A/AB:

All values were within acceptance criteria.

Sample and QC:

Sample -1 was used for the MS/MSD. The method blank was non-detect; the LCS and MS/MSD were within acceptance criteria for all project-specific analytes.

EPA 245.1 Mercury (Filtered):

Samples -1 through -6 were analyzed for dissolved Mercury by EPA 245.1. The samples were prepared on 03/28/18 and analyzed on 03/29/18 in batch #s 180328LA2F / 180328SA2A on Mercury 07.

Initial Calibration, Initial Calibration Verification and Initial Calibration Blank:

- *ICAL on 03/28/18:* All values were within acceptance criteria.
- *ICAL on 03/29/18:* All values were within acceptance criteria.

Continuing Calibration Verification and Continuing Calibration Blank:

- *CCV/CCB on 03/28/18:* All values were within acceptance criteria.
- *CCV/CCB on 03/29/18:* All values were within acceptance criteria.

Sample and QC:

Sample -1 was used for the MS/MSD. The method blank was non-detect; the LCS and MS/MSD were within acceptance criteria.

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Case Narrative

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1798

EPA 245.1 Mercury (Total):

Samples -1 through -7 were analyzed for total Mercury by EPA 245.1. The samples were prepared on 03/28/18 and analyzed on 03/29/18 in batch #s 180328LA1 / 180328SA1A on Mercury 07.

Initial Calibration, Initial Calibration Verification and Initial Calibration Blank:

- *ICAL on 03/28/18:* All values were within acceptance criteria.
- *ICAL on 03/29/18:* All values were within acceptance criteria.

Continuing Calibration Verification and Continuing Calibration Blank:

- *CCV/CCB on 03/28/18:* All values were within acceptance criteria.
- *CCV/CCB on 03/29/18:* All values were within acceptance criteria.

Sample and QC:

Sample -2 was used for the MS/MSD. The method blank was non-detect; the LCS and MS/MSD were within acceptance criteria.

SM 2130 B Turbidity:

Samples -1 through -5 were analyzed for Turbidity by SM 2130 B on 03/22/18 in batch # I0322TURL1 on TUR 04.

Calibration/Verification:

All values were within acceptance criteria.

Sample and QC:

A non-client sample was used as the sample duplicate for quality control; refer to the sample duplicate summary form for the further information.

SM 2540 D Total Suspended Solids:

Samples -1 through -6 were analyzed for Total Suspended Solids by SM 2540 D. The samples were prepared and analyzed on 03/27/18 in batch #s I0327TSSL1 / I0327TSSD1.

Balance Calibration/Verification:

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Case Narrative

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1798

All values were within acceptance criteria.

Sample and QC:

Sample -3 was used as the sample duplicate for quality control. The method blank was non-detect; the LCS/LCSD and the duplicate QC analysis was within acceptance criteria.

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SM 2130 B

Turbidity

RAW DATA

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RAW DATA SHEET
FOR METHOD: SM 2130 B

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,086
INSTRUMENT:	TUR 4	D/T ANALYZED:	2018-03-22 16:46
EXTRACTION :	N/A	REVIEWED BY:	167
D/T EXTRACTED:		D/T REVIEWED:	2018-04-02 11:47

DATA FILE: NONE

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0009S006**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0322TURL1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	NTU	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Turbidity	22.3	1.00	22.3	1.0	

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RAW DATA SHEET
FOR METHOD: SM 2130 B

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,086
INSTRUMENT:	TUR 4	D/T ANALYZED:	2018-03-22 16:46
EXTRACTION :	N/A	REVIEWED BY:	167
D/T EXTRACTED:		D/T REVIEWED:	2018-04-02 11:47

DATA FILE: NONE

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0011S008**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0322TURL1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	NTU	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Turbidity	28.3	1.00	28.3	1.0	

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RAW DATA SHEET
FOR METHOD: SM 2130 B

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,086
INSTRUMENT:	TUR 4	D/T ANALYZED:	2018-03-22 16:46
EXTRACTION :	N/A	REVIEWED BY:	167
D/T EXTRACTED:		D/T REVIEWED:	2018-04-02 11:47

DATA FILE: NONE

 # 3 **CLIENT SAMPLE NUMBER: CABMP0001S001**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0322TURL1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	NTU	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Turbidity	275	1.00	275	10	

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RAW DATA SHEET
FOR METHOD: SM 2130 B

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,086
INSTRUMENT:	TUR 4	D/T ANALYZED:	2018-03-22 16:46
EXTRACTION :	N/A	REVIEWED BY:	167
D/T EXTRACTED:		D/T REVIEWED:	2018-04-02 11:47

DATA FILE: NONE

 # 4 **CLIENT SAMPLE NUMBER: CABMP0002S001**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0322TURL1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	NTU	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Turbidity	381	1.00	381	10	

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RAW DATA SHEET
FOR METHOD: SM 2130 B

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,086
INSTRUMENT:	TUR 4	D/T ANALYZED:	2018-03-22 16:46
EXTRACTION :	N/A	REVIEWED BY:	167
D/T EXTRACTED:		D/T REVIEWED:	2018-04-02 11:47

DATA FILE: NONE

 # 5 **CLIENT SAMPLE NUMBER: CABMP0003S001**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0322TURL1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	NTU	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Turbidity	179	1.00	179	10	

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DUPLICATE REPORT
FOR METHOD: SM 2130 B

DUP SAMPLE ID: **18-03-1747-1**
DUP BATCH : I0322TURL1
INSTRUMENTS:
SAMPLE: TUR 4
DUP SAMPLE: TUR 4

EXTRACTION : N/A
D/T EXTRACTED :
SAMPLE:
DUP SAMPLE:

ANALYZED BY: 1,086
D/T ANALYZED
SAMPLE: 2018-03-22 16:46
DUP SAMPLE: 2018-03-22 16:46
REVIEWED BY: 1,086
D/T REVIEWED 2018-03-30 09:29

COMPOUND	SAMPLE CONC	DUP CONC	% RPD	CONTROL LIMIT	STATUS	QUALIFIERS
Turbidity	0.3100	0.2800	10	0-25	PASS	

Data Files:

TYPE	DATA FILE	DATA FILE PATH
SDP	NONE	

Turbidity Logbook

METHOD	MATRIX	ANALYSIS DATE	ANALYST(S)	BATCH NUMBER	CONC UNIT	INSTRUMENT ID
☒ SM 2130 B ☐ EPA 180.1	Aqueous	03/22/18	1151 / 1139	LCS: I032 2 TUR L1 Sample Duplicate: ↓ D1	NTU	☐ TUR 03 ☒ Other TUR 04

STANDARD ID #	NOMINAL CONC	RECORDED CONC	CONTROL LIMIT	CEL ID #	INITIAL CONC	FINAL CONC	DIL FACTOR	RPD	CONTROL LIMITS
STD-1 G007 - 082 - 19	0.020	0.020	0.00 - 0.040	Sample: 18-03-1747-1D	0.31	0.31	1	10	0 – 25
STD-2 ↓ 20	10	10.08	9.9 - 10.1	Duplicate: ↓ 1D	0.28	0.28	1		
STD-3 ↓ 21	1000	997	990 - 1010						

1151 03/22/18 STANDARD ID #	NOMINAL CONC	RECOVERED CONC	% REC	CONTROL LIMIT	COMMENT	Instruction:
LCS ~~03~~ GTS032218 G	100	95	95	95 - 105	~~P-107A~~ P-121 1086 03/23/18	CEL ID consists of Work Order Number and Bottle/Vial ID

CEL ID #	SAMPLE INITIAL V (mL)	SAMPLE FINAL V (mL)	SAMPLE DF	INITIAL CONC	FINAL CONC	FINAL RL (1086 03/23/18)	QUAL	COMMENTS
Duplicate 18-03-1747 - 1D	30	30	1	0.28	0.28	~~0.10~~ 0.050		1627
18-03-1747 - 1D	↓	↓	↓	0.31	0.31	0.050		1626
18-03-1748 - 1C				5.51	5.5	0.10		1628
18-03-1749 - 1A				0.13	0.13	0.050		1629
18-03-1798 - 1C				22.3	22	1.0		1630
↓ 2C				28.3	28	↓		1631
3C				2.75	280	10		1632
4C				381	380	↓		1633
↓ 5C				179	180	↓		1634
18-03-1822 - 1D				85.1	85	1.0		1635
↓ 2A				77.5	78	↓		1636
3A				30.8	31	↓		1637
4D				49.7	50	↓		1638
5A				975	980	10		1639
6A				16.0	16	1.0		1640
7A				6.35	6.4	0.10		1641
↓ 8A				16.1	16	1.0		1642
18-03-1838 - 2E				12.3	12	↓		1643
↓ 3E				153	150	10		1644
↓ 8E				17.9	18	1.0		1645
GTS032218 G	↓	↓	↓	95	95	1.0		1646

NOTES: V = VOLUME; DF = DILUTION FACTOR; CONC = CONCENTRATION; RL = REPORTING LIMIT; QUAL = QUALIFIER

BATCH TIME
Time (24 Hr): 1646
Initials: 1086

Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Pipet Tips - 10 mL	Wheaton	851358	1605896	N/A	100/box	1 Box	07/31/17	1064	07/31/17	1064	
2	~~Pipet Tips - 1-200 µL~~ 1064 07/31/17							↓	↓	↓	↓	
3	↓ 1000 µL	MGP	3450-11	17070462	N/A	1000/Bag	1 Bag	↓	↓	↓	↓	
4	Eppendorf Pipet	VWR	16001-188	20150703	↓	500	Box	↓	↓	↓	↓	
5	Kim wipes	Kimtech			↓	3 box	Box	↓	↓	↓	↓	
6	Specimen Cups	VWR	25384148	106283KS	N/A	500	Box	↓	↓	↓	↓	
7	COD STD Vials	Bioscience	174318	7053031-07	12/2018	50	G	07/31/17	1067			
8	↓	↓	↓	08	↓	↓	↓	↓	↓			
9	↓	↓	↓	09	↓	↓	↓	↓	↓			
10	↓	↓	↓	10	↓	↓	↓	↓	↓	10/26/17	[illegible]	
11	↓	↓	↓	11	↓	↓	↓	↓	↓			
12	↓	↓	↓	12	↓	↓	↓	↓	↓	08/24/17	1141	
13	↓	↓	↓	13	↓	↓	↓	↓	↓			
14	↓	↓	↓	14	↓	↓	↓	↓	↓			
15	↓	↓	↓	15	↓	↓	↓	↓	↓	09/16/17	1141	
16	Clorox (Bleach)	Clorox	N/A	N/A	08/02/18	1.89L	P	08/02/17	725	08/02/17	725	
17	8.0 OZ cups	VWR	84107-310	41787	N/A	500	Box	08/04/17	1064	08/04/17	1064	
18	Specimen cups	VWR	25384248	106250KS	↓	500	Box	↓	↓	↓	↓	
19	0.02NTU Turbidity standard	ProCal #Scientific	39957	70645	06/2019	20ml	G	08/07/17	650	08/08/17	650	
20	10.0NTU ↓	↓	↓	↓	↓	125ml	P	↓	↓	↓	↓	
21	1000 NTU ↓	↓	↓	↓	↓	20ml	G	↓	↓	↓	↓	
22	0.02NTU Turbidity standard	↓	↓	↓	06/2019	20ml	G	↓	↓	01/30/18	1064	
23	10.0 NTU ↓	↓	↓	↓	↓	125ml	P	↓	↓	↓	↓	
24	1000NTU ↓	↓	↓	↓	↓	20ml	G	↓	↓	↓	↓	
25	pH 7.00	Fisher	SB107-500	172189	04/2019	500ml	P	08/07/17	650			

COMMENTS:

Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
GS	032218	F	Hardness	P-107A	GS062317B	10 mL	H_2O	100 mL	100 ppm	03/23/18	1151/1086
GS	032218	G	Turbidity	P-107A	G007-092-23	2.50mL	H_2O	100 mL	100 n.t.u	03/23/18	1151/1086
GS	032218	H	NH_3 ISE	P-029	GS030913A	40mL	H_2O	200mL	1000 ppm STD	03/23/18	1130
GS	↓	I	↓	↓	GS 032218H	20mL	↓	↓	100 ppm STD	↓	↓
GS	↓	J	↓	P119	↓	2mL	↓	↓	10 ppm STD	↓	↓
GS	↓	K	↓	P120	↓	0.2mL	↓	↓	1 ppm STD	↓	↓
GS	↓	L	↓	I-25	↓	0.02mL	↓	↓	0.1 ppm STD	↓	↓
GS	↓	M	↓	P119	GS031318A	20mL	↓	↓	10 ppm ICV	↓	↓
GS	032218	N	MBAS	P-102~~7318~~	AS021818O	1.0 mL	H_2O	100mL	~~100PPM~~ 1.00PPM CCV	03/22/18	1063
GS	↓	O	SH	P-120	GS031718G	0.250	H_2O	100 mL	2.50 PPM CCV	03/22/18	1063
GS	032318	A	CN^-	Pipet P-106,120	GS012718C	1.03 mL	H_2O	100mL	10ppm CCV	03/23/18	1064
GS	↓	B	↓	↓	↓ D	↓	↓	↓	10ppm LCS	↓	↓
GS	↓	C	↓	↓	GS032018A	2.0mL	↓	↓	0.2 ppm CCV	↓	↓
GS	↓	D	↓	↓	↓	0.2mL	↓	↓	0.02 ppm	↓	↓
GS	↓	E	↓	↓	↓	0.4mL	↓	↓	0.04 ppm	↓	↓
GS	↓	F	↓	↓	↓	1.0mL	↓	↓	0.1 ppm	↓	↓
GS	↓	G	↓	↓	↓	2.0mL	↓	↓	0.2 ppm	↓	↓
GS	↓	H	↓	↓	↓	3.0mL	↓	↓	0.3 ppm	↓	↓

SM 2540 D

Total Suspended Solids

RAW DATA

RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 13:30
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:55
DATA FILE:	NONE		

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0009S006**

LCS/MB BATCH:	I0327TSSL1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	43.6	1.00	43.6	1.0	

RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 13:30
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:55

DATA FILE: NONE

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0011S008**

LCS/MB BATCH:	I0327TSSL1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	26.8	1.00	26.8	1.0	

RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 13:30
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:55
DATA FILE:	NONE		

 # 3 **CLIENT SAMPLE NUMBER: CABMP0001S001**

LCS/MB BATCH:	I0327TSSL1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	327	1.00	327	1.00	

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RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 13:30
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:55

DATA FILE: NONE

 # 4 **CLIENT SAMPLE NUMBER: CABMP0002S001**

LCS/MB BATCH:	I0327TSSL1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	455	1.00	455	1.00	

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RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 13:30
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:55
DATA FILE:	NONE		

 # 5 **CLIENT SAMPLE NUMBER: CABMP0003S001**

LCS/MB BATCH:	I0327TSSL1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	216	1.00	216	1.00	

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RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 13:30
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:55
DATA FILE:	NONE		

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0003S022**

LCS/MB BATCH:	I0327TSSL1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	34.8	1.00	34.8	1.0	

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METHOD BLANK ASSOCIATION SUMMARY
FOR METHOD: SM 2540 D

MB SAMPLE ID:	**099-09-010-9017**	ANALYZED BY:	1,136
MB BATCH ID:	I0327TSSL1	D/T ANALYZED:	2018-03-27 13:30
INSTRUMENT:	N/A	REVIEWED BY:	1,136
EXTRACTION:	N/A	D/T REVIEWED:	2018-03-29 15:32
D/T EXTRACTED:	2018-03-27 00:00	MATRIX:	Water

DATA FILE: NONE

CLIENT WORK ORDER: 18-03-1798

S#	RUN TYPE	CLIENT SAMPLE ID	D/T ANALYZED	DATA FILE
1		A2BMP0009S006	2018-03-27 13:30	NONE
2		A2BMP0011S008	2018-03-27 13:30	NONE
3		CABMP0001S001	2018-03-27 13:30	NONE
4		CABMP0002S001	2018-03-27 13:30	NONE
5		CABMP0003S001	2018-03-27 13:30	NONE
6		EVBMP0003S022	2018-03-27 13:30	NONE

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RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**099-09-010**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 13:30
EXTRACTION :	N/A	REVIEWED BY:	1,136
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-29 15:32
DATA FILE:	NONE		

 # MB **CLIENT SAMPLE NUMBER: Method Blank**

LCS/MB BATCH:	I0327TSSL1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	0.000	1.00	ND	1.0	

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LCS / LCSD QUALITY CONTROL SHEET
FOR METHOD: SM 2540 D

LCS/LCSD SAMPLE ID: 099-09-010-9017
LCS/LCSD BATCH: I0327TSSL1
INSTRUMENTS:
LCS: N/A
LCSD: N/A

EXTRACTION: N/A
D/T EXTRACTED:
LCS: 2018-03-27 00:00
LCSD: 2018-03-27 00:00

ANALYZED BY: 1,136
D/T ANALYZED:
LCS: 2018-03-27 13:30
LCSD: 2018-03-27 13:30
REVIEWED BY: 1,136
D/T REVIEWED: 2018-03-29 15:32

COMMENT:

COMPOUND	ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	% REC CL	RPD	RPD CL	STATUS	QUALIFIERS
Solids, Total Suspended	100.0	92.00	92	98.00	98	80-120	6	0-20	PASS	

Data Files:

TYPE	DATA FILE	DATA FILE PATH
LCS	NONE	
LCSD	NONE	

DUPLICATE REPORT
FOR METHOD: SM 2540 D

DUP SAMPLE ID: 18-03-1798-3
DUP BATCH : I0327TSSD1
INSTRUMENTS:
SAMPLE: N/A
DUP SAMPLE: N/A

EXTRACTION : N/A
D/T EXTRACTED :
SAMPLE: 2018-03-27 00:00
DUP SAMPLE: 2018-03-27 00:00

ANALYZED BY: 1,136
D/T ANALYZED
SAMPLE: 2018-03-27 13:30
DUP SAMPLE: 2018-03-27 13:30
REVIEWED BY: 1,075
D/T REVIEWED 2018-03-30 09:55

COMPOUND	SAMPLE CONC	DUP CONC	% RPD	CONTROL LIMIT	STATUS	QUALIFIERS
Solids, Total Suspended	327.0	311.0	5	0-20	PASS	

Data Files:

TYPE	DATA FILE	DATA FILE PATH
SDP	NONE	

Batch IDs:									
I0327TSS	B1	Date		Method	Thermometer ID:	Oven:	ID: IO-8		Filter Batch ID
	L1	Prep	03/27/18	SM 2540D	IO-8A		Time	Temp oC	
	D1	Analysis	03/27/18	Matrix	Correction Factor:	Start	830	104	G008-1-23
	D2	Analyst(s)	1136	Aqueous	2.5	End	1330	104	

Level II reviewer: 305

ECI ID		Hot Plate	Container ID	Container Mass (g)	Balance ID	Initial Sample (mL)	Cycle 1 Time In: 930 / Time Out: 1030 Mass (g)	Cycle 2 Time In: 1130 / Time Out: 1230 Mass (g)	Cycle 3 Time In: NA / Time Out: NA Mass (g)	Final Mass Change Within Limit?	Initial Conc. mg/L	Final Conc.	RL	Qualifier	Comments:
MB		NA	244	0.4159	71	1000	0.4156	0.4155		TRUE	-0.40	ND	1.0		<.0025 g residue
LCS		NA	245	0.4151	71	100	0.4243	0.4243		TRUE	92.00	92	1.0		
LCSD		NA	246	0.4181	71	100	0.4279	0.4279		TRUE	98.00	98	1.0		
Dup 1	18-03-1798-3G	NA	247	0.4144	71	200	0.4766	0.4766		TRUE	311.00	311	1.0		
	18-03-1798-3G	NA	248	0.4134	71	200	0.4788	0.4788		TRUE	327.00	327	1.0		
	1G	NA	249	0.4149	71	500	0.4367	0.4367		TRUE	43.60	44	1.0		
	2G	NA	250	0.4111	71	500	0.4245	0.4245		TRUE	26.80	27	1.0		
	4G	NA	251	0.4149	71	100	0.4604	0.4604		TRUE	455.00	455	1.0		
	5G	NA	252	0.4148	71	100	0.4364	0.4364		TRUE	216.00	216	1.0		
	6G	NA	253	0.4162	71	500	0.4336	0.4336		TRUE	34.80	35	1.0		
	18-03-2006-1A	NA	254	0.4174	71	1000	0.4190	0.4190		TRUE	1.60	1.6	1.0		<.0025 g residue
	2A	NA	255	0.4198	71	1000	0.4230	0.4230		TRUE	3.20	3.2	1.0		
	3A	NA	256	0.4205	71	1000	0.4244	0.4244		TRUE	3.90	3.9	1.0		
	4A	NA	258	0.4105	71	1000	0.4129	0.4129		TRUE	2.40	2.4	1.0		<.0025 g residue
Dup 2	18-03-1793-1E	NA	259	0.4110	71	100	0.4193	0.4193		TRUE	83.00	83	1.0		
Dup 2	18-03-1793-1E	NA	260	0.4149	71	100	0.4234	0.4234		TRUE	85.00	85	1.0		
	2F	NA	261	0.4172	71	100	0.4259	0.4259		TRUE	87.00	87	1.0		
	3F	NA	262	0.4189	71	1000	0.4202	0.4202		TRUE	1.30	1.3	1.0		<.0025 g residue
	18-03-2212-2A	NA	263	0.4133	71	1000	0.4234	0.4233		TRUE	10.00	10	1.0		
	3A	NA	264	0.4142	71	20	0.4214	0.4214		TRUE	360.00	360	1.0		
	4A	NA	265	0.4134	71	10	0.4352	0.4352		TRUE	2180.00	2180	10		
	18-03-2211-2A	NA	266	0.4119	71	975	0.4141	0.4141		TRUE	2.26	2.3	1.0		<.0025 g residue
	18-03-2210-2A	NA	267	0.4147	71	500	0.4313	0.4313		TRUE	33.20	33	1.0		
	18-03-1854-1A	NA	268	0.4194	71	500	0.4348	0.4348		TRUE	30.80	31	1.0		
	18-03-1855-1A	NA	269	0.4211	71	1000	0.4423	0.4423		TRUE	21.20	21	1.0		

Quality Control					
		%Rec	Passing?	RPD	Passing?
LCS ID	LCS	92%	Yes	6%	Yes
GS021918A	LCSD	98%	Yes		
LCS Concentration	Dup 1			5%	Yes
100 mg/L	Dup 2			2%	Yes

Reporting Limits	
Concentration	RL
Conc < 1,000	1
1,000 ≤ Conc < 10,000	10
10,000 ≤ Conc < 100,000	100
Conc ≥ 100,000	1000

BALANCE CALIBRATION CHECK LOG

Eurofins Calscience

Date performed: 03/27/18 Initials: 1009

ID	Class 2 Weight (g)	Reading (g)	Acceptance Range	Pass? (circle one)	Comment (If not passed, note removal or corrective action)
83	1	1.00	0.98 - 1.02	(Y) N	IO Lab
	100	99.99	98.00 - 102.00	(Y) N	
62	0.002	0.0019	0.00180 - 0.00220	(Y) N	IO Lab
	1	0.9993	0.99900 - 1.00100	(Y) N	
	100	99.9941	99.90000 - 100.10000	(Y) N	
11	1	1.00	0.98 - 1.02	(Y) N	IO Lab
	100	99.99	98.00 - 102.00	(Y) N	
55	1	1.00	0.98 - 1.02	(Y) N	IO Lab
	100	99.97	98.00 - 102.00	(Y) N	
	500	499.93	498.00 - 502.00	(Y) N	
25	1		0.98 - 1.02	Y N	IO Lab
	100		98.00 - 102.00	Y N	
	500		498.00 - 502.00	Y N	
71	0.002	0.0019	0.0018 - 0.0022	(Y) N	BOD Room
	1	0.9993	0.9990 - 1.0010	(Y) N	
	100	99.9935	99.9000 - 100.1000	(Y) N	
63	0.1	0.10	0.09 - 0.11	(Y) N	BOD Room
	100	99.99	98.00 - 102.00	(Y) N	
73	0.1	0.10	0.09 - 0.11	(Y) N	Oil & Grease Room
	1	1.00	0.98 - 1.02	(Y) N	
	100	99.99	98.00 - 102.00	(Y) N	
72	0.002	0.0019	0.0018 - 0.0022	(Y) N	Oil & Grease Room
	1	0.9993	0.9990 - 1.0010	(Y) N	
	100	99.9936	99.9000 - 100.1000	(Y) N	
84	1	1.00	0.98 - 1.02	(Y) N	Oil & Grease Room
	100	99.99	98.00 - 102.00	(Y) N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

Comments:

WT SET ID USED: 2 mg	1000 118069	COMMENT:
WT SET ID USED: 10 mg - 100 g	4000013239	
WT SET ID USED: 500 g	69073	

Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
GS	021718	L	$TKN/\$NH_3$	P-120	GS020118A	0.50ml	H_2O	1L	0.50PPM	03/01/18	1068
GS	↓	M	↓	↓	↓	0.10ml	↓	↓	0.10PPM	↓	↓
GS	↓	N	↓	↓	GS020118B	10 ml	↓	↓	10.0PPM LCS	↓	↓
GS	↓	O	↓	↓	↓	20ml	↓	↓	20.0PPM LCS	↓	↓
GS	021718	P	COD 1141 08/17/18 Balance #62 ~~#119~~		G007-90-21	0.850g	H_2O	1L	20000ppmCCV	08/17/18	1141
GS	021718	Q	COD	Balance #62 ~~P-119~~	G007-90-20	0.850g	H_2O	1L	20000ppmLCS	08/17/18	1141
GS	021718	R	COD	P-119	G-S021718P	50mL	H_2O	1L	1000ppmCCV	08/17/18	1141
GS	021718	S	COD	P-119	G-S021718Q	50mL	H_2O	1L	1000ppm LCS	08/17/18	1141
GS	021718	T	CrO_4	P-119	G-S042317M	0.50mL	H_2O	100mL	0.50ppmCCV	08/17/18	1141
GS	021918	A	TSS (LCS)	balance 71	G007-58-2	0.100g	H_2O	1000mL	100ppm	08/19/18	1009
GS	021918	B	Fe^{2+}	P-120	GS091117Y	0.50mL	H_2O	100mL	2.0ppmCCV	02/19/18	1141
GS	021918	C	TOC	P-023	G-SC12918M	10mL	H_2O	1L	10ppmCCV	08/19/18	1141
GS	↓	D	↓	↓	G-SC12918N	10mL	H_2O	1L	10ppm LCS	08/19/18	1141
GS	022018	A	COD	Balance #62	G-007-90-21	4.25g	H_2O	250mL	20,000ppmCCV	08/20/18	1141
GS	↓	B	COD	Balance #62	G-007-90-20	4.25g	H_2O	250mL	10,000ppmLCS	08/20/18	1141
GS	↓	C	COD	P-119 1141 08/20/18	G-SC2+20:18A	25mL	H_2O	500mL	1,000ppmCCV	08/20/18	1141
GS	↓	D	COD	P-119	G-SC220:18B	25mL	H_2O	500mL	1,000ppmLCS	08/20/18	1141
GS											1068 02/20/18

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Sulfuric Acid	EMD	54132	SX1247-2	11/02/19	2.5L	G	11/02/16	685	11/02/16	685	
2	Infusorial Earth	Fisher	122-3	160676	~~H/04/11~~ 11/04/21 1009 11/4/16	3 Kg	P	11/04/16	1009	11/04/16	1009	
3	Sulfuric Acid	EMD	SX1247-2	~~SX1247-2~~ 54132	11/23/15	2.5L	G	11/04/16	1068	11/23/16	990	
4	conductivity Calibration Solution	VWR	23198-cls	72912	07/2017	473mL	Bottle	11/04/16	1068	01/24/17	1086	
5	↓	↓	↓	↓	↓	↓	↓	↓	↓			
6												
7					685 11/07/16							
8	Transfer Pipets 3ml	VWR	16001-188	07152016	~~8/07~~ N/A	500pcs	Box	11/07/16	685	11/07/16	685	
9	Boiling Stones	Saint-Gobain	0919120	D1069103	N/A	450g	P.Jar	11/07/16	685	11/07/16	685	
10	10ml Syringes	BD	305462	5231435	↓	100pcs	Box	↓	↓	↓	↓	
11	50ml Centrifuge Tube	Fisher	05-539-9	25116015	N/A	500pcs	Box	✓	✓	✓	✓	
12	4.5oz Container Cups	VWR	25384-148	102336KS	✓	✓	✓					
13	Test-tubes	Evergreen	214-2070-010	16245	N/A	1000pcs	Box	✓	✓	✓	✓	
14	8oz Snap Cups	VWR	89107-310	41955	N/A	500pcs	✓	✓	✓	✓	✓	
15	Test tubes	Evergreen	214-2070010	16245	N/A	1000pcs	Box	✓	✓	✓	✓	
16	Superior Pipet tips 0.5-5ml	Socorex	312.05B	W8513602	N/A	500pcs	Box	✓	✓	✓	✓	
17	✓ 685 11/07/16	✓ 11/07/16	✓	✓	✓	✓	✓	✓	✓	✓	✓	
18	~~HydroHydrology~~ (Blue 1000ul) Pipet tips	MBP 685 ~~3950-11~~	3950-11 ~~16271638~~	16271638	✓	1000pcs	~~P~~		✓	11/10/16	✓	
19	Clorox (Bleach)	Clorox	N/A	N/A	11/10/17	1.89L	P	~~11/10/16~~ 11/10/17	776	11/10/16	776	
20	0.45um Syringe Filter	Merck	SLHV033NK	R6EA50999	N/A	1000pcs	Box	11/10/16	1068	11/10/16	1068	
21	Specimen Container	VWR	25384-148	102336KS	N/A	500	Box	11/10/16	1068	11/10/16	1068	
22	10mL, Tip for pipete	Wheaton	851358	1581567	N/A	2 cases	Box	11/14/16	735	11/14/16	735	
23	5mL Pipette	Wheaton	W851362	16080042	N/A	1case	Box	11/14/16	735	11/14/16	735	
24	1000uL Pipet tips	MBP	3950-11	16271638	NA	1000 Tips	Bag	11/14/16	735	11/14/16	735	
25	3mL Graduated Transfer Pipets	VWR	16001-188	05032016	NA	3BOX	BOX	11/14/16	735	11/14/16	735	

COMMENTS:

Book Number: 7

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EPA METHOD 200.8

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EPA METHOD 200.8

INITIAL CALIBRATION

ICV/ICB

CCV/CCB

ICSA/B

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EPA Method 200.8
Instrument Tuning

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Tuning Date: 03/27/18

Analyte	Exact Mass (amu)	Measured Mass (amu)	Mass Calibration		Mass Calibration DAC Value	Resolution DAC Value	Measured Peak Width (amu)	Resolution Check	
			Acceptance Criteria (amu)	Pass/Fail (P/F)				Acceptance Criteria (amu)	Pass/Fail (P/F)
C	12.000	12.025	± 0.100	P	2773	2064	0.704	< 0.900	P
Mg	23.985	23.975	± 0.100	P	5713	2056	0.739	< 0.900	P
Mg 25	24.986	25.025	± 0.100	P	5917	1996	0.743	< 0.900	P
Mg 26	25.983	25.975	± 0.100	P	6207	2076	0.720	< 0.900	P
Rh	102.905	102.925	± 0.100	P	24945	1899	0.699	< 0.900	P
Ce	139.905	139.875	± 0.100	P	33963	1839	0.698	< 0.900	P
Pb 206	205.975	205.975	± 0.100	P	50072	1705	0.687	< 0.900	P
Pb 207	206.976	206.975	± 0.100	P	50378	1768	0.716	< 0.900	P
Pb	207.977	208.025	± 0.100	P	50551	1696	0.687	< 0.900	P
U	238.050	238.025	± 0.100	P	57919	1668	0.688	< 0.900	P

03/28/2018 16:59

Tuning Filename: C:\Elandata\Tuning\Default.tun

Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

Analyte	Initial Calibration Verification					
	True	ICV-1		ICV-2		Control Limit
		Observed	%REC	Observed	%REC	
Copper	100.000000	100.821688	101	101.612800	102	90 - 110
Cadmium	100.000000	104.790273	105	104.043326	104	90 - 110
Lead	100.000000	103.931915	104	103.336073	103	90 - 110

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ICV-1 Filename: W:\dataset\2018\180327B1\ICV-1 - MS021218B.016
ICV-2 Filename: W:\dataset\2018\180327B1\ICV-1 - MS021218B.270

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Interference Check

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

Analyte	Interference Check					
	ICS-A		ICS-AB			
	Observed	Control Limit	True	Observed	%REC	Control Limit
Copper	0.098743	< 2.000000	20.000000	20.043472	100	80 – 120
Cadmium	0.064760	< 2.000000	10.000000	9.998683	100	80 – 120
Lead	0.016017	< 2.000000				

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ICS-A-1 Filename: W:\dataset\2018\180327B1\ICS-A - MS092817B.022
ICS-AB-1 Filename: W:\dataset\2018\180327B1\ICS-AB - MS092817C.023

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Continuing Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

Analyte	Continuing Calibration Verification					
	True	CCV-1		CCV-2		Control Limit
		Observed	%REC	Observed	%REC	
Copper	100.000000	101.902826	102	103.367420	103	90 - 110
Cadmium	100.000000	99.568692	100	99.528645	100	90 - 110
Lead	100.000000	98.821705	99	98.614265	99	90 - 110

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CCV-1 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.301
CCV-2 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.314

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L
Test Method: EPA 200.8

	Initial and Continuing Calibration Blanks				
Analyte	ICB-1	ICB-2	CCB-1	CCB-2	RL (No PF)
Copper	-0.001116	-0.010748	0.013350	0.014819	1.000000
Cadmium	0.018666	0.011791	0.005332	0.018702	1.000000
Lead	-0.000552	-0.000504	-0.003080	0.004772	1.000000

Preparation Factor (PF): 1 L/L
03/28/2018 16:59

ICB-1 Filename: W:\dataset\2018\180327B1\ICB.019
ICB-2 Filename: W:\dataset\2018\180327B1\ICB.273
CCB-1 Filename: W:\dataset\2018\180327B1\CCB.303
CCB-2 Filename: W:\dataset\2018\180327B1\CCB.316

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Internal Standard Summary

Work Order No.: 18-03-1798

Instrument ID: ICP/MS 03

Test Method: EPA 200.8 Control Limit: 60–125%

Sample	Analysis	IS-3		IS-4		IS-5	
CEL ID Number	Date/Time	Analyte	%RI	Analyte	%RI	Analyte	%RI
180326-ba-1	03/27/2018 23:07:34	Gallium	97	Indium	99	Bismuth	97
180326-ba-2	03/27/2018 23:10:02	Gallium	98	Indium	99	Bismuth	98
180326-la-1	03/27/2018 23:12:29	Gallium	99	Indium	99	Bismuth	97
180326-la-2	03/27/2018 23:14:57	Gallium	99	Indium	98	Bismuth	97
18-03-1798-f-2 ms	03/27/2018 23:17:24	Gallium	96	Indium	97	Bismuth	95
18-03-1798-f-2 msd	03/27/2018 23:19:52	Gallium	96	Indium	98	Bismuth	94

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

Analyte	Initial Calibration Verification			
	True	ICV-1 Observed	ICV-1 %REC	Control Limit
Copper	100.000000	102.922568	103	90 - 110
Cadmium	100.000000	103.277628	103	90 - 110
Lead	100.000000	104.307730	104	90 - 110

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ICV-1 Filename: W:\dataset\2018\180327B1\ICV-1 - MS021218B.320

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L
Test Method: EPA 200.8

Analyte	Initial and Continuing Calibration Blanks				
	ICB-1	CCB-1	CCB-2	CCB-3	RL (No PF)
Copper	-0.005770	0.025495	0.002749	-0.008352	1.000000
Cadmium	0.011174	0.033989	-0.000085	-0.005249	1.000000
Lead	-0.004297	0.023231	-0.001523	-0.008272	1.000000

Preparation Factor (PF): 1 L/L
03/28/2018 16:59

ICB-1 Filename: W:\dataset\2018\180327B1\ICB.323
CCB-1 Filename: W:\dataset\2018\180327B1\CCB.326
CCB-2 Filename: W:\dataset\2018\180327B1\CCB.340
CCB-3 Filename: W:\dataset\2018\180327B1\CCB.353

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Continuing Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

Analyte	Continuing Calibration Verification							
	True	CCV-1		CCV-2		CCV-3		Control Limit
		Observed	%REC	Observed	%REC	Observed	%REC	
Copper	100.000000	98.393064	98	98.631161	99	101.596181	102	90 - 110
Cadmium	100.000000	101.608430	102	100.394339	100	102.357981	102	90 - 110
Lead	100.000000	98.944028	99	99.681591	100	101.369803	101	90 - 110

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CCV-1 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.324
CCV-2 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.338
CCV-3 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.351

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Internal Standard Summary

Work Order No.: 18-03-1798

Instrument ID: ICP/MS 03

Test Method: EPA 200.8 Control Limit: 60-125%

Sample CEL ID Number	Analysis Date/Time	IS-3		IS-4		IS-5	
		Analyte	%RI	Analyte	%RI	Analyte	%RI
18-03-1798-f-2	03/28/2018 00:01:56	Gallium	97	Indium	101	Bismuth	98
18-03-1798-f-1	03/28/2018 00:04:23	Gallium	100	Indium	100	Bismuth	101
18-03-1798-f-3	03/28/2018 00:06:50	Gallium	98	Indium	100	Bismuth	100
18-03-1798-f-4	03/28/2018 00:09:17	Gallium	97	Indium	101	Bismuth	99
18-03-1798-f-5	03/28/2018 00:11:44	Gallium	99	Indium	100	Bismuth	101
18-03-1798-f-6	03/28/2018 00:14:11	Gallium	97	Indium	102	Bismuth	99
18-03-1798-1 ms	03/28/2018 00:16:38	Gallium	99	Indium	101	Bismuth	101
18-03-1798-1 msd	03/28/2018 00:19:05	Gallium	100	Indium	100	Bismuth	99
18-03-1798-1	03/28/2018 00:33:51	Gallium	104	Indium	101	Bismuth	102
18-03-1798-2	03/28/2018 00:36:18	Gallium	99	Indium	100	Bismuth	99
18-03-1798-3	03/28/2018 00:38:45	Gallium	101	Indium	100	Bismuth	99
18-03-1798-4	03/28/2018 00:41:12	Gallium	101	Indium	99	Bismuth	97
18-03-1798-5	03/28/2018 00:43:39	Gallium	97	Indium	102	Bismuth	97
18-03-1798-6	03/28/2018 00:46:06	Gallium	103	Indium	101	Bismuth	101
18-03-1798-7	03/28/2018 00:48:33	Gallium	100	Indium	102	Bismuth	100

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Instrument Tuning Report

Instrument Name: ICP-MS-03 US26INS00050
Analyst Name: UFLE
Sample Date/Time: Tuesday, March 27, 2018 09:40:20
File Name: Default.tun
File Path: C:\Elandata\Tuning\Default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
C	12.000	12.025	2773	2064	0.704	
Mg	23.985	23.975	5713	2056	0.739	
Mg 25	24.986	25.025	5917	1996	0.743	
Mg 26	25.983	25.975	6207	2076	0.720	
Rh	102.905	102.925	24945	1899	0.699	
Ce	139.905	139.875	33963	1839	0.698	
Pb 206	205.975	205.975	50072	1705	0.687	
Pb 207	206.976	206.975	50378	1768	0.716	
Pb	207.977	208.025	50551	1696	0.687	
U	238.050	238.025	57919	1668	0.688	

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Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Tuesday, March 27, 2018 09:57:05
Sample Description:
Method File: C:\elandata\Method\CEL\Cel-Daily Performance-2.mth
Dataset File: W:\dataset\2018\180327B1\Daily Performance Check.003
Tuning File: C:\Elandata\Tuning\Default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Pulse
Acq. Dead Time(ns): 55
Current Dead Time (ns): 55
Instrument Name: ICP/MS 3
User Name: UFLE

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	80443.4	80443.355	480.980	0.6
	In	114.9	499036.5	499036.548	5846.940	1.2
	Pb	208.0	219427.3	219427.314	1249.249	0.6
⌈	Ce++	70.0	6518.7	0.011	0.000	2.7
| >	Ce	139.9	587188.4	587188.372	7390.117	1.3
⌊	CeO	155.9	15865.8	0.027	0.000	1.2
	Bkgd	220.0	51.8	51.833	8.608	16.6

Current Optimization File Data

Current Value	Description
0.92	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
16.00	Plasma Gas Flow
6.50	Lens Voltage
1600.00	ICP RF Power
-1800.00	Analog Stage Voltage
1050.00	Pulse Stage Voltage
-3.00	Quadrupole Rod Offset Std [QRO]
-8.00	Cell Rod Offset Std [CRO]
22.00	Discriminator Threshold
-20.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.90	RPq
0.92	DRC Mode NEB
-16.00	DRC Mode QRO
-3.00	DRC Mode CRO
-37.00	DRC Mode CPV
0.00	Cell Gas A
3.00	Cell Gas B
200.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
350.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	13	21	5.0	6708.0

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Mg	24	21	4.5	87062.1
In	115	21	6.5	505297.9
Ce	140	21	6.5	597866.9
Pb	208	21	8.5	218523.0
U	238	21	9.0	460687.1

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: Blank

Autosampler Position: 2

Sample Date/Time: Tuesday, March 27, 2018 10:30:54

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\Blank.013

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		47189.830		ppb	0.500	
9	Be		54.333		ppb	16.599	
45	Sc	>	4982270.966		ppb	3.629	
10	B		154.668		ppb	9.706	
23	Na		309.529		ppb	16.624	
25	Mg		577.161		ppb	9.445	
27	Al		5474.315		ppb	1.441	
39	K		8443.921		ppb	1.898	
43	Ca		274.290		ppb	6.831	
44	Ca		39926.534		ppb	0.437	
45	Sc-1	>	4982270.966		ppb	3.629	
47	Ti		156.001		ppb	15.115	
49	Ti		162.668		ppb	3.756	
51	V		2493.845		ppb	9.675	
52	Cr		8871.660		ppb	0.773	
55	Mn		645.356		ppb	3.787	
54	Fe		31470.175		ppb	1.576	
57	Fe		11706.205		ppb	3.479	
59	Co		206.002		ppb	10.680	
60	Ni		209.336		ppb	13.421	
63	Cu		399.779		ppb	2.208	
65	Cu		183.806		ppb	20.707	
71	Ga	>	1433439.379		ppb	1.707	
75	As		7420.493		ppb	1.538	
75	As-1		-332.758		ppb	23.260	
78	Se		7727.417		ppb	1.775	
82	Se		2.919		ppb	741.926	
88	Sr		156.668		ppb	3.900	
66	Zn		1515.460		ppb	0.936	
68	Zn		1992.885		ppb	4.061	
95	Mo		380.008		ppb	16.941	
115	In-1	>	1105309.653		ppb	0.780	
107	Ag		114.001		ppb	1.754	
111	Cd		28.617		ppb	100.970	
118	Sn		685.359		ppb	8.328	
121	Sb		128.668		ppb	14.359	
135	Ba		89.334		ppb	5.634	
165	Ho		1307419.809		ppb	3.374	
159	Tb		1408994.867		ppb	2.898	
203	Tl		89.334		ppb	10.341	
207	Pb		586.007		ppb	3.464	
209	Bi	>	731930.875		ppb	2.006	

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: STD-1 - MS021518A

Autosampler Position: 3

Sample Date/Time: Tuesday, March 27, 2018 10:33:22

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\STD-1 - MS021518A.014

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	45718.020		ppb	1.521	47189.830
9	Be	|	72554.078	200.000000	ppb	1.390	54.333
45	Sc	|>	4932291.153		ppb	2.626	4982270.966
10	B	⌊	54947.689	500.000000	ppb	3.452	154.668
23	Na	⌈	367308.582	10200.000000	ppb	2.443	309.529
25	Mg	|	5329005.961	10200.000000	ppb	1.403	577.161
27	Al	|	1131317.035	200.000000	ppb	3.216	5474.315
39	K	|	1291623.882	10200.000000	ppb	0.468	8443.921
43	Ca	|	150654.731	10200.000000	ppb	2.411	274.290
44	Ca	|	1942646.163	10200.000000	ppb	3.327	39926.534
45	Sc-1	|>	4932291.153		ppb	2.626	4982270.966
47	Ti	|	135454.977	200.000000	ppb	3.093	156.001
49	Ti	|	116120.120	200.000000	ppb	3.354	162.668
51	V	|	1917524.382	200.000000	ppb	1.799	2493.845
52	Cr	|	1728806.014	200.000000	ppb	1.233	8871.660
55	Mn	|	2639553.937	200.000000	ppb	0.766	645.356
54	Fe	|	6850818.905	10200.000000	ppb	1.764	31470.175
57	Fe	|	2888950.088	10200.000000	ppb	0.592	11706.205
59	Co	|	2336121.750	200.000000	ppb	1.430	206.002
60	Ni	⌊	503844.308	200.000000	ppb	1.721	209.336
63	Cu	⌈	1095952.380	200.000000	ppb	2.464	399.779
65	Cu	|	503460.022	200.000000	ppb	2.601	183.806
71	Ga	|>	1385716.288		ppb	1.075	1433439.379
75	As	|	332138.120	200.000000	ppb	1.938	7420.493
75	As-1	|	360901.503	200.000000	ppb	2.176	-332.758
78	Se	|	95640.867	200.000000	ppb	2.255	7727.417
82	Se	|	45603.043	200.000000	ppb	2.756	2.919
88	Sr	|	4114857.564	200.000000	ppb	2.769	156.668
66	Zn	|	316595.758	200.000000	ppb	1.347	1515.460
68	Zn	⌊	229331.936	200.000000	ppb	1.910	1992.885
95	Mo	⌈	690506.325	200.000000	ppb	2.044	380.008
115	In-1	|>	1089737.805		ppb	1.179	1105309.653
107	Ag	|	1877387.708	200.000000	ppb	2.537	114.001
111	Cd	|	418064.822	200.000000	ppb	1.033	28.617
118	Sn	|	1079510.865	200.000000	ppb	1.595	685.359
121	Sb	|	1260406.008	200.000000	ppb	2.018	128.668
135	Ba	|	371121.744	200.000000	ppb	2.077	89.334
165	Ho	|	1285227.233		ppb	1.929	1307419.809
159	Tb	⌊	1384490.647		ppb	2.863	1408994.867
203	Tl	⌈	1373845.183	200.000000	ppb	1.123	89.334
207	Pb	|	3802124.674	200.000000	ppb	0.842	586.007
209	Bi	⌊>	703920.965		ppb	1.431	731930.875

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICV-1 - MS021218B
Autosampler Position: 206
Sample Date/Time: Tuesday, March 27, 2018 10:38:21
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICV-1 - MS021218B.016
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		46373.645		ppb	0.318	47189.830
9	Be		37528.643	102.820167	ppb	1.201	54.333
45	Sc	>	4957708.042		ppb	2.726	4982270.966
10	B		286.671	1.202612	ppb	16.248	154.668
23	Na		331.435	0.659247	ppb	4.800	309.529
25	Mg		55423.699	104.493236	ppb	1.515	577.161
27	Al		5963.956	0.092207	ppb	2.074	5474.315
39	K		8696.826	2.375649	ppb	1.841	8443.921
43	Ca		2985.253	183.157878	ppb	4.198	274.290
44	Ca		74361.006	184.772898	ppb	1.082	39926.534
45	Sc-1	>	4957708.042		ppb	2.726	4982270.966
47	Ti		69166.811	101.519074	ppb	1.054	156.001
49	Ti		58749.250	100.548439	ppb	1.549	162.668
51	V		1013182.122	104.973787	ppb	1.761	2493.845
52	Cr		914639.539	104.797159	ppb	1.256	8871.660
55	Mn		1387381.135	104.615758	ppb	2.395	645.356
54	Fe		3549183.542	5236.400940	ppb	0.911	31470.175
57	Fe		1466574.884	5132.502436	ppb	1.712	11706.205
59	Co		1163477.681	99.096961	ppb	1.424	206.002
60	Ni		261119.401	103.105761	ppb	2.122	209.336
63	Cu		576694.236	103.205872	ppb	1.973	399.779
65	Cu		258809.894	100.821688	ppb	2.365	183.806
71	Ga	>	1412631.923		ppb	0.722	1433439.379
75	As		173636.594	100.418170	ppb	0.692	7420.493
75	As-1		184913.325	100.619193	ppb	0.315	-332.758
78	Se		53625.015	102.376031	ppb	1.152	7727.417
82	Se		23797.028	102.388908	ppb	1.399	2.919
88	Sr		2104320.564	100.321841	ppb	2.264	156.668
66	Zn		167676.679	103.453787	ppb	2.138	1515.460
68	Zn		115437.748	97.898633	ppb	1.550	1992.885
95	Mo		351274.117	101.578491	ppb	1.836	380.008
115	In-1	>	1090737.595		ppb	1.308	1105309.653
107	Ag		224.003	0.011850	ppb	12.659	114.001
111	Cd		219295.234	104.790273	ppb	2.467	28.617
118	Sn		526221.324	97.344239	ppb	2.478	685.359
121	Sb		615607.236	97.592924	ppb	2.475	128.668
135	Ba		152.668	0.034726	ppb	4.211	89.334
165	Ho		1302154.631		ppb	2.391	1307419.809
159	Tb		1370336.842		ppb	2.292	1408994.867
203	Tl		680956.767	97.732437	ppb	1.285	89.334
207	Pb		2004619.320	103.931915	ppb	2.949	586.007
209	Bi	>	713981.812		ppb	2.350	731930.875

QC Out of Limits

alyte Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICB

Autosampler Position: 2

Sample Date/Time: Tuesday, March 27, 2018 10:45:50

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICB.019

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		46643.707		ppb	1.573	47189.830
9	Be		61.334	0.020488	ppb	0.941	54.333
45	Sc	>	4941567.437		ppb	0.904	4982270.966
10	B		233.336	0.726074	ppb	18.961	154.668
23	Na		256.194	-1.405556	ppb	10.362	309.529
25	Mg		528.587	-0.082958	ppb	12.468	577.161
27	Al		3339.280	-0.370521	ppb	0.537	5474.315
39	K		8625.424	1.988566	ppb	1.203	8443.921
43	Ca		291.433	1.311823	ppb	7.070	274.290
44	Ca		37751.570	-9.870153	ppb	1.633	39926.534
45	Sc-1	>	4941567.437		ppb	0.904	4982270.966
47	Ti		160.668	0.008888	ppb	9.984	156.001
49	Ti		168.668	0.012700	ppb	9.585	162.668
51	V		2515.306	0.004513	ppb	10.637	2493.845
52	Cr		8690.820	-0.012621	ppb	1.694	8871.660
55	Mn		680.025	0.003023	ppb	4.149	645.356
54	Fe		30419.659	-1.180398	ppb	0.665	31470.175
57	Fe		11555.339	-0.191453	ppb	0.675	11706.205
59	Co		246.003	0.003553	ppb	7.226	206.002
60	Ni		295.338	0.034833	ppb	14.227	209.336
63	Cu		380.378	-0.002657	ppb	7.167	399.779
65	Cu		178.447	-0.001116	ppb	15.883	183.806
71	Ga	>	1416456.213		ppb	1.642	1433439.379
75	As		7268.186	-0.038084	ppb	1.709	7420.493
75	As-1		-307.851	0.010967	ppb	19.955	-332.758
78	Se		7553.247	-0.180443	ppb	1.067	7727.417
82	Se		4.075	0.004253	ppb	551.687	2.919
88	Sr		258.004	0.004922	ppb	14.104	156.668
66	Zn		1485.455	-0.008245	ppb	9.331	1515.460
68	Zn		1967.546	-0.001665	ppb	3.190	1992.885
95	Mo		342.007	-0.009336	ppb	27.536	380.008
115	In-1	>	1085777.686		ppb	1.780	1105309.653
107	Ag		258.004	0.015619	ppb	3.101	114.001
111	Cd		67.136	0.018666	ppb	50.845	28.617
118	Sn		2358.978	0.312935	ppb	15.639	685.359
121	Sb		1364.106	0.196586	ppb	23.368	128.668
135	Ba		94.001	0.003555	ppb	27.904	89.334
165	Ho		1278088.440		ppb	0.988	1307419.809
159	Tb		1374103.978		ppb	2.050	1408994.867
203	Tl		112.001	0.003674	ppb	15.465	89.334
207	Pb		558.673	-0.000552	ppb	16.839	586.007
209	Bi	>	710013.349		ppb	1.830	731930.875

QC Out of Limits

ıalyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICS-A - MS092817B

Autosampler Position: 9

Sample Date/Time: Tuesday, March 27, 2018 10:53:16

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICS-A - MS092817B.022

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		44247.763		ppb	1.081	47189.830
9	Be		64.334	0.029883	ppb	14.692	54.333
45	Sc	>	4923595.043		ppb	2.464	4982270.966
10	B		250.670	0.894770	ppb	1.219	154.668
23	Na		882923.522	24560.846476	ppb	0.383	309.529
25	Mg		5026994.972	9637.883208	ppb	2.677	577.161
27	Al		55540647.286	9881.240939	ppb	4.803	5474.315
39	K		1219635.665	9644.208381	ppb	2.192	8443.921
43	Ca		428834.037	29108.298287	ppb	5.268	274.290
44	Ca		5511921.440	29384.160972	ppb	2.645	39926.534
45	Sc-1	>	4923595.043		ppb	2.464	4982270.966
47	Ti		160956.449	238.180018	ppb	0.860	156.001
49	Ti		117618.090	202.962165	ppb	1.485	162.668
51	V		492.388	-0.207224	ppb	130.039	2493.845
52	Cr		10264.461	0.174270	ppb	2.894	8871.660
55	Mn		16218.457	1.183310	ppb	1.786	645.356
54	Fe		16646347.526	24900.639827	ppb	0.121	31470.175
57	Fe		7002991.284	24825.002310	ppb	0.490	11706.205
59	Co		1076.730	0.074935	ppb	3.507	206.002
60	Ni		1781.508	0.626514	ppb	1.805	209.336
63	Cu		218.971	-0.028703	ppb	60.171	399.779
65	Cu		406.164	0.098743	ppb	18.928	183.806
71	Ga	>	1320431.879		ppb	0.601	1433439.379
75	As		7186.827	0.227120	ppb	0.580	7420.493
75	As-1		-181.391	0.072664	ppb	17.736	-332.758
78	Se		7392.450	0.654212	ppb	1.663	7727.417
82	Se		20.857	0.083979	ppb	145.961	2.919
88	Sr		24501.649	1.242213	ppb	2.006	156.668
66	Zn		2363.641	0.644433	ppb	2.769	1515.460
68	Zn		2002.221	0.153850	ppb	3.102	1992.885
95	Mo		694152.213	209.134062	ppb	0.869	380.008
115	In-1	>	1047667.855		ppb	1.527	1105309.653
107	Ag		395.342	0.031863	ppb	5.362	114.001
111	Cd		157.939	0.064760	ppb	43.133	28.617
118	Sn		3253.258	0.502349	ppb	15.698	685.359
121	Sb		1219.416	0.181233	ppb	8.556	128.668
135	Ba		356.674	0.152507	ppb	3.426	89.334
165	Ho		1272309.122		ppb	2.073	1307419.809
159	Tb		1347364.576		ppb	1.273	1408994.867
203	Tl		158.001	0.011870	ppb	16.601	89.334
207	Pb		818.680	0.016017	ppb	1.102	586.007
209	Bi	>	663974.350		ppb	1.638	731930.875

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICS-AB - MS092817C
Autosampler Position: 10
Sample Date/Time: Tuesday, March 27, 2018 10:55:45
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICS-AB - MS092817C.023
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		45480.149		ppb	0.528	47189.830
9	Be		52.333	-0.001581	ppb	13.557	54.333
45	Sc	>	4846281.806		ppb	1.193	4982270.966
10	B		217.336	0.621199	ppb	3.831	154.668
23	Na		859718.885	24290.852611	ppb	1.799	309.529
25	Mg		4890491.764	9524.011870	ppb	2.452	577.161
27	Al		54428302.143	9839.027758	ppb	1.644	5474.315
39	K		1204367.316	9672.578362	ppb	2.024	8443.921
43	Ca		426505.482	29416.967386	ppb	1.921	274.290
44	Ca		5542344.330	30021.937738	ppb	3.499	39926.534
45	Sc-1	>	4846281.806		ppb	1.193	4982270.966
47	Ti		159008.663	239.026056	ppb	1.116	156.001
49	Ti		114918.544	201.462424	ppb	1.409	162.668
51	V		196036.289	20.566247	ppb	0.639	2493.845
52	Cr		180836.946	20.375039	ppb	0.648	8871.660
55	Mn		276053.773	21.239154	ppb	1.338	645.356
54	Fe		16328686.552	24801.888878	ppb	3.355	31470.175
57	Fe		6869515.641	24733.699413	ppb	1.267	11706.205
59	Co		219372.853	19.088045	ppb	1.162	206.002
60	Ni		49254.415	19.814211	ppb	1.181	209.336
63	Cu		104709.726	19.854849	ppb	1.775	399.779
65	Cu		48562.986	20.043472	ppb	2.686	183.806
71	Ga	>	1329534.983		ppb	1.835	1433439.379
75	As		22974.436	10.323730	ppb	1.288	7420.493
75	As-1		17527.889	10.294514	ppb	1.702	-332.758
78	Se		11421.487	10.060912	ppb	2.677	7727.417
82	Se		2201.653	10.054955	ppb	0.882	2.919
88	Sr		24569.835	1.237504	ppb	2.210	156.668
66	Zn		16959.146	10.288792	ppb	2.863	1515.460
68	Zn		12254.922	9.541529	ppb	0.861	1992.885
95	Mo		680075.209	205.143460	ppb	2.108	380.008
115	In-1	>	1046184.807		ppb	1.722	1105309.653
107	Ag		45587.362	5.046801	ppb	1.314	114.001
111	Cd		20097.006	9.998683	ppb	3.757	28.617
118	Sn		1984.887	0.257371	ppb	16.595	685.359
121	Sb		1009.390	0.146583	ppb	8.918	128.668
135	Ba		361.341	0.155648	ppb	8.455	89.334
165	Ho		1266010.205		ppb	0.961	1307419.809
159	Tb		1352331.978		ppb	0.688	1408994.867
203	Tl		139.334	0.009198	ppb	14.378	89.334
207	Pb		752.678	0.012628	ppb	6.279	586.007
209	Bi	>	659010.434		ppb	1.748	731930.875

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: Blank

Autosampler Position: 2

Sample Date/Time: Tuesday, March 27, 2018 21:26:16

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\Blank.267

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	**Li**		40188.711		ppb	3.558	
9	**Be**		44.667		ppb	24.762	
45	**Sc**	>	4734242.801		ppb	2.905	
10	**B**		141.334		ppb	4.323	
23	**Na**		176.192		ppb	7.312	
25	**Mg**		312.386		ppb	13.328	
27	**Al**		2188.264		ppb	3.412	
39	**K**		8094.936		ppb	0.915	
43	**Ca**		233.336		ppb	21.916	
44	**Ca**		23646.906		ppb	0.679	
45	**Sc-1**	>	4734242.801		ppb	2.905	
47	**Ti**		164.668		ppb	23.966	
49	**Ti**		160.668		ppb	3.133	
51	**V**		2518.782		ppb	7.994	
52	**Cr**		8213.711		ppb	2.728	
55	**Mn**		844.039		ppb	4.521	
54	**Fe**		27690.319		ppb	2.004	
57	**Fe**		10771.047		ppb	2.605	
59	**Co**		180.002		ppb	1.111	
60	**Ni**		125.334		ppb	6.041	
63	**Cu**		302.985		ppb	8.291	
65	**Cu**		163.091		ppb	7.480	
71	**Ga**	>	1366388.245		ppb	2.779	
75	**As**		7058.145		ppb	2.935	
75	**As-1**		-281.356		ppb	28.221	
78	**Se**		7309.951		ppb	2.672	
82	**Se**		0.945		ppb	3184.827	
88	**Sr**		202.002		ppb	8.575	
66	**Zn**		1314.762		ppb	8.216	
68	**Zn**		1754.169		ppb	1.543	
95	**Mo**		350.007		ppb	21.351	
115	**In-1**	>	1057220.148		ppb	1.985	
107	**Ag**		164.001		ppb	9.680	
111	**Cd**		30.901		ppb	54.361	
118	**Sn**		2895.813		ppb	24.705	
121	**Sb**		1047.395		ppb	20.742	
135	**Ba**		186.002		ppb	11.631	
165	**Ho**		1276471.289		ppb	2.968	
159	**Tb**		1363627.612		ppb	2.631	
203	**Tl**		90.000		ppb	5.879	
207	**Pb**		534.006		ppb	6.233	
209	**Bi**	>	711392.616		ppb	1.483	

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: STD-1 - MS021518A

Autosampler Position: 3

Sample Date/Time: Tuesday, March 27, 2018 21:28:44

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\STD-1 - MS021518A.268

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37068.148		ppb	3.519	40188.711
9	Be		66117.664	200.000000	ppb	2.516	44.667
45	Sc	>	4699445.326		ppb	4.369	4734242.801
10	B		50388.043	500.000000	ppb	3.596	141.334
23	Na		344181.846	10200.000000	ppb	2.102	176.192
25	Mg		5416342.211	10200.000000	ppb	3.105	312.386
27	Al		1158378.165	200.000000	ppb	2.936	2188.264
39	K		1242640.397	10200.000000	ppb	1.796	8094.936
43	Ca		141655.382	10200.000000	ppb	1.941	233.336
44	Ca		1835098.957	10200.000000	ppb	4.409	23646.906
45	Sc-1	>	4699445.326		ppb	4.369	4734242.801
47	Ti		133222.041	200.000000	ppb	3.953	164.668
49	Ti		111982.429	200.000000	ppb	4.580	160.668
51	V		1863559.929	200.000000	ppb	3.716	2518.782
52	Cr		1638860.594	200.000000	ppb	2.021	8213.711
55	Mn		2555406.347	200.000000	ppb	2.471	844.039
54	Fe		6579205.246	10200.000000	ppb	2.435	27690.319
57	Fe		2732808.099	10200.000000	ppb	2.019	10771.047
59	Co		2169425.806	200.000000	ppb	1.755	180.002
60	Ni		470081.948	200.000000	ppb	0.832	125.334
63	Cu		1020439.965	200.000000	ppb	2.971	302.985
65	Cu		463741.567	200.000000	ppb	2.878	163.091
71	Ga	>	1296293.453		ppb	2.504	1366388.245
75	As		312329.312	200.000000	ppb	2.922	7058.145
75	As-1		340091.119	200.000000	ppb	3.188	-281.356
78	Se		92455.327	200.000000	ppb	3.785	7309.951
82	Se		44068.186	200.000000	ppb	3.341	0.945
88	Sr		3865701.456	200.000000	ppb	3.242	202.002
66	Zn		294960.884	200.000000	ppb	2.670	1314.762
68	Zn		213048.929	200.000000	ppb	2.138	1754.169
95	Mo		658491.302	200.000000	ppb	1.723	350.007
115	In-1	>	1025883.866		ppb	2.396	1057220.148
107	Ag		1785009.059	200.000000	ppb	2.860	164.001
111	Cd		402588.289	200.000000	ppb	1.643	30.901
118	Sn		1018523.547	200.000000	ppb	2.789	2895.813
121	Sb		1211788.122	200.000000	ppb	2.400	1047.395
135	Ba		362425.160	200.000000	ppb	3.425	186.002
165	Ho		1257213.773		ppb	2.618	1276471.289
159	Tb		1351528.365		ppb	1.842	1363627.612
203	Tl		1311018.869	200.000000	ppb	3.435	90.000
207	Pb		3645739.893	200.000000	ppb	1.821	534.006
209	Bi	>	668272.965		ppb	1.911	711392.616

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICV-1 - MS021218B

Autosampler Position: 206

Sample Date/Time: Tuesday, March 27, 2018 21:33:43

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICV-1 - MS021218B.270

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38640.058		ppb	4.577	40188.711
9	Be		33910.821	101.950896	ppb	2.429	44.667
45	Sc	>	4728890.848		ppb	4.630	4734242.801
10	B		208.669	0.675187	ppb	9.601	141.334
23	Na		192.383	0.509424	ppb	14.577	176.192
25	Mg		57278.109	106.587651	ppb	3.401	312.386
27	Al		3412.641	0.211522	ppb	2.438	2188.264
39	K		8121.627	0.390841	ppb	1.445	8094.936
43	Ca		2861.403	188.412215	ppb	2.038	233.336
44	Ca		57281.832	188.661347	ppb	1.515	23646.906
45	Sc-1	>	4728890.848		ppb	4.630	4734242.801
47	Ti		66792.819	99.510001	ppb	4.631	164.668
49	Ti		56845.926	100.874405	ppb	2.652	160.668
51	V		956872.257	101.974870	ppb	2.794	2518.782
52	Cr		872915.768	105.391306	ppb	3.272	8213.711
55	Mn		1339841.375	104.256418	ppb	2.424	844.039
54	Fe		3363347.581	5164.178932	ppb	2.806	27690.319
57	Fe		1416669.628	5240.047661	ppb	2.215	10771.047
59	Co		1101791.231	100.971440	ppb	3.008	180.002
60	Ni		248798.885	105.271271	ppb	3.245	125.334
63	Cu		552230.070	102.152104	ppb	1.729	302.985
65	Cu		249627.237	101.612800	ppb	2.229	163.091
71	Ga	>	1373553.934		ppb	4.122	1366388.245
75	As		166040.087	98.232285	ppb	1.899	7058.145
75	As-1		176609.593	98.174447	ppb	1.859	-281.356
78	Se		51879.825	98.376714	ppb	3.199	7309.951
82	Se		22898.125	98.171049	ppb	3.535	0.945
88	Sr		2022820.617	98.902286	ppb	3.080	202.002
66	Zn		163086.153	104.002390	ppb	1.830	1314.762
68	Zn		112375.463	98.783447	ppb	3.346	1754.169
95	Mo		333737.512	98.079611	ppb	1.850	350.007
115	In-1	>	1059302.902		ppb	2.602	1057220.148
107	Ag		188.669	0.002635	ppb	5.838	164.001
111	Cd		216307.365	104.043326	ppb	2.416	30.901
118	Sn		516541.383	97.981364	ppb	1.472	2895.813
121	Sb		593303.263	94.765134	ppb	1.665	1047.395
135	Ba		103.334	-0.044338	ppb	5.587	186.002
165	Ho		1274134.448		ppb	3.240	1276471.289
159	Tb		1348400.996		ppb	2.954	1363627.612
203	Tl		664766.716	96.351894	ppb	4.283	90.000
207	Pb		1982783.418	103.336073	ppb	1.813	534.006
209	Bi	>	703501.848		ppb	2.155	711392.616

QC Out of Limits

alyte Mass	Out of Limits Message
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Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICB

Autosampler Position: 2

Sample Date/Time: Tuesday, March 27, 2018 21:41:10

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICB.273

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38229.941		ppb	3.326	40188.711
9	Be		43.667	-0.001986	ppb	18.652	44.667
45	Sc	>	4686831.404		ppb	2.283	4734242.801
10	B		192.002	0.520147	ppb	21.525	141.334
23	Na		152.382	-0.653950	ppb	5.413	176.192
25	Mg		415.248	0.201197	ppb	10.144	312.386
27	Al		2214.938	0.008250	ppb	7.819	2188.264
39	K		8148.317	1.130810	ppb	0.992	8094.936
43	Ca		243.813	0.917493	ppb	6.664	233.336
44	Ca		22863.000	-3.053527	ppb	0.507	23646.906
45	Sc-1	>	4686831.404		ppb	2.283	4734242.801
47	Ti		125.334	-0.057087	ppb	14.480	164.668
49	Ti		166.002	0.012106	ppb	10.294	160.668
51	V		2449.948	-0.004439	ppb	5.916	2518.782
52	Cr		8147.651	0.002618	ppb	2.637	8213.711
55	Mn		845.373	0.000817	ppb	2.862	844.039
54	Fe		27416.704	0.003082	ppb	3.726	27690.319
57	Fe		10836.462	0.672567	ppb	4.162	10771.047
59	Co		183.335	0.000481	ppb	4.919	180.002
60	Ni		111.334	-0.005312	ppb	19.376	125.334
63	Cu		356.216	0.011712	ppb	4.638	302.985
65	Cu		133.308	-0.010748	ppb	11.775	163.091
71	Ga	>	1330202.088		ppb	3.034	1366388.245
75	As		6977.895	0.068707	ppb	3.474	7058.145
75	As-1		-98.465	0.100296	ppb	20.135	-281.356
78	Se		7174.403	0.133966	ppb	3.358	7309.951
82	Se		47.118	0.203338	ppb	40.649	0.945
88	Sr		188.002	-0.000428	ppb	12.269	202.002
66	Zn		1292.759	0.008361	ppb	4.857	1314.762
68	Zn		1768.839	0.055325	ppb	7.624	1754.169
95	Mo		308.005	-0.011667	ppb	21.172	350.007
115	In-1	>	1045781.356		ppb	2.495	1057220.148
107	Ag		245.337	0.009185	ppb	11.795	164.001
111	Cd		54.864	0.011791	ppb	13.716	30.901
118	Sn		2713.757	-0.031174	ppb	26.557	2895.813
121	Sb		1581.475	0.087647	ppb	21.152	1047.395
135	Ba		213.336	0.015852	ppb	10.537	186.002
165	Ho		1282564.375		ppb	3.328	1276471.289
159	Tb		1362193.948		ppb	2.151	1363627.612
203	Tl		78.667	-0.001468	ppb	16.542	90.000
207	Pb		518.005	-0.000504	ppb	8.108	534.006
209	Bi	>	703466.400		ppb	2.567	711392.616

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 4
Sample Date/Time: Tuesday, March 27, 2018 22:50:15
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.301
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		41083.985		ppb	2.091	40188.711
9	Be		34641.233	103.538398	ppb	2.347	44.667
45	Sc	>	4748799.332		ppb	0.895	4734242.801
10	B		26786.744	262.148896	ppb	1.361	141.334
23	Na		179782.170	5260.520543	ppb	2.849	176.192
25	Mg		2681251.213	4991.879438	ppb	3.413	312.386
27	Al		579288.238	98.642156	ppb	2.809	2188.264
39	K		641629.136	5171.801262	ppb	3.371	8094.936
43	Ca		72074.124	5123.970330	ppb	1.045	233.336
44	Ca		1228024.118	6709.617789	ppb	2.663	23646.906
45	Sc-1	>	4748799.332		ppb	0.895	4734242.801
47	Ti		66425.816	98.550614	ppb	1.050	164.668
49	Ti		55570.778	98.091289	ppb	3.220	160.668
51	V		928164.104	98.425963	ppb	0.538	2518.782
52	Cr		827462.077	99.376735	ppb	2.043	8213.711
55	Mn		1288280.136	99.652674	ppb	2.710	844.039
54	Fe		3282624.192	5010.815741	ppb	3.333	27690.319
57	Fe		1385125.466	5092.280760	ppb	4.808	10771.047
59	Co		1093688.684	99.649605	ppb	4.860	180.002
60	Ni		236284.418	99.338748	ppb	3.546	125.334
63	Cu		515298.450	99.265713	ppb	3.833	302.985
65	Cu		240309.486	101.902826	ppb	3.493	163.091
71	Ga	>	1318139.099		ppb	1.909	1366388.245
75	As		158442.699	97.594752	ppb	1.408	7058.145
75	As-1		168638.069	97.625761	ppb	1.280	-281.356
78	Se		49707.767	98.127305	ppb	2.280	7309.951
82	Se		21964.475	98.060811	ppb	1.564	0.945
88	Sr		1962323.572	99.882642	ppb	1.301	202.002
66	Zn		153534.832	101.941819	ppb	3.737	1314.762
68	Zn		111175.954	101.864053	ppb	2.509	1754.169
95	Mo		322945.700	97.096430	ppb	0.922	350.007
115	In-1	>	1035512.235		ppb	1.882	1057220.148
107	Ag		902372.700	100.146593	ppb	1.209	164.001
111	Cd		202331.958	99.568692	ppb	0.838	30.901
118	Sn		504320.774	97.828997	ppb	2.408	2895.813
121	Sb		601057.744	98.206361	ppb	1.194	1047.395
135	Ba		178988.416	97.801934	ppb	2.808	186.002
165	Ho		1245919.042		ppb	2.192	1276471.289
159	Tb		1344484.100		ppb	0.420	1363627.612
203	Tl		660601.342	99.599152	ppb	1.892	90.000
207	Pb		1823520.610	98.821705	ppb	2.220	534.006
209	Bi	>	676425.247		ppb	1.869	711392.616

QC Out of Limits

Analyte	Mass	Out of Limits Message
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Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 1
Sample Date/Time: Tuesday, March 27, 2018 22:55:11
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCB.303
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	41605.685		ppb	2.133	40188.711
9	Be	|	47.333	0.006978	ppb	18.215	44.667
45	Sc	|>	4763505.796		ppb	4.275	4734242.801
10	B	⌊	152.001	0.097264	ppb	14.945	141.334
23	Na	⌈	211.431	0.982177	ppb	13.032	176.192
25	Mg	|	580.019	0.497069	ppb	9.030	312.386
27	Al	|	3145.218	0.162111	ppb	14.476	2188.264
39	K	|	8265.089	1.068833	ppb	1.695	8094.936
43	Ca	|	251.432	1.168357	ppb	11.972	233.336
44	Ca	|	22412.356	-7.505077	ppb	0.568	23646.906
45	Sc-1	|>	4763505.796		ppb	4.275	4734242.801
47	Ti	|	146.668	-0.027886	ppb	18.813	164.668
49	Ti	|	155.335	-0.010693	ppb	3.934	160.668
51	V	|	2490.150	-0.005018	ppb	10.017	2518.782
52	Cr	|	8207.704	-0.005609	ppb	1.844	8213.711
55	Mn	|	965.385	0.009220	ppb	8.187	844.039
54	Fe	|	28083.715	0.424151	ppb	2.869	27690.319
57	Fe	|	10669.592	-0.555146	ppb	1.877	10771.047
59	Co	|	225.336	0.004057	ppb	2.853	180.002
60	Ni	⌊	126.668	0.000370	ppb	15.007	125.334
63	Cu	⌈	383.912	0.015937	ppb	2.250	302.985
65	Cu	|	193.191	0.013350	ppb	3.638	163.091
71	Ga	|>	1350076.768		ppb	2.699	1366388.245
75	As	|	7030.858	0.038765	ppb	1.417	7058.145
75	As-1	|	-324.111	-0.025496	ppb	21.606	-281.356
78	Se	|	7262.840	0.098183	ppb	0.897	7309.951
82	Se	|	-21.826	-0.099530	ppb	60.576	0.945
88	Sr	|	388.675	0.009427	ppb	7.283	202.002
66	Zn	|	1541.464	0.158229	ppb	4.697	1314.762
68	Zn	⌊	1934.873	0.183137	ppb	3.837	1754.169
95	Mo	⌈	328.673	-0.004550	ppb	8.395	350.007
115	In-1	|>	1039011.912		ppb	0.879	1057220.148
107	Ag	|	208.002	0.005184	ppb	10.707	164.001
111	Cd	|	41.216	0.005332	ppb	9.265	30.901
118	Sn	|	2607.052	-0.046473	ppb	21.591	2895.813
121	Sb	|	250.670	-0.126974	ppb	16.475	1047.395
135	Ba	|	80.667	-0.055681	ppb	10.020	186.002
165	Ho	|	1249363.436		ppb	2.029	1276471.289
159	Tb	⌊	1337657.292		ppb	2.526	1363627.612
203	Tl	⌈	102.001	0.002168	ppb	13.726	90.000
207	Pb	|	460.004	-0.003080	ppb	0.435	534.006
209	Bi	⌊>	690055.249		ppb	0.578	711392.616

QC Out of Limits

alyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 4
Sample Date/Time: Tuesday, March 27, 2018 23:22:21
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.314
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38764.825		ppb	1.827	40188.711
9	Be		33566.200	100.762631	ppb	1.769	44.667
45	Sc	>	4729490.580		ppb	2.347	4734242.801
10	B		26287.288	258.343634	ppb	1.151	141.334
23	Na		177849.872	5228.335613	ppb	3.434	176.192
25	Mg		2749880.419	5142.872168	ppb	0.452	312.386
27	Al		591023.827	101.058777	ppb	3.471	2188.264
39	K		636484.029	5153.750627	ppb	3.052	8094.936
43	Ca		72429.579	5168.996355	ppb	3.885	233.336
44	Ca		1218779.288	6688.126729	ppb	1.314	23646.906
45	Sc-1	>	4729490.580		ppb	2.347	4734242.801
47	Ti		65822.921	98.036340	ppb	3.104	164.668
49	Ti		56475.555	100.110997	ppb	0.893	160.668
51	V		952327.797	101.407796	ppb	2.014	2518.782
52	Cr		824118.051	99.373316	ppb	3.132	8213.711
55	Mn		1276321.569	99.140774	ppb	2.491	844.039
54	Fe		3301284.067	5061.044526	ppb	2.553	27690.319
57	Fe		1396418.277	5157.360822	ppb	2.875	10771.047
59	Co		1107605.856	101.366387	ppb	2.344	180.002
60	Ni		240474.066	101.566066	ppb	3.423	125.334
63	Cu		523326.091	102.009763	ppb	2.740	302.985
65	Cu		240872.001	103.367420	ppb	2.358	163.091
71	Ga	>	1302060.793		ppb	0.708	1366388.245
75	As		158878.196	99.131851	ppb	1.299	7058.145
75	As-1		169146.989	99.123192	ppb	2.369	-281.356
78	Se		49195.182	98.337917	ppb	0.907	7309.951
82	Se		21803.389	98.542124	ppb	4.335	0.945
88	Sr		1953429.880	100.629983	ppb	2.122	202.002
66	Zn		153754.051	103.362119	ppb	0.915	1314.762
68	Zn		110705.720	102.684508	ppb	3.010	1754.169
95	Mo		325113.210	97.681197	ppb	2.648	350.007
115	In-1	>	1035861.920		ppb	0.933	1057220.148
107	Ag		911025.447	101.058753	ppb	2.520	164.001
111	Cd		202352.355	99.528645	ppb	1.930	30.901
118	Sn		524568.980	101.741869	ppb	2.136	2895.813
121	Sb		616584.742	100.696359	ppb	1.099	1047.395
135	Ba		182557.539	99.728621	ppb	0.894	186.002
165	Ho		1266046.214		ppb	2.954	1276471.289
159	Tb		1365861.594		ppb	1.453	1363627.612
203	Tl		654406.408	98.024723	ppb	2.626	90.000
207	Pb		1831250.625	98.614265	ppb	3.010	534.006
209	Bi	>	680602.698		ppb	1.526	711392.616

QC Out of Limits

Analyte	Mass	Out of Limits Message
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Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 1
Sample Date/Time: Tuesday, March 27, 2018 23:27:17
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCB.316
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	38718.615		ppb	0.897	40188.711
9	Be	|	46.333	**0.006466**	ppb	8.723	44.667
45	Sc	|>	4680286.506		ppb	2.429	4734242.801
10	B	⌊	169.335	**0.299344**	ppb	11.831	141.334
23	Na	⌈	183.811	**0.286843**	ppb	9.108	176.192
25	Mg	|	722.886	**0.784571**	ppb	8.254	312.386
27	Al	|	2576.367	**0.071271**	ppb	8.548	2188.264
39	K	|	8297.118	**2.481051**	ppb	1.436	8094.936
43	Ca	|	240.003	**0.706824**	ppb	8.988	233.336
44	Ca	|	23070.198	**-1.723632**	ppb	2.196	23646.906
45	Sc-1	|>	4680286.506		ppb	2.429	4734242.801
47	Ti	|	142.001	**-0.030995**	ppb	9.758	164.668
49	Ti	|	151.335	**-0.014124**	ppb	17.248	160.668
51	V	|	2352.413	**-0.014899**	ppb	3.595	2518.782
52	Cr	|	8183.017	**0.007755**	ppb	2.952	8213.711
55	Mn	|	954.050	**0.009457**	ppb	2.836	844.039
54	Fe	|	28131.881	**1.190221**	ppb	2.041	27690.319
57	Fe	|	11136.819	**1.864564**	ppb	1.819	10771.047
59	Co	|	296.672	**0.010947**	ppb	10.364	180.002
60	Ni	⌊	150.668	**0.011389**	ppb	11.290	125.334
63	Cu	⌈	412.646	**0.023171**	ppb	5.180	302.985
65	Cu	|	191.884	**0.014819**	ppb	15.800	163.091
71	Ga	|>	1317905.912		ppb	2.440	1366388.245
75	As	|	6960.271	**0.099646**	ppb	1.439	7058.145
75	As-1	|	-158.238	**0.065382**	ppb	1.531	-281.356
78	Se	|	7149.904	**0.233937**	ppb	1.355	7309.951
82	Se	|	22.966	**0.098650**	ppb	8.811	0.945
88	Sr	|	410.676	**0.010998**	ppb	7.550	202.002
66	Zn	|	1562.134	**0.197041**	ppb	2.330	1314.762
68	Zn	⌊	1814.848	**0.114328**	ppb	3.293	1754.169
95	Mo	⌈	528.015	**0.053985**	ppb	11.828	350.007
115	In-1	|>	1047204.178		ppb	0.810	1057220.148
107	Ag	|	204.002	**0.004559**	ppb	2.594	164.001
111	Cd	|	69.133	**0.018702**	ppb	28.272	30.901
118	Sn	|	4381.760	**0.292897**	ppb	23.232	2895.813
121	Sb	|	1838.856	**0.129963**	ppb	17.560	1047.395
135	Ba	|	96.667	**-0.047348**	ppb	6.321	186.002
165	Ho	|	1243625.284		ppb	2.358	1276471.289
159	Tb	⌊	1330490.579		ppb	0.521	1363627.612
203	Tl	⌈	156.001	**0.010186**	ppb	6.662	90.000
207	Pb	|	606.674	**0.004772**	ppb	3.706	534.006
209	Bi	⌊>	688645.830		ppb	1.642	711392.616

QC Out of Limits

ıalyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: Blank
Autosampler Position: 210
Sample Date/Time: Tuesday, March 27, 2018 23:29:47
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\Blank.317
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	**Li**		39186.692		ppb	3.830	
9	**Be**		49.667		ppb	9.079	
45	**Sc**	>	4659300.554		ppb	4.222	
10	**B**		138.001		ppb	9.051	
23	**Na**		180.002		ppb	15.142	
25	**Mg**		723.839		ppb	17.796	
27	**Al**		3163.885		ppb	5.849	
39	**K**		8169.669		ppb	0.353	
43	**Ca**		248.575		ppb	11.085	
44	**Ca**		23338.493		ppb	1.086	
45	**Sc-1**	>	4659300.554		ppb	4.222	
47	**Ti**		154.668		ppb	1.975	
49	**Ti**		158.001		ppb	3.349	
51	**V**		2704.932		ppb	9.601	
52	**Cr**		8152.324		ppb	3.928	
55	**Mn**		948.049		ppb	1.477	
54	**Fe**		27831.142		ppb	1.542	
57	**Fe**		10971.286		ppb	2.808	
59	**Co**		305.339		ppb	13.269	
60	**Ni**		171.335		ppb	3.370	
63	**Cu**		371.797		ppb	6.546	
65	**Cu**		173.813		ppb	15.630	
71	**Ga**	>	1341824.633		ppb	3.205	
75	**As**		7098.606		ppb	1.874	
75	**As-1**		-162.073		ppb	25.210	
78	**Se**		7270.325		ppb	2.132	
82	**Se**		15.050		ppb	174.617	
88	**Sr**		460.678		ppb	2.653	
66	**Zn**		1589.473		ppb	5.978	
68	**Zn**		1882.195		ppb	4.093	
95	**Mo**		340.007		ppb	18.349	
115	**In-1**	>	1040983.126		ppb	2.456	
107	**Ag**		184.002		ppb	3.919	
111	**Cd**		45.968		ppb	23.854	
118	**Sn**		2927.154		ppb	22.763	
121	**Sb**		1233.418		ppb	12.138	
135	**Ba**		169.335		ppb	5.826	
165	**Ho**		1261276.724		ppb	1.007	
159	**Tb**		1341620.348		ppb	1.343	
203	**Tl**		154.001		ppb	12.389	
207	**Pb**		620.008		ppb	14.336	
209	**Bi**	>	698471.606		ppb	2.642	

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: STD-1 - MS021518A
Autosampler Position: 3
Sample Date/Time: Tuesday, March 27, 2018 23:32:17
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\STD-1 - MS021518A.318
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37770.056		ppb	4.171	39186.692
9	Be		64966.999	200.000000	ppb	1.146	49.667
45	Sc	>	4614497.617		ppb	3.742	4659300.554
10	B		50990.101	500.000000	ppb	4.221	138.001
23	Na		350147.625	10200.000000	ppb	1.797	180.002
25	Mg		5314491.875	10200.000000	ppb	4.860	723.839
27	Al		1140980.746	200.000000	ppb	3.314	3163.885
39	K		1237968.638	10200.000000	ppb	1.386	8169.669
43	Ca		143572.337	10200.000000	ppb	3.367	248.575
44	Ca		1754988.212	10200.000000	ppb	3.172	23338.493
45	Sc-1	>	4614497.617		ppb	3.742	4659300.554
47	Ti		130116.760	200.000000	ppb	1.843	154.668
49	Ti		109629.219	200.000000	ppb	1.919	158.001
51	V		1838657.472	200.000000	ppb	2.291	2704.932
52	Cr		1619769.903	200.000000	ppb	1.669	8152.324
55	Mn		2507269.242	200.000000	ppb	2.896	948.049
54	Fe		6525603.566	10200.000000	ppb	2.032	27831.142
57	Fe		2757058.957	10200.000000	ppb	5.510	10971.286
59	Co		2169646.041	200.000000	ppb	4.092	305.339
60	Ni		471400.523	200.000000	ppb	4.610	171.335
63	Cu		1037545.666	200.000000	ppb	4.558	371.797
65	Cu		471632.138	200.000000	ppb	4.443	173.813
71	Ga	>	1275915.327		ppb	2.228	1341824.633
75	As		305792.607	200.000000	ppb	1.782	7098.606
75	As-1		333746.994	200.000000	ppb	1.404	-162.073
78	Se		89641.478	200.000000	ppb	0.217	7270.325
82	Se		43106.196	200.000000	ppb	1.971	15.050
88	Sr		3776536.684	200.000000	ppb	2.876	460.678
66	Zn		300577.087	200.000000	ppb	2.183	1589.473
68	Zn		214566.212	200.000000	ppb	2.418	1882.195
95	Mo		644005.706	200.000000	ppb	2.678	340.007
115	In-1	>	1033443.010		ppb	0.499	1040983.126
107	Ag		1757683.744	200.000000	ppb	1.711	184.002
111	Cd		400886.799	200.000000	ppb	1.330	45.968
118	Sn		1040591.987	200.000000	ppb	0.275	2927.154
121	Sb		1199686.980	200.000000	ppb	0.574	1233.418
135	Ba		361947.515	200.000000	ppb	1.347	169.335
165	Ho		1273560.144		ppb	2.261	1261276.724
159	Tb		1365705.280		ppb	1.234	1341620.348
203	Tl		1331984.846	200.000000	ppb	3.124	154.001
207	Pb		3662855.604	200.000000	ppb	2.454	620.008
209	Bi	>	673571.490		ppb	2.030	698471.606

QC Out of Limits

ıalyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICV-1 - MS021218B

Autosampler Position: 206

Sample Date/Time: Tuesday, March 27, 2018 23:37:14

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth

Dataset File: W:\dataset\2018\180327B1\ICV-1 - MS021218B.320

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38595.172		ppb	3.964	39186.692
9	Be		33921.183	104.542915	ppb	1.914	49.667
45	Sc	>	4608379.236		ppb	3.945	4659300.554
10	B		212.003	0.737794	ppb	14.646	138.001
23	Na		194.288	0.488676	ppb	13.071	180.002
25	Mg		56020.675	106.397931	ppb	1.516	723.839
27	Al		3458.658	0.058478	ppb	3.331	3163.885
39	K		8291.113	1.820402	ppb	0.446	8169.669
43	Ca		2864.262	186.580167	ppb	6.080	248.575
44	Ca		56777.720	198.921227	ppb	1.140	23338.493
45	Sc-1	>	4608379.236		ppb	3.945	4659300.554
47	Ti		64388.896	98.914861	ppb	4.764	154.668
49	Ti		55016.002	100.360350	ppb	1.726	158.001
51	V		938512.551	102.125807	ppb	2.473	2704.932
52	Cr		836653.547	102.972865	ppb	2.293	8152.324
55	Mn		1321035.133	105.438173	ppb	2.542	948.049
54	Fe		3275493.341	5103.635059	ppb	1.412	27831.142
57	Fe		1394688.919	5143.977775	ppb	1.263	10971.286
59	Co		1077456.163	99.405849	ppb	3.057	305.339
60	Ni		245220.790	104.098350	ppb	1.953	171.335
63	Cu		546575.427	102.175265	ppb	2.020	371.797
65	Cu		250298.688	102.922568	ppb	2.606	173.813
71	Ga	>	1315909.002		ppb	2.380	1341824.633
75	As		162720.110	100.997122	ppb	2.290	7098.606
75	As-1		172230.514	100.104543	ppb	2.044	-162.073
78	Se		50653.702	101.992673	ppb	1.930	7270.325
82	Se		22061.310	99.171641	ppb	1.306	15.050
88	Sr		1991272.826	102.227047	ppb	1.792	460.678
66	Zn		162238.697	104.190732	ppb	2.284	1589.473
68	Zn		112267.863	100.642625	ppb	2.235	1882.195
95	Mo		334855.708	102.701621	ppb	2.702	340.007
115	In-1	>	1045777.803		ppb	2.329	1040983.126
107	Ag		237.336	0.005919	ppb	1.754	184.002
111	Cd		209509.662	103.277628	ppb	2.227	45.968
118	Sn		502133.750	95.077644	ppb	2.212	2927.154
121	Sb		584295.193	96.183650	ppb	0.317	1233.418
135	Ba		134.001	-0.019823	ppb	11.657	169.335
165	Ho		1273221.600		ppb	2.982	1261276.724
159	Tb		1363537.234		ppb	1.469	1341620.348
203	Tl		662514.614	96.990243	ppb	1.878	154.001
207	Pb		1960094.166	104.307730	ppb	3.158	620.008
209	Bi	>	691045.660		ppb	3.106	698471.606

QC Out of Limits

alyte	Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICB
Autosampler Position: 210
Sample Date/Time: Tuesday, March 27, 2018 23:44:39
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\ICB.323
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	38718.015		ppb	3.669	39186.692
9	Be	|	45.667	-0.009609	ppb	18.365	49.667
45	Sc	|>	4570830.818		ppb	1.173	4659300.554
10	B	⌊	183.335	0.476383	ppb	7.014	138.001
23	Na	⌈	186.669	0.301684	ppb	12.277	180.002
25	Mg	|	456.202	-0.492377	ppb	5.024	723.839
27	Al	|	2874.454	-0.040717	ppb	1.985	3163.885
39	K	|	8283.774	2.269598	ppb	2.246	8169.669
43	Ca	|	226.670	-1.249150	ppb	12.875	248.575
44	Ca	|	22639.590	-1.524447	ppb	1.855	23338.493
45	Sc-1	|>	4570830.818		ppb	1.173	4659300.554
47	Ti	|	155.335	0.005670	ppb	13.647	154.668
49	Ti	|	155.335	0.000534	ppb	4.875	158.001
51	V	|	2453.026	-0.021879	ppb	7.589	2704.932
52	Cr	|	7808.020	-0.023833	ppb	2.887	8152.324
55	Mn	|	818.704	-0.008979	ppb	5.814	948.049
54	Fe	|	27231.734	-0.120534	ppb	5.055	27831.142
57	Fe	|	10658.914	-0.386230	ppb	2.252	10971.286
59	Co	|	274.671	-0.002299	ppb	17.082	305.339
60	Ni	⌊	148.001	-0.008583	ppb	4.054	171.335
63	Cu	⌈	343.786	-0.004040	ppb	2.382	371.797
65	Cu	|	156.476	-0.005770	ppb	14.976	173.813
71	Ga	|>	1320245.370		ppb	2.928	1341824.633
75	As	|	7055.685	0.046939	ppb	2.167	7098.606
75	As-1	|	-209.473	-0.029509	ppb	21.524	-162.073
78	Se	|	7251.984	0.235405	ppb	1.730	7270.325
82	Se	|	6.909	-0.035663	ppb	49.428	15.050
88	Sr	|	329.339	-0.006351	ppb	6.689	460.678
66	Zn	|	1456.117	-0.070202	ppb	6.337	1589.473
68	Zn	⌊	1933.539	0.075566	ppb	3.071	1882.195
95	Mo	⌈	302.005	-0.011644	ppb	17.918	340.007
115	In-1	|>	1039208.298		ppb	3.692	1040983.126
107	Ag	|	275.338	0.010488	ppb	11.653	184.002
111	Cd	|	68.361	0.011174	ppb	5.040	45.968
118	Sn	|	2664.404	-0.050711	ppb	22.808	2927.154
121	Sb	|	1589.476	0.059241	ppb	19.011	1233.418
135	Ba	|	193.335	0.013406	ppb	3.633	169.335
165	Ho	|	1239456.301		ppb	0.680	1261276.724
159	Tb	⌊	1346496.075		ppb	0.920	1341620.348
203	Tl	⌈	116.001	-0.005375	ppb	4.562	154.001
207	Pb	|	534.672	-0.004297	ppb	6.695	620.008
209	Bi	⌊>	694150.427		ppb	2.927	698471.606

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 215
Sample Date/Time: Tuesday, March 27, 2018 23:47:08
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.324
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37834.255		ppb	2.106	39186.692
9	Be		32895.417	**101.019581**	ppb	1.486	49.667
45	Sc	>	4621044.377		ppb	3.657	4659300.554
10	B		25632.775	**250.325420**	ppb	3.051	138.001
23	Na		173948.159	**5057.294697**	ppb	2.537	180.002
25	Mg		2675154.510	**5128.881953**	ppb	2.734	723.839
27	Al		585094.320	**102.138930**	ppb	3.445	3163.885
39	K		627752.671	**5130.762215**	ppb	1.233	8169.669
43	Ca		72398.946	**5125.881760**	ppb	4.431	248.575
44	Ca		1198935.645	**6915.610885**	ppb	2.814	23338.493
45	Sc-1	>	4621044.377		ppb	3.657	4659300.554
47	Ti		64897.668	**99.452644**	ppb	3.449	154.668
49	Ti		54940.948	**99.925899**	ppb	2.970	158.001
51	V		929328.124	**100.815039**	ppb	1.953	2704.932
52	Cr		823881.099	**101.140281**	ppb	0.500	8152.324
55	Mn		1271851.415	**101.296712**	ppb	3.006	948.049
54	Fe		3274593.628	**5090.839222**	ppb	3.005	27831.142
57	Fe		1354274.840	**4984.478699**	ppb	4.485	10971.286
59	Co		1069269.807	**98.397114**	ppb	3.296	305.339
60	Ni		232192.671	**98.282510**	ppb	2.079	171.335
63	Cu		511608.615	**98.587934**	ppb	3.412	371.797
65	Cu		232096.080	**98.393064**	ppb	3.090	173.813
71	Ga	>	1276072.515		ppb	0.840	1341824.633
75	As		160438.715	**102.766468**	ppb	0.783	7098.606
75	As-1		170082.483	**101.937986**	ppb	0.282	-162.073
78	Se		49596.012	**103.157951**	ppb	2.830	7270.325
82	Se		21721.890	**100.696706**	ppb	3.104	15.050
88	Sr		1958196.880	**103.628464**	ppb	3.987	460.678
66	Zn		150764.248	**99.794784**	ppb	2.180	1589.473
68	Zn		108681.210	**100.459346**	ppb	1.523	1882.195
95	Mo		325202.489	**101.295390**	ppb	2.733	340.007
115	In-1	>	1029786.468		ppb	1.027	1040983.126
107	Ag		900418.620	**102.794294**	ppb	2.031	184.002
111	Cd		202964.186	**101.608430**	ppb	0.994	45.968
118	Sn		505697.342	**97.250630**	ppb	0.972	2927.154
121	Sb		605947.643	**101.285672**	ppb	0.621	1233.418
135	Ba		179080.844	**99.264379**	ppb	2.756	169.335
165	Ho		1238035.833		ppb	2.759	1261276.724
159	Tb		1325927.216		ppb	2.002	1341620.348
203	Tl		648461.876	**97.159557**	ppb	2.300	154.001
207	Pb		1816177.160	**98.944028**	ppb	1.949	620.008
209	Bi	>	674997.962		ppb	1.844	698471.606

QC Out of Limits

Analyte	Mass	Out of Limits Message
i	44	

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 211
Sample Date/Time: Tuesday, March 27, 2018 23:52:03
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\CCB.326
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050
Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38222.520		ppb	0.668	39186.692
9	Be		52.000	0.008271	ppb	16.765	49.667
45	Sc	>	4629723.724		ppb	1.745	4659300.554
10	B		170.668	0.330890	ppb	9.758	138.001
23	Na		246.670	1.964164	ppb	5.830	180.002
25	Mg		1471.564	1.430030	ppb	44.733	723.839
27	Al		3844.186	0.121383	ppb	27.184	3163.885
39	K		8428.579	2.554362	ppb	5.035	8169.669
43	Ca		275.242	1.961174	ppb	20.298	248.575
44	Ca		23232.516	0.262746	ppb	2.331	23338.493
45	Sc-1	>	4629723.724		ppb	1.745	4659300.554
47	Ti		186.002	0.049237	ppb	14.061	154.668
49	Ti		180.002	0.042030	ppb	2.940	158.001
51	V		2793.486	0.011278	ppb	7.965	2704.932
52	Cr		8441.253	0.041951	ppb	3.111	8152.324
55	Mn		1248.754	0.024241	ppb	18.094	948.049
54	Fe		29827.406	3.403886	ppb	3.254	27831.142
57	Fe		11477.249	2.125854	ppb	4.227	10971.286
59	Co		608.688	0.027875	ppb	32.606	305.339
60	Ni		201.336	0.012961	ppb	20.074	171.335
63	Cu		551.359	0.034718	ppb	19.241	371.797
65	Cu		232.975	0.025495	ppb	13.432	173.813
71	Ga	>	1319278.365		ppb	1.124	1341824.633
75	As		7059.612	0.052341	ppb	0.351	7098.606
75	As-1		-221.552	-0.036047	ppb	29.483	-162.073
78	Se		7235.406	0.205439	ppb	0.739	7270.325
82	Se		-5.065	-0.089136	ppb	259.093	15.050
88	Sr		1075.403	0.031923	ppb	37.581	460.678
66	Zn		1550.799	-0.007315	ppb	5.173	1589.473
68	Zn		1878.861	0.025651	ppb	4.919	1882.195
95	Mo		452.012	0.033283	ppb	30.008	340.007
115	In-1	>	1050522.208		ppb	0.634	1040983.126
107	Ag		354.674	0.018940	ppb	24.251	184.002
111	Cd		115.445	0.033989	ppb	49.018	45.968
118	Sn		3628.083	0.127613	ppb	23.079	2927.154
121	Sb		870.043	-0.061516	ppb	21.452	1233.418
135	Ba		192.002	0.011474	ppb	22.559	169.335
165	Ho		1264668.272		ppb	2.744	1261276.724
159	Tb		1361044.226		ppb	2.843	1341620.348
203	Tl		284.671	0.018180	ppb	33.887	154.001
207	Pb		1080.025	0.023231	ppb	27.893	620.008
209	Bi	>	709001.063		ppb	1.530	698471.606

QC Out of Limits

ıalyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 215
Sample Date/Time: Wednesday, March 28, 2018 00:21:33
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.338
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37968.487		ppb	2.401	39186.692
9	Be		33783.338	103.430613	ppb	1.930	49.667
45	Sc	>	4633020.386		ppb	0.847	4659300.554
10	B		26245.184	255.671141	ppb	2.890	138.001
23	Na		178287.065	5164.579094	ppb	3.652	180.002
25	Mg		2766117.315	5288.712486	ppb	1.314	723.839
27	Al		586914.623	102.187443	ppb	1.857	3163.885
39	K		641109.353	5223.383638	ppb	3.689	8169.669
43	Ca		73286.746	5175.808313	ppb	2.764	248.575
44	Ca		1205468.522	6934.323988	ppb	0.524	23338.493
45	Sc-1	>	4633020.386		ppb	0.847	4659300.554
47	Ti		64895.554	99.178903	ppb	2.317	154.668
49	Ti		54906.043	99.558899	ppb	2.505	158.001
51	V		933001.477	100.890011	ppb	2.573	2704.932
52	Cr		831914.392	101.751378	ppb	3.680	8152.324
55	Mn		1288232.813	102.165811	ppb	1.928	948.049
54	Fe		3320460.259	5141.179186	ppb	1.110	27831.142
57	Fe		1401454.520	5135.621458	ppb	1.155	10971.286
59	Co		1100575.590	100.852689	ppb	1.668	305.339
60	Ni		238576.361	100.585064	ppb	1.376	171.335
63	Cu		529974.885	98.488991	ppb	1.924	371.797
65	Cu		241234.443	98.631161	ppb	1.529	173.813
71	Ga	>	1323467.937		ppb	2.190	1341824.633
75	As		162154.406	100.029078	ppb	2.072	7098.606
75	As-1		171766.725	99.273572	ppb	1.458	-162.073
78	Se		50186.179	100.252689	ppb	1.171	7270.325
82	Se		21927.004	98.047833	ppb	2.392	15.050
88	Sr		1949057.044	99.462484	ppb	0.515	460.678
66	Zn		154942.399	98.880447	ppb	2.405	1589.473
68	Zn		111225.070	99.117307	ppb	1.735	1882.195
95	Mo		323911.582	100.331932	ppb	1.952	340.007
115	In-1	>	1035606.963		ppb	2.573	1040983.126
107	Ag		903650.879	102.588260	ppb	2.770	184.002
111	Cd		201706.481	100.394339	ppb	3.108	45.968
118	Sn		514062.169	98.304228	ppb	3.150	2927.154
121	Sb		613643.096	102.011340	ppb	1.239	1233.418
135	Ba		180857.645	99.699256	ppb	1.715	169.335
165	Ho		1260307.177		ppb	1.772	1261276.724
159	Tb		1352500.987		ppb	1.425	1341620.348
203	Tl		672293.940	98.376407	ppb	1.923	154.001
207	Pb		1873791.685	99.681591	ppb	2.285	620.008
209	Bi	>	691384.661		ppb	3.100	698471.606

QC Out of Limits

Analyte	Mass	Out of Limits Message
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Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 211
Sample Date/Time: Wednesday, March 28, 2018 00:26:28
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\CCB.340
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	39057.184		ppb	4.831	39186.692
9	Be	|	43.667	-0.019886	ppb	13.022	49.667
45	Sc	|>	4721071.055		ppb	1.225	4659300.554
10	B	⌊	171.335	0.301250	ppb	12.482	138.001
23	Na	⌈	169.525	-0.369276	ppb	10.966	180.002
25	Mg	|	681.930	-0.096919	ppb	4.401	723.839
27	Al	|	2867.788	-0.058255	ppb	8.412	3163.885
39	K	|	8347.165	0.566555	ppb	1.896	8169.669
43	Ca	|	235.241	-1.157402	ppb	7.117	248.575
44	Ca	|	22263.420	-7.948617	ppb	0.787	23338.493
45	Sc-1	|>	4721071.055		ppb	1.225	4659300.554
47	Ti	|	156.001	-0.001016	ppb	12.230	154.668
49	Ti	|	186.002	0.046190	ppb	2.845	158.001
51	V	|	2464.214	-0.029203	ppb	10.214	2704.932
52	Cr	|	8184.360	-0.008623	ppb	6.751	8152.324
55	Mn	|	892.711	-0.005249	ppb	6.441	948.049
54	Fe	|	28067.828	-0.169662	ppb	8.213	27831.142
57	Fe	|	10778.401	-1.203911	ppb	5.900	10971.286
59	Co	|	312.672	0.000320	ppb	16.450	305.339
60	Ni	⌊	160.668	-0.005425	ppb	14.955	171.335
63	Cu	⌈	371.111	0.000308	ppb	9.573	371.797
65	Cu	|	179.806	0.002749	ppb	11.256	173.813
71	Ga	|>	1334994.331		ppb	2.316	1341824.633
75	As	|	7060.775	-0.000737	ppb	1.953	7098.606
75	As-1	|	-215.828	-0.031050	ppb	25.928	-162.073
78	Se	|	7258.304	0.059038	ppb	1.839	7270.325
82	Se	|	4.961	-0.043790	ppb	570.203	15.050
88	Sr	|	419.343	-0.002007	ppb	14.719	460.678
66	Zn	|	1337.432	-0.156164	ppb	4.620	1589.473
68	Zn	⌊	1831.518	-0.037649	ppb	5.411	1882.195
95	Mo	⌈	477.346	0.044183	ppb	22.666	340.007
115	In-1	|>	1030356.226		ppb	3.655	1040983.126
107	Ag	|	215.336	0.003889	ppb	16.519	184.002
111	Cd	|	45.613	-0.000085	ppb	34.583	45.968
118	Sn	|	3570.058	0.128838	ppb	22.513	2927.154
121	Sb	|	1194.747	-0.004437	ppb	19.760	1233.418
135	Ba	|	122.667	-0.024995	ppb	9.962	169.335
165	Ho	|	1244296.654		ppb	4.775	1261276.724
159	Tb	⌊	1324288.188		ppb	5.033	1341620.348
203	Tl	⌈	144.001	-0.001287	ppb	16.897	154.001
207	Pb	|	587.341	-0.001523	ppb	5.505	620.008
209	Bi	⌊>	694867.867		ppb	2.574	698471.606

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 215
Sample Date/Time: Wednesday, March 28, 2018 00:53:30
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.351
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38526.953		ppb	5.337	39186.692
9	Be		33397.631	101.989954	ppb	3.951	49.667
45	Sc	>	4643748.505		ppb	3.054	4659300.554
10	B		25987.869	252.386811	ppb	6.672	138.001
23	Na		178562.791	5156.591737	ppb	6.145	180.002
25	Mg		2690439.534	5131.844830	ppb	3.012	723.839
27	Al		587512.510	102.023770	ppb	4.474	3163.885
39	K		628793.112	5106.468840	ppb	5.536	8169.669
43	Ca		71621.103	5047.153160	ppb	2.111	248.575
44	Ca		1200727.765	6891.643200	ppb	2.522	23338.493
45	Sc-1	>	4643748.505		ppb	3.054	4659300.554
47	Ti		66010.132	100.737980	ppb	0.857	154.668
49	Ti		56566.357	102.479185	ppb	4.639	158.001
51	V		947538.165	102.364930	ppb	3.699	2704.932
52	Cr		848133.806	103.675325	ppb	3.984	8152.324
55	Mn		1323658.006	104.914404	ppb	5.437	948.049
54	Fe		3404142.050	5269.720012	ppb	6.615	27831.142
57	Fe		1417129.024	5189.028407	ppb	4.234	10971.286
59	Co		1120852.041	102.596541	ppb	3.056	305.339
60	Ni		243843.118	102.696113	ppb	3.185	171.335
63	Cu		532899.899	100.747838	ppb	1.248	371.797
65	Cu		244520.382	101.596181	ppb	2.067	173.813
71	Ga	>	1303276.130		ppb	4.751	1341824.633
75	As		160169.354	100.347334	ppb	4.750	7098.606
75	As-1		170401.605	99.989416	ppb	4.954	-162.073
78	Se		49384.879	100.157431	ppb	4.557	7270.325
82	Se		21859.561	99.200419	ppb	4.883	15.050
88	Sr		1978332.267	102.557110	ppb	2.744	460.678
66	Zn		155458.347	100.822866	ppb	3.538	1589.473
68	Zn		112137.956	101.551163	ppb	3.562	1882.195
95	Mo		329993.290	100.657889	ppb	2.374	340.007
115	In-1	>	1051829.082		ppb	1.208	1040983.126
107	Ag		929135.242	103.864195	ppb	0.468	184.002
111	Cd		208848.617	102.357981	ppb	1.373	45.968
118	Sn		524359.809	98.723722	ppb	2.535	2927.154
121	Sb		619255.399	101.318829	ppb	2.827	1233.418
135	Ba		183572.494	99.606824	ppb	2.764	169.335
165	Ho		1283718.082		ppb	3.798	1261276.724
159	Tb		1369455.789		ppb	3.449	1341620.348
203	Tl		672019.659	101.212608	ppb	3.043	154.001
207	Pb		1851910.894	101.369803	ppb	0.573	620.008
209	Bi	>	671923.912		ppb	1.782	698471.606

QC Out of Limits

alyte	Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCB

Autosampler Position: 211

Sample Date/Time: Wednesday, March 28, 2018 00:58:24

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth

Dataset File: W:\dataset\2018\180327B1\CCB.353

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		40285.085		ppb	1.985	39186.692
9	Be		47.000	-0.008470	ppb	27.164	49.667
45	Sc	>	4709523.426		ppb	4.582	4659300.554
10	B		140.668	0.013235	ppb	18.934	138.001
23	Na		151.430	-0.876858	ppb	13.208	180.002
25	Mg		436.201	-0.554617	ppb	13.808	723.839
27	Al		2720.407	-0.081503	ppb	3.420	3163.885
39	K		8370.519	1.029069	ppb	1.387	8169.669
43	Ca		200.955	-3.533015	ppb	12.258	248.575
44	Ca		22621.448	-5.355519	ppb	1.602	23338.493
45	Sc-1	>	4709523.426		ppb	4.582	4659300.554
47	Ti		150.001	-0.009543	ppb	10.914	154.668
49	Ti		153.335	-0.011715	ppb	17.995	158.001
51	V		2529.570	-0.021640	ppb	5.066	2704.932
52	Cr		8199.030	-0.003520	ppb	2.039	8152.324
55	Mn		780.700	-0.013710	ppb	6.381	948.049
54	Fe		28995.529	1.352140	ppb	3.982	27831.142
57	Fe		10548.123	-1.894406	ppb	4.052	10971.286
59	Co		219.336	-0.008102	ppb	13.718	305.339
60	Ni		140.668	-0.013494	ppb	12.744	171.335
63	Cu		296.527	-0.015164	ppb	9.162	371.797
65	Cu		156.505	-0.008352	ppb	6.351	173.813
71	Ga	>	1374456.275		ppb	5.093	1341824.633
75	As		7251.771	-0.002079	ppb	1.361	7098.606
75	As-1		-195.081	-0.019204	ppb	82.841	-162.073
78	Se		7460.771	0.067544	ppb	1.347	7270.325
82	Se		16.982	-0.001140	ppb	315.779	15.050
88	Sr		218.003	-0.012504	ppb	13.762	460.678
66	Zn		1390.773	-0.146098	ppb	4.392	1589.473
68	Zn		1798.845	-0.112823	ppb	5.403	1882.195
95	Mo		305.339	-0.012726	ppb	15.725	340.007
115	In-1	>	1062476.260		ppb	1.930	1040983.126
107	Ag		147.335	-0.004464	ppb	7.719	184.002
111	Cd		36.246	-0.005249	ppb	33.687	45.968
118	Sn		2447.006	-0.101740	ppb	21.891	2927.154
121	Sb		269.337	-0.160656	ppb	13.820	1233.418
135	Ba		98.667	-0.039885	ppb	10.402	169.335
165	Ho		1289740.540		ppb	3.620	1261276.724
159	Tb		1378133.351		ppb	3.230	1341620.348
203	Tl		84.667	-0.010190	ppb	21.434	154.001
207	Pb		470.005	-0.008272	ppb	1.126	620.008
209	Bi	>	709812.044		ppb	3.281	698471.606

QC Out of Limits

ıalyte Mass Out of Limits Message

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EPA METHOD 200.8

SAMPLE DATA

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:33
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-1.icp

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0009S006**

LCS/MB BATCH:	180326LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.000119	1.00	ND	0.00100	
Copper	0.00286	1.00	0.00286	0.00100	
Lead	0.00346	1.00	0.00346	0.00100	

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-1
Autosampler Position: 319
Sample Date/Time: Wednesday, March 28, 2018 00:33:51
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-1 .343
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		42262.467		ppb	4.382	39186.692
9	Be		75.334	0.069439	ppb	0.766	49.667
45	Sc	>	4856513.564		ppb	5.807	4659300.554
10	B		1550.132	13.158749	ppb	2.459	138.001
23	Na		49554.954	1370.916015	ppb	5.376	180.002
25	Mg		468227.207	853.845822	ppb	2.655	723.839
27	Al		4982551.408	831.538166	ppb	5.637	3163.885
39	K		124023.677	912.989942	ppb	5.042	8169.669
43	Ca		25316.264	1693.265425	ppb	6.865	248.575
44	Ca		443964.060	2350.784832	ppb	2.872	23338.493
45	Sc-1	>	4856513.564		ppb	5.807	4659300.554
47	Ti		50977.016	74.228089	ppb	7.200	154.668
49	Ti		42826.322	73.975167	ppb	7.248	158.001
51	V		35294.100	3.359426	ppb	6.280	2704.932
52	Cr		24005.713	1.828180	ppb	5.309	8152.324
55	Mn		443921.845	33.604741	ppb	0.510	948.049
54	Fe		906944.327	1310.083631	ppb	1.556	27831.142
57	Fe		380366.156	1303.230080	ppb	1.573	10971.286
59	Co		8255.080	0.695677	ppb	0.832	305.339
60	Ni		7639.878	3.012477	ppb	3.609	171.335
63	Cu		16332.027	2.810553	ppb	6.076	371.797
65	Cu		7549.527	2.857876	ppb	6.078	173.813
71	Ga	>	1395384.082		ppb	3.676	1341824.633
75	As		7776.090	0.245468	ppb	1.486	7098.606
75	As-1		464.881	0.346823	ppb	20.608	-162.073
78	Se		7480.393	-0.157447	ppb	1.232	7270.325
82	Se		73.691	0.248608	ppb	29.890	15.050
88	Sr		163319.248	7.896660	ppb	4.526	460.678
66	Zn		51225.407	30.310120	ppb	4.059	1589.473
68	Zn		37183.967	30.277389	ppb	3.888	1882.195
95	Mo		994.722	0.196632	ppb	15.505	340.007
115	In-1	>	1056238.645		ppb	3.603	1040983.126
107	Ag		483.346	0.032888	ppb	14.156	184.002
111	Cd		292.080	0.119373	ppb	16.326	45.968
118	Sn		4058.942	0.202660	ppb	24.334	2927.154
121	Sb		2005.557	0.122520	ppb	13.544	1233.418
135	Ba		30324.508	16.317806	ppb	2.171	169.335
165	Ho		1318202.263		ppb	3.475	1261276.724
159	Tb		1409417.101		ppb	4.322	1341620.348
203	Tl		506.014	0.050149	ppb	9.345	154.001
207	Pb		67315.596	3.456319	ppb	5.436	620.008
209	Bi	>	709613.724		ppb	4.846	698471.606

QC Out of Limits

alyte Mass Out of Limits Message

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:36
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-2.icp

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0011S008**

LCS/MB BATCH:	180326LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000938	1.00	ND	0.00100	
Copper	0.00268	1.00	0.00268	0.00100	
Lead	0.00403	1.00	0.00403	0.00100	

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-2
Autosampler Position: 320
Sample Date/Time: Wednesday, March 28, 2018 00:36:18
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-2.344
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		39238.181		ppb	1.753	39186.692
9	Be		75.334	0.071700	ppb	5.365	49.667
45	Sc	>	4805750.561		ppb	5.875	4659300.554
10	B		2816.438	25.222953	ppb	7.720	138.001
23	Na		29349.219	817.663332	ppb	2.169	180.002
25	Mg		622867.844	1147.336182	ppb	5.047	723.839
27	Al		3460992.485	583.481367	ppb	6.070	3163.885
39	K		489663.605	3834.411084	ppb	1.598	8169.669
43	Ca		35569.625	2412.280618	ppb	6.167	248.575
44	Ca		611182.581	3320.493778	ppb	5.754	23338.493
45	Sc-1	>	4805750.561		ppb	5.875	4659300.554
47	Ti		19508.971	28.580816	ppb	6.593	154.668
49	Ti		15966.693	27.732173	ppb	4.288	158.001
51	V		32894.366	3.151928	ppb	2.853	2704.932
52	Cr		20040.733	1.391501	ppb	0.595	8152.324
55	Mn		388350.863	29.748487	ppb	3.428	948.049
54	Fe		560581.776	803.824621	ppb	3.802	27831.142
57	Fe		233661.348	795.449623	ppb	5.845	10971.286
59	Co		6304.191	0.531826	ppb	6.195	305.339
60	Ni		3734.101	1.452464	ppb	3.522	171.335
63	Cu		14681.473	2.661177	ppb	6.764	371.797
65	Cu		6713.369	2.675196	ppb	7.685	173.813
71	Ga	>	1323101.811		ppb	2.157	1341824.633
75	As		8163.668	0.752294	ppb	0.488	7098.606
75	As-1		900.849	0.613196	ppb	8.703	-162.073
78	Se		7271.424	0.242044	ppb	1.128	7270.325
82	Se		14.904	0.000326	ppb	93.430	15.050
88	Sr		218593.944	11.143702	ppb	4.709	460.678
66	Zn		36298.401	22.392189	ppb	4.049	1589.473
68	Zn		26941.216	22.736842	ppb	2.820	1882.195
95	Mo		1420.778	0.332200	ppb	7.755	340.007
115	In-1	>	1043641.568		ppb	0.565	1040983.126
107	Ag		445.344	0.029385	ppb	5.396	184.002
111	Cd		236.049	0.093808	ppb	14.168	45.968
118	Sn		1984.219	-0.181285	ppb	13.180	2927.154
121	Sb		1482.788	0.040740	ppb	6.021	1233.418
135	Ba		23553.816	12.802558	ppb	2.095	169.335
165	Ho		1248578.370		ppb	3.867	1261276.724
159	Tb		1346165.023		ppb	4.180	1341620.348
203	Tl		344.007	0.027909	ppb	7.049	154.001
207	Pb		76541.438	4.031097	ppb	3.372	620.008
209	Bi	>	692776.058		ppb	1.018	698471.606

QC Out of Limits

Analyte Mass	Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:38
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-3.icp

 # 3 **CLIENT SAMPLE NUMBER: CABMP0001S001**

LCS/MB BATCH:	180326LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.00150	1.00	0.00150	0.00100	
Copper	0.0210	1.00	0.0210	0.00100	
Lead	0.0948	1.00	0.0948	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-3
Autosampler Position: 321
Sample Date/Time: Wednesday, March 28, 2018 00:38:45
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-3.345
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		41069.601		ppb	2.582	39186.692
9	Be		141.334	0.269949	ppb	4.023	49.667
45	Sc	>	4768667.773		ppb	5.461	4659300.554
10	B		1472.786	12.655212	ppb	8.038	138.001
23	Na		56023.567	1574.695262	ppb	1.963	180.002
25	Mg		2380782.100	4422.779392	ppb	4.973	723.839
27	Al		42310049.132	7193.228556	ppb	6.133	3163.885
39	K		1134561.887	9037.822176	ppb	2.394	8169.669
43	Ca		87803.864	6026.953270	ppb	5.765	248.575
44	Ca		1513009.103	8487.669712	ppb	4.830	23338.493
45	Sc-1	>	4768667.773		ppb	5.461	4659300.554
47	Ti		254267.845	378.482696	ppb	3.644	154.668
49	Ti		215778.180	381.705301	ppb	0.649	158.001
51	V		189566.367	19.727198	ppb	2.161	2704.932
52	Cr		168397.713	19.271195	ppb	3.167	8152.324
55	Mn		3133420.982	242.588956	ppb	7.177	948.049
54	Fe		6170393.645	9354.590204	ppb	6.055	27831.142
57	Fe		2600654.067	9331.483427	ppb	6.865	10971.286
59	Co		56623.489	5.034140	ppb	5.571	305.339
60	Ni		24900.797	10.174889	ppb	5.742	171.335
63	Cu		112617.522	20.476739	ppb	4.255	371.797
65	Cu		52572.026	21.030165	ppb	3.220	173.813
71	Ga	>	1348797.542		ppb	0.704	1341824.633
75	As		9417.462	1.444534	ppb	2.826	7098.606
75	As-1		2291.258	1.390559	ppb	5.404	-162.073
78	Se		7296.941	-0.022352	ppb	3.366	7270.325
82	Se		74.223	0.259864	ppb	48.777	15.050
88	Sr		797713.171	39.926183	ppb	5.552	460.678
66	Zn		507097.239	319.763610	ppb	1.922	1589.473
68	Zn		356252.367	315.084861	ppb	1.360	1882.195
95	Mo		1287.425	0.290507	ppb	3.334	340.007
115	In-1	>	1046086.198		ppb	2.269	1040983.126
107	Ag		6747.837	0.737930	ppb	1.294	184.002
111	Cd		3086.529	1.499699	ppb	2.659	45.968
118	Sn		1898.869	-0.198698	ppb	17.953	2927.154
121	Sb		2861.118	0.267081	ppb	6.042	1233.418
135	Ba		321429.774	175.429448	ppb	3.355	169.335
165	Ho		1294223.900		ppb	5.895	1261276.724
159	Tb		1379906.100		ppb	5.017	1341620.348
203	Tl		966.051	0.119130	ppb	5.355	154.001
207	Pb		1781000.522	94.781258	ppb	2.235	620.008
209	Bi	>	690964.842		ppb	0.259	698471.606

QC Out of Limits

Analyte Mass	Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:41
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-4.icp

 # 4 **CLIENT SAMPLE NUMBER: CABMP0002S001**

LCS/MB BATCH:	180326LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.00180	1.00	0.00180	0.00100	
Copper	0.0166	1.00	0.0166	0.00100	
Lead	0.0687	1.00	0.0687	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1798-4

Autosampler Position: 322

Sample Date/Time: Wednesday, March 28, 2018 00:41:12

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1798-4.346

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		41634.523		ppb	3.293	39186.692
9	Be		164.668	0.338140	ppb	5.643	49.667
45	Sc	>	4786650.411		ppb	3.249	4659300.554
10	B		1426.112	12.193274	ppb	8.750	138.001
23	Na		45534.845	1273.948467	ppb	4.296	180.002
25	Mg		2516797.572	4658.648433	ppb	5.342	723.839
27	Al		51945992.421	8804.863966	ppb	4.615	3163.885
39	K		564125.956	4442.649520	ppb	5.615	8169.669
43	Ca		128957.751	8828.873869	ppb	4.022	248.575
44	Ca		1681673.919	9408.686879	ppb	5.619	23338.493
45	Sc-1	>	4786650.411		ppb	3.249	4659300.554
47	Ti		247869.619	367.253974	ppb	4.247	154.668
49	Ti		207158.232	364.487238	ppb	1.853	158.001
51	V		195690.013	20.259681	ppb	2.393	2704.932
52	Cr		141510.577	15.926129	ppb	3.786	8152.324
55	Mn		3273183.760	251.545406	ppb	5.093	948.049
54	Fe		6676342.182	10051.834332	ppb	6.214	27831.142
57	Fe		2826393.816	10069.307233	ppb	3.260	10971.286
59	Co		58640.991	5.177366	ppb	6.118	305.339
60	Ni		24421.444	9.910628	ppb	2.965	171.335
63	Cu		88087.160	15.972919	ppb	1.519	371.797
65	Cu		41525.852	16.562539	ppb	1.975	173.813
71	Ga	>	1352930.922		ppb	3.368	1341824.633
75	As		8834.748	1.056924	ppb	4.159	7098.606
75	As-1		1623.826	1.008440	ppb	8.124	-162.073
78	Se		7314.520	-0.040999	ppb	4.873	7270.325
82	Se		50.024	0.149003	ppb	75.392	15.050
88	Sr		1214384.697	60.588913	ppb	3.548	460.678
66	Zn		1290262.583	813.197585	ppb	1.000	1589.473
68	Zn		901718.082	797.927267	ppb	2.295	1882.195
95	Mo		742.697	0.127650	ppb	6.566	340.007
115	In-1	>	1026516.941		ppb	3.103	1040983.126
107	Ag		3166.552	0.342261	ppb	2.246	184.002
111	Cd		3636.206	1.802693	ppb	5.769	45.968
118	Sn		1450.785	-0.278682	ppb	17.120	2927.154
121	Sb		1906.201	0.115519	ppb	9.415	1233.418
135	Ba		313428.003	174.284200	ppb	4.992	169.335
165	Ho		1264237.812		ppb	4.380	1261276.724
159	Tb		1338778.973		ppb	4.790	1341620.348
203	Tl		890.044	0.110202	ppb	6.047	154.001
207	Pb		1270523.190	68.749743	ppb	0.641	620.008
209	Bi	>	679620.020		ppb	2.062	698471.606

QC Out of Limits

Analyte Mass	Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:43
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-5.icp

 # 5 **CLIENT SAMPLE NUMBER: CABMP0003S001**

LCS/MB BATCH:	180326LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.000690	1.00	0.000690	0.00100	J
Copper	0.0121	1.00	0.0121	0.00100	
Lead	0.0620	1.00	0.0620	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1798-5

Autosampler Position: 323

Sample Date/Time: Wednesday, March 28, 2018 00:43:39

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1798-5.347

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	40248.329		ppb	4.048	39186.692
9	Be	|	92.334	0.125383	ppb	23.761	49.667
45	Sc	| >	4750349.881		ppb	1.673	4659300.554
10	B	⌊	1081.398	8.988906	ppb	3.357	138.001
23	Na	⌈	26275.096	738.008128	ppb	3.806	180.002
25	Mg	|	947904.703	1767.061284	ppb	2.982	723.839
27	Al	|	16696678.012	2850.636886	ppb	1.265	3163.885
39	K	|	215511.337	1667.839733	ppb	4.111	8169.669
43	Ca	|	50232.691	3454.998077	ppb	0.719	248.575
44	Ca	|	875631.818	4872.478836	ppb	2.512	23338.493
45	Sc-1	| >	4750349.881		ppb	1.673	4659300.554
47	Ti	|	100298.563	149.624369	ppb	2.918	154.668
49	Ti	|	83587.336	147.924434	ppb	5.691	158.001
51	V	|	114673.263	11.835024	ppb	5.787	2704.932
52	Cr	|	117344.651	13.132412	ppb	5.509	8152.324
55	Mn	|	1461457.588	113.069982	ppb	4.262	948.049
54	Fe	|	2496065.531	3757.368817	ppb	5.029	27831.142
57	Fe	|	1035025.873	3687.838532	ppb	3.650	10971.286
59	Co	|	27835.888	2.461062	ppb	1.226	305.339
60	Ni	⌊	12093.376	4.905895	ppb	2.876	171.335
63	Cu	⌈	62604.520	11.780216	ppb	2.607	371.797
65	Cu	|	29264.970	12.109917	ppb	3.034	173.813
71	Ga	| >	1301652.854		ppb	3.560	1341824.633
75	As	|	7776.945	0.585647	ppb	3.691	7098.606
75	As-1	|	623.429	0.457476	ppb	28.577	-162.073
78	Se	|	7236.851	0.443115	ppb	2.347	7270.325
82	Se	|	42.211	0.123898	ppb	47.648	15.050
88	Sr	|	390703.023	20.267819	ppb	1.086	460.678
66	Zn	|	441484.938	288.447755	ppb	2.763	1589.473
68	Zn	⌊	306312.820	280.562709	ppb	3.410	1882.195
95	Mo	⌈	678.025	0.099766	ppb	5.015	340.007
115	In-1	| >	1064375.943		ppb	5.062	1040983.126
107	Ag	|	878.042	0.076338	ppb	5.812	184.002
111	Cd	|	1472.123	0.690095	ppb	6.158	45.968
118	Sn	|	1112.735	-0.351787	ppb	12.590	2927.154
121	Sb	|	2309.627	0.170520	ppb	1.083	1233.418
135	Ba	|	106390.315	57.092290	ppb	1.249	169.335
165	Ho	|	1259702.273		ppb	1.866	1261276.724
159	Tb	⌊	1352098.576		ppb	1.808	1341620.348
203	Tl	⌈	399.342	0.037569	ppb	2.521	154.001
207	Pb	|	1138593.404	61.978584	ppb	2.488	620.008
209	Bi	⌊ >	675678.606		ppb	3.577	698471.606

QC Out of Limits

Analyte Mass Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:46
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-6.icp

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0003S022**

LCS/MB BATCH:	180326LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000658	1.00	ND	0.00100	
Copper	0.00530	1.00	0.00530	0.00100	
Lead	0.00243	1.00	0.00243	0.00100	

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-6
Autosampler Position: 324
Sample Date/Time: Wednesday, March 28, 2018 00:46:06
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-6.348
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		41448.060		ppb	4.402	39186.692
9	Be		47.333	-0.008262	ppb	12.909	49.667
45	Sc	>	4724991.661		ppb	5.754	4659300.554
10	B		888.710	7.181826	ppb	8.153	138.001
23	Na		23372.967	662.311849	ppb	7.151	180.002
25	Mg		311136.233	582.841063	ppb	2.106	723.839
27	Al		3108954.446	533.387827	ppb	4.323	3163.885
39	K		89409.254	658.812033	ppb	3.727	8169.669
43	Ca		33823.859	2333.521387	ppb	4.913	248.575
44	Ca		587034.303	3241.293213	ppb	4.670	23338.493
45	Sc-1	>	4724991.661		ppb	5.754	4659300.554
47	Ti		19805.606	29.513189	ppb	6.190	154.668
49	Ti		16646.591	29.403199	ppb	5.465	158.001
51	V		52693.951	5.313863	ppb	4.940	2704.932
52	Cr		18792.102	1.276343	ppb	5.050	8152.324
55	Mn		331958.335	25.829220	ppb	2.741	948.049
54	Fe		495908.384	717.320407	ppb	1.637	27831.142
57	Fe		206858.012	711.000791	ppb	2.598	10971.286
59	Co		5677.774	0.484133	ppb	3.621	305.339
60	Ni		6458.294	2.607231	ppb	1.903	171.335
63	Cu		29428.134	5.180146	ppb	5.588	371.797
65	Cu		13697.000	5.301897	ppb	6.591	173.813
71	Ga	>	1379752.095		ppb	5.127	1341824.633
75	As		7676.699	0.238691	ppb	1.977	7098.606
75	As-1		387.746	0.307345	ppb	8.802	-162.073
78	Se		7326.387	-0.313528	ppb	1.623	7270.325
82	Se		25.550	0.045177	ppb	57.616	15.050
88	Sr		153488.303	7.512761	ppb	4.111	460.678
66	Zn		130581.825	79.728594	ppb	5.726	1589.473
68	Zn		91914.348	78.228568	ppb	4.784	1882.195
95	Mo		1150.073	0.247746	ppb	6.376	340.007
115	In-1	>	1046522.604		ppb	3.347	1040983.126
107	Ag		202.669	0.001933	ppb	15.984	184.002
111	Cd		179.384	0.065812	ppb	8.063	45.968
118	Sn		1183.413	-0.335229	ppb	22.762	2927.154
121	Sb		3128.539	0.311158	ppb	4.000	1233.418
135	Ba		19159.506	10.374917	ppb	1.726	169.335
165	Ho		1292134.493		ppb	3.044	1261276.724
159	Tb		1380302.141		ppb	1.797	1341620.348
203	Tl		134.001	-0.003103	ppb	2.585	154.001
207	Pb		47332.213	2.431824	ppb	4.636	620.008
209	Bi	>	706806.770		ppb	5.618	698471.606

QC Out of Limits

Analyte Mass Out of Limits Message

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:48
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-7.icp

 # 7 **CLIENT SAMPLE NUMBER: FBQW1852Q001**

LCS/MB BATCH:	180326LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.000	1.00	ND	0.00100	
Copper	0.000758	1.00	0.000758	0.00100	J
Lead	0.0000147	1.00	ND	0.00100	

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-7
Autosampler Position: 325
Sample Date/Time: Wednesday, March 28, 2018 00:48:33
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-7.349
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		40397.233		ppb	1.189	39186.692
9	Be		42.333	-0.027025	ppb	24.813	49.667
45	Sc	>	4852853.711		ppb	6.980	4659300.554
10	B		567.351	3.951248	ppb	11.156	138.001
23	Na		8275.195	224.865555	ppb	2.918	180.002
25	Mg		7545.042	12.404498	ppb	6.181	723.839
27	Al		24581.310	3.556357	ppb	7.411	3163.885
39	K		8770.897	2.304500	ppb	1.870	8169.669
43	Ca		1135.310	59.089007	ppb	12.520	248.575
44	Ca		37235.183	72.949191	ppb	2.658	23338.493
45	Sc-1	>	4852853.711		ppb	6.980	4659300.554
47	Ti		264.671	0.150702	ppb	13.312	154.668
49	Ti		229.336	0.114888	ppb	12.588	158.001
51	V		3170.402	0.038139	ppb	3.904	2704.932
52	Cr		9950.778	0.174868	ppb	2.242	8152.324
55	Mn		3134.541	0.163800	ppb	2.780	948.049
54	Fe		36900.348	12.011779	ppb	1.145	27831.142
57	Fe		12389.775	3.589197	ppb	2.710	10971.286
59	Co		219.336	-0.008548	ppb	8.857	305.339
60	Ni		380.675	0.082915	ppb	12.657	171.335
63	Cu		4285.230	0.717452	ppb	5.003	371.797
65	Cu		2052.769	0.758198	ppb	3.547	173.813
71	Ga	>	1342142.615		ppb	4.415	1341824.633
75	As		7247.530	0.099082	ppb	1.474	7098.606
75	As-1		-162.594	-0.000721	ppb	81.861	-162.073
78	Se		7426.663	0.378060	ppb	0.336	7270.325
82	Se		17.743	0.012838	ppb	106.480	15.050
88	Sr		2272.951	0.091421	ppb	3.332	460.678
66	Zn		6243.480	2.958004	ppb	5.028	1589.473
68	Zn		5062.078	2.841197	ppb	4.731	1882.195
95	Mo		196.002	-0.045726	ppb	17.437	340.007
115	In-1	>	1064395.536		ppb	0.357	1040983.126
107	Ag		94.000	-0.010401	ppb	13.952	184.002
111	Cd		36.126	-0.005278	ppb	29.042	45.968
118	Sn		1202.748	-0.334941	ppb	16.326	2927.154
121	Sb		352.007	-0.147291	ppb	11.932	1233.418
135	Ba		638.689	0.249889	ppb	2.976	169.335
165	Ho		1246235.962		ppb	4.538	1261276.724
159	Tb		1344166.999		ppb	4.424	1341620.348
203	Tl		68.667	-0.012424	ppb	16.562	154.001
207	Pb		902.684	0.014675	ppb	7.528	620.008
209	Bi	>	701189.302		ppb	3.326	698471.606

QC Out of Limits

Analyte Mass Out of Limits Message

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EPA METHOD 200.8

QUALITY CONTROL

Method Blank
LCS/LCSD
MS/MSD
PDS/PDSD

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METHOD BLANK ASSOCIATION SUMMARY
FOR METHOD: EPA 200.8

MB SAMPLE ID:	**099-16-094-2273**	ANALYZED BY:	598
MB BATCH ID:	180326LA1	D/T ANALYZED:	2018-03-27 23:07
INSTRUMENT:	ICP/MS 03	REVIEWED BY:	
EXTRACTION:	N/A	D/T REVIEWED:	
D/T EXTRACTED:	2018-03-26 00:00	MATRIX:	Water

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180326-BA-1__308.icp

CLIENT WORK ORDER: 18-03-1798

S#	RUN TYPE	CLIENT SAMPLE ID	D/T ANALYZED	DATA FILE
1		A2BMP0009S006	2018-03-28 00:33	W:\ICPMS-DATA\2018\180327B1\18-03-1798-1.icp
2		A2BMP0011S008	2018-03-28 00:36	W:\ICPMS-DATA\2018\180327B1\18-03-1798-2.icp
3		CABMP0001S001	2018-03-28 00:38	W:\ICPMS-DATA\2018\180327B1\18-03-1798-3.icp
4		CABMP0002S001	2018-03-28 00:41	W:\ICPMS-DATA\2018\180327B1\18-03-1798-4.icp
5		CABMP0003S001	2018-03-28 00:43	W:\ICPMS-DATA\2018\180327B1\18-03-1798-5.icp
6		EVBMP0003S022	2018-03-28 00:46	W:\ICPMS-DATA\2018\180327B1\18-03-1798-6.icp
7		FBQW1852Q001	2018-03-28 00:48	W:\ICPMS-DATA\2018\180327B1\18-03-1798-7.icp

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**099-16-094**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 23:07
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180326-BA-1__308.icp

 # MB **CLIENT SAMPLE NUMBER: Method Blank**

LCS/MB BATCH:	180326LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Antimony	0.000	1.00	ND	0.00100	
Arsenic	0.0000223	1.00	ND	0.00100	
Barium	0.000	1.00	ND	0.00100	
Beryllium	0.0000166	1.00	ND	0.00100	
Cadmium	0.00000711	1.00	ND	0.00100	
Chromium	0.0000315	1.00	ND	0.00100	
Cobalt	0.000000315	1.00	ND	0.00100	
Copper	0.000000962	1.00	ND	0.00100	
Lead	0.000	1.00	ND	0.00100	
Molybdenum	0.000	1.00	ND	0.00100	
Nickel	0.000	1.00	ND	0.00100	
Selenium	0.0000494	1.00	ND	0.00100	
Silver	0.000	1.00	ND	0.00100	
Thallium	0.000	1.00	ND	0.00100	
Vanadium	0.000	1.00	ND	0.00100	
Zinc	0.000412	1.00	ND	0.00500	
Aluminum	0.000246	1.00	ND	0.0500	
Calcium	0.000	1.00	ND	0.100	
Iron	0.00122	1.00	ND	0.0500	
Magnesium	0.000320	1.00	ND	0.100	
Manganese	0.000000530	1.00	ND	0.00100	
Potassium	0.00280	1.00	ND	0.0500	
Sodium	0.000940	1.00	ND	0.100	
Strontium	0.0000111	1.00	ND	0.00100	
Tin	0.000	1.00	ND	0.00100	
Titanium	0.0000295	1.00	ND	0.00100	
Boron	0.000	1.00	ND	0.0500	

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LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

LCS SAMPLE ID: **099-16-094-2273**
LCS/MB BATCH ID: 180326LA1
INSTRUMENT: ICP/MS 03

EXTRACTION: N/A
D/T EXTRACTED: 2018-03-26 00:00

ANALYZED BY: 598
D/T ANALYZED: 2018-03-27 23:12
REVIEWED BY:
D/T REVIEWED:

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180326-LA-1__310.icp

COMPOUND	CONC	CONC REC	%REC	%REC CL	ME CL	STATUS	QUALIFIERS
Antimony	0.1000	0.1003	100	80-120	73-127	PASS	
Arsenic	0.1000	0.1007	101	80-120	73-127	PASS	
Barium	0.1000	0.1019	102	80-120	73-127	PASS	
Beryllium	0.1000	0.1054	105	80-120	73-127	PASS	
Cadmium	0.1000	0.1032	103	80-120	73-127	PASS	
Chromium	0.1000	0.1048	105	80-120	73-127	PASS	
Cobalt	0.1000	0.1011	101	80-120	73-127	PASS	
Copper	0.1000	0.1027	103	80-120	73-127	PASS	
Lead	0.1000	0.1048	105	80-120	73-127	PASS	
Molybdenum	0.1000	0.1009	101	80-120	73-127	PASS	
Nickel	0.1000	0.1024	102	80-120	73-127	PASS	
Selenium	0.1000	0.1014	101	80-120	73-127	PASS	
Silver	0.05000	0.05208	104	80-120	73-127	PASS	
Thallium	0.1000	0.09721	97	80-120	73-127	PASS	
Vanadium	0.1000	0.1029	103	80-120	73-127	PASS	
Zinc	0.1000	0.1050	105	80-120	73-127	PASS	
Aluminum	0.1000	0.1045	104	80-120	73-127	PASS	
Calcium	5.100	5.313	104	80-120	73-127	PASS	
Iron	5.100	5.193	102	80-120	73-127	PASS	
Magnesium	5.100	4.993	98	80-120	73-127	PASS	
Manganese	0.1000	0.1039	104	80-120	73-127	PASS	
Potassium	1.000	1.053	105	80-120	73-127	PASS	
Sodium	1.000	1.080	108	80-120	73-127	PASS	
Strontium	0.1000	0.1007	101	80-120	73-127	PASS	
Tin	0.1000	0.09768	98	80-120	73-127	PASS	
Titanium	0.1000	0.1031	103	80-120	73-127	PASS	
Boron	0.1000	0.1034	103	80-120	73-127	PASS	

Compounds listed in bold are required to be reported.

LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

LCS SAMPLE ID:	**099-16-094-2273**	EXTRACTION:	N/A	ANALYZED BY:	598
LCS/MB BATCH ID:	180326LA1	D/T EXTRACTED:	2018-03-26 00:00	D/T ANALYZED:	2018-03-27 23:12
INSTRUMENT:	ICP/MS 03			REVIEWED BY:	
				D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180326-LA-1__310.icp

COMPOUND	CONC	CONC REC	%REC	%REC CL	ME CL	STATUS	QUALIFIERS

Total number of LCS compounds: 27
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Compounds listed in bold are required to be reported.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

SPIKED SAMPLE ID: **18-03-1798-1**
MS/MSD BATCH: 180326SA1
INSTRUMENTS:
SAMPLE: ICP/MS 03
MS: ICP/MS 03
MSD: ICP/MS 03

EXTRACTION: N/A
D/T EXTRACTED:
SAMPLE: 2018-03-26 00:00
MS: 2018-03-26 00:00
MSD: 2018-03-26 00:00

ANALYZED BY: 598
D/T ANALYZED:
SAMPLE: 2018-03-28 00:33
MS: 2018-03-28 00:16
MSD: 2018-03-28 00:19
REVIEWED BY:
D/T REVIEWED:

COMMENT:

COMPOUND NAME	SAMPLE	INITIAL	FINAL	MS CONC	% MS.REC	MSD CONC	% MSD.REC	% REC CL	RPD	RPD CL	STATUS	QUALIFIERS
Antimony	**ND**	**0.1000**	**0.1000**	**0.07413**	**74**	**0.07754**	**78**	**80-120**	**4**	**0-20**	**FAIL**	**3G**
Arsenic	ND	0.1000	0.1000	0.1016	102	0.1006	101	80-120	1	0-20	PASS	
Barium	0.01632	0.1000	0.1000	0.1200	104	0.1210	105	80-120	1	0-10	PASS	
Beryllium	ND	0.1000	0.1000	0.1037	104	0.1055	105	80-120	2	0-20	PASS	
Cadmium	ND	0.1000	0.1000	0.1051	105	0.1062	106	80-120	1	0-20	PASS	
Chromium	0.00182	0.1000	0.1000	0.1045	103	0.1041	102	80-120	0	0-20	PASS	
Cobalt	ND	0.1000	0.1000	0.1026	103	0.1002	100	80-120	2	0-20	PASS	
Copper	0.00285	0.1000	0.1000	0.1059	103	0.1030	100	80-120	3	0-20	PASS	
Lead	0.00345	0.1000	0.1000	0.1077	104	0.1091	106	80-120	1	0-20	PASS	
Molybdenum	ND	0.1000	0.1000	0.1002	100	0.1020	102	80-120	2	0-20	PASS	
Nickel	0.00301	0.1000	0.1000	0.1060	103	0.1042	101	80-120	2	0-20	PASS	
Selenium	ND	0.1000	0.1000	0.1001	100	0.1000	100	80-120	0	0-20	PASS	
Silver	ND	0.05000	0.05000	0.05193	104	0.05249	105	80-120	1	0-20	PASS	
Thallium	ND	0.1000	0.1000	0.09680	97	0.09715	97	80-120	0	0-20	PASS	
Vanadium	0.00335	0.1000	0.1000	0.1041	101	0.1056	102	80-120	1	0-20	PASS	
Zinc	0.03031	0.1000	0.1000	0.1272	97	0.1261	96	80-120	1	0-20	PASS	
Aluminum	0.8315	0.1000	0.1000	0.8029	4x	0.8074	4x	80-120	4x	0-20	PASS	Q
Calcium	1.693	5.100	5.100	7.026	105	7.066	105	80-120	1	0-20	PASS	
Iron	1.310	5.100	5.100	6.350	99	6.283	98	80-120	1	0-20	PASS	
Magnesium	0.8538	5.100	5.100	6.019	101	6.078	102	80-120	1	0-20	PASS	
Manganese	0.03360	0.1000	0.1000	0.1350	101	0.1349	101	80-120	0	0-20	PASS	
Potassium	0.9130	1.000	1.000	1.880	97	1.933	102	80-120	3	0-20	PASS	
Sodium	1.371	1.000	1.000	2.368	100	2.406	103	80-120	2	0-20	PASS	
Strontium	0.00789	0.1000	0.1000	0.1117	104	0.1108	103	80-120	1	0-20	PASS	
Tin	**ND**	**0.1000**	**0.1000**	**0.07046**	**70**	**0.07395**	**74**	**80-120**	**5**	**0-20**	**FAIL**	**3G**
Titanium	**0.07398**	**0.1000**	**0.1000**	**0.1489**	**75**	**0.1494**	**75**	**80-120**	**0**	**0-20**	**FAIL**	**3G**
Boron	ND	0.1000	0.1000	0.1110	111	0.1135	113	80-120	2	0-20	PASS	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

Data Files:

TYPE	DATA FILE	DATA FILE PATH
MS	18-03-1798-1 MS.icp	W:\ICPMS-DATA\2018\180327B1\
MSD	18-03-1798-1 MSD.icp	W:\ICPMS-DATA\2018\180327B1\

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 180326-ba-1

Autosampler Position: 301

Sample Date/Time: Tuesday, March 27, 2018 23:07:34

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\180326-ba-1.308

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		41632.525		ppb	3.560	40188.711
9	Be		49.667	0.016560	ppb	11.449	44.667
45	Sc	>	4684034.829		ppb	3.455	4734242.801
10	B		123.334	-0.167111	ppb	15.916	141.334
23	Na		205.717	0.940142	ppb	16.375	176.192
25	Mg		479.061	0.319890	ppb	25.822	312.386
27	Al		3581.378	0.245681	ppb	11.450	2188.264
39	K		8338.490	2.802959	ppb	1.339	8094.936
43	Ca		212.383	-1.306721	ppb	6.214	233.336
44	Ca		22688.279	-3.917409	ppb	1.057	23646.906
45	Sc-1	>	4684034.829		ppb	3.455	4734242.801
47	Ti		150.668	-0.018308	ppb	6.273	164.668
49	Ti		174.668	0.029478	ppb	16.881	160.668
51	V		2385.771	-0.011637	ppb	7.066	2518.782
52	Cr		8379.195	0.031526	ppb	2.740	8213.711
55	Mn		842.706	0.000530	ppb	7.905	844.039
54	Fe		28163.128	1.221161	ppb	2.331	27690.319
57	Fe		10427.313	-0.828682	ppb	2.787	10771.047
59	Co		181.335	0.000315	ppb	0.637	180.002
60	Ni		90.667	-0.014211	ppb	3.370	125.334
63	Cu		291.851	-0.000349	ppb	9.258	302.985
65	Cu		160.502	0.000962	ppb	18.777	163.091
71	Ga	>	1325391.881		ppb	1.228	1366388.245
75	As		6961.535	0.074531	ppb	1.627	7058.145
75	As-1		-234.970	0.022328	ppb	53.309	-281.356
78	Se		7197.712	0.247561	ppb	0.939	7309.951
82	Se		11.774	0.049432	ppb	289.829	0.945
88	Sr		415.343	0.011116	ppb	7.465	202.002
66	Zn		1892.864	0.411549	ppb	4.378	1314.762
68	Zn		2196.932	0.458851	ppb	1.682	1754.169
95	Mo		202.002	-0.042893	ppb	21.715	350.007
115	In-1	>	1045436.674		ppb	0.621	1057220.148
107	Ag		99.334	-0.006897	ppb	27.484	164.001
111	Cd		45.227	0.007108	ppb	47.651	30.901
118	Sn		886.044	-0.381986	ppb	18.390	2895.813
121	Sb		172.002	-0.139984	ppb	20.572	1047.395
135	Ba		95.334	-0.047995	ppb	15.746	186.002
165	Ho		1251140.701		ppb	1.679	1276471.289
159	Tb		1352774.928		ppb	1.334	1363627.612
203	Tl		73.334	-0.002123	ppb	25.921	90.000
207	Pb		452.004	-0.003581	ppb	3.832	534.006
209	Bi	>	692451.436		ppb	1.541	711392.616

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 180326-la-1

Autosampler Position: 303

Sample Date/Time: Tuesday, March 27, 2018 23:12:29

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\180326-la-1.310

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		41703.810		ppb	2.496	40188.711
9	Be		34970.494	**105.416471**	ppb	2.538	44.667
45	Sc	>	4709497.351		ppb	2.150	4734242.801
10	B		10562.137	**103.411515**	ppb	3.469	141.334
23	Na		36741.731	**1080.365262**	ppb	1.709	176.192
25	Mg		2659318.816	**4993.316531**	ppb	2.052	312.386
27	Al		608388.391	**104.494702**	ppb	2.212	2188.264
39	K		135904.375	**1052.685085**	ppb	0.964	8094.936
43	Ca		74112.430	**5313.047993**	ppb	2.578	233.336
44	Ca		1228637.286	**6769.040519**	ppb	3.873	23646.906
45	Sc-1	>	4709497.351		ppb	2.150	4734242.801
47	Ti		67121.598	**100.423746**	ppb	1.762	164.668
49	Ti		57936.179	**103.131265**	ppb	3.534	160.668
51	V		962102.204	**102.907378**	ppb	3.386	2518.782
52	Cr		864498.049	**104.772901**	ppb	1.729	8213.711
55	Mn		1331760.406	**103.907543**	ppb	1.277	844.039
54	Fe		3371942.112	**5192.536319**	ppb	0.749	27690.319
57	Fe		1419233.075	**5263.154905**	ppb	1.473	10771.047
59	Co		1100558.921	**101.142346**	ppb	2.443	180.002
60	Ni		241552.464	**102.431665**	ppb	1.916	125.334
63	Cu		534200.348	**100.765761**	ppb	0.634	302.985
65	Cu		247319.634	**102.691219**	ppb	1.491	163.091
71	Ga	>	1345931.906		ppb	1.970	1366388.245
75	As		165997.903	**100.267580**	ppb	1.102	7058.145
75	As-1		177692.286	**100.748813**	ppb	1.497	-281.356
78	Se		51547.731	**99.926262**	ppb	2.244	7309.951
82	Se		23187.494	**101.382726**	ppb	3.029	0.945
88	Sr		2020010.567	**100.673775**	ppb	1.738	202.002
66	Zn		161464.059	**105.030484**	ppb	2.923	1314.762
68	Zn		116683.569	**104.742298**	ppb	1.933	1754.169
95	Mo		339036.698	**100.920195**	ppb	1.638	350.007
115	In-1	>	1045630.334		ppb	1.009	1057220.148
107	Ag		474006.785	**52.076868**	ppb	2.059	164.001
111	Cd		211800.979	**103.195987**	ppb	1.918	30.901
118	Sn		508458.643	**97.678153**	ppb	1.371	2895.813
121	Sb		619923.849	**100.294797**	ppb	1.006	1047.395
135	Ba		188232.172	**101.871497**	ppb	0.808	186.002
165	Ho		1270491.053		ppb	0.740	1276471.289
159	Tb		1361129.969		ppb	1.194	1363627.612
203	Tl		660753.703	**97.211718**	ppb	0.838	90.000
207	Pb		1981369.226	**104.803505**	ppb	1.961	534.006
209	Bi	>	692968.083		ppb	1.557	711392.616

QC Out of Limits

alyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-1 ms
Autosampler Position: 315
Sample Date/Time: Wednesday, March 28, 2018 00:16:38
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-1 ms.336
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		40348.111		ppb	4.186	39186.692
9	Be		34718.529	103.738956	ppb	2.454	49.667
45	Sc	>	4746066.083		ppb	0.856	4659300.554
10	B		11758.291	111.009260	ppb	7.066	138.001
23	Na		83844.891	2367.574258	ppb	0.830	180.002
25	Mg		3225926.705	6019.328843	ppb	5.767	723.839
27	Al		4703203.547	802.881402	ppb	6.417	3163.885
39	K		241761.368	1880.064498	ppb	1.020	8169.669
43	Ca		101845.438	7026.410974	ppb	5.135	248.575
44	Ca		1696537.935	9575.394196	ppb	4.754	23338.493
45	Sc-1	>	4746066.083		ppb	0.856	4659300.554
47	Ti		99990.580	149.282065	ppb	3.150	154.668
49	Ti		84048.517	148.898127	ppb	4.166	158.001
51	V		985677.052	104.056814	ppb	3.038	2704.932
52	Cr		874911.588	104.504092	ppb	2.364	8152.324
55	Mn		1743660.172	135.022137	ppb	2.433	948.049
54	Fe		4194232.282	6349.796013	ppb	2.189	27831.142
57	Fe		1767855.257	6333.564023	ppb	2.574	10971.286
59	Co		1147056.718	102.618255	ppb	2.772	305.339
60	Ni		257457.190	105.961355	ppb	3.250	171.335
63	Cu		565938.235	105.183933	ppb	1.020	371.797
65	Cu		258992.981	105.901093	ppb	1.096	173.813
71	Ga	>	1323284.046		ppb	0.862	1341824.633
75	As		164712.039	101.709390	ppb	2.272	7098.606
75	As-1		175763.839	101.605184	ppb	3.235	-162.073
78	Se		50036.609	99.911709	ppb	3.180	7270.325
82	Se		22398.232	100.148521	ppb	6.361	15.050
88	Sr		2187930.609	111.665373	ppb	5.219	460.678
66	Zn		198765.482	127.164554	ppb	0.628	1589.473
68	Zn		141510.403	126.579288	ppb	1.628	1882.195
95	Mo		327830.367	100.205739	ppb	5.016	340.007
115	In-1	>	1049692.174		ppb	0.854	1040983.126
107	Ag		463666.145	51.933621	ppb	2.851	184.002
111	Cd		213900.167	105.056628	ppb	1.613	45.968
118	Sn		374300.135	70.461108	ppb	3.534	2927.154
121	Sb		452439.061	74.128402	ppb	2.899	1233.418
135	Ba		220579.049	119.963591	ppb	1.575	169.335
165	Ho		1293659.942		ppb	2.894	1261276.724
159	Tb		1390392.728		ppb	3.019	1341620.348
203	Tl		674137.646	96.802063	ppb	2.485	154.001
207	Pb		2062547.063	107.716040	ppb	1.538	620.008
209	Bi	>	704620.365		ppb	3.223	698471.606

QC Out of Limits

alyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-1 msd
Autosampler Position: 316
Sample Date/Time: Wednesday, March 28, 2018 00:19:05
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-1 msd.337
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		40202.378		ppb	1.572	39186.692
9	Be		35214.759	105.497493	ppb	2.110	49.667
45	Sc	>	4734136.638		ppb	1.557	4659300.554
10	B		11979.228	113.492724	ppb	3.709	138.001
23	Na		84977.229	2405.900901	ppb	0.601	180.002
25	Mg		3247764.701	6077.990196	ppb	2.664	723.839
27	Al		4715660.865	807.369105	ppb	3.409	3163.885
39	K		247671.209	1932.840720	ppb	0.762	8169.669
43	Ca		102128.671	7066.293865	ppb	1.752	248.575
44	Ca		1677977.245	9494.246167	ppb	2.528	23338.493
45	Sc-1	>	4734136.638		ppb	1.557	4659300.554
47	Ti		101291.906	151.634326	ppb	1.299	154.668
49	Ti		84096.575	149.390910	ppb	1.526	158.001
51	V		997547.456	105.595161	ppb	1.404	2704.932
52	Cr		869195.592	104.091790	ppb	3.037	8152.324
55	Mn		1737312.723	134.893167	ppb	2.354	948.049
54	Fe		4139703.938	6283.179699	ppb	3.439	27831.142
57	Fe		1716637.566	6165.624304	ppb	3.247	10971.286
59	Co		1116760.122	100.164693	ppb	3.155	305.339
60	Ni		252508.577	104.187854	ppb	4.106	171.335
63	Cu		551733.908	100.833335	ppb	2.457	371.797
65	Cu		256112.085	102.978392	ppb	1.426	173.813
71	Ga	>	1345879.625		ppb	1.464	1341824.633
75	As		165112.796	100.158162	ppb	2.410	7098.606
75	As-1		177112.921	100.638521	ppb	2.581	-162.073
78	Se		50091.955	98.058519	ppb	1.917	7270.325
82	Se		22765.105	100.039266	ppb	2.488	15.050
88	Sr		2208505.924	110.789101	ppb	2.701	460.678
66	Zn		200437.546	126.081867	ppb	0.155	1589.473
68	Zn		145115.297	127.648177	ppb	1.831	1882.195
95	Mo		330624.591	102.049263	ppb	1.707	340.007
115	In-1	>	1039312.677		ppb	0.933	1040983.126
107	Ag		464075.073	52.489698	ppb	0.380	184.002
111	Cd		214084.352	106.180861	ppb	1.750	45.968
118	Sn		388830.520	73.951523	ppb	2.217	2927.154
121	Sb		468503.300	77.538963	ppb	1.762	1233.418
135	Ba		220258.108	120.980437	ppb	2.564	169.335
165	Ho		1270112.603		ppb	3.066	1261276.724
159	Tb		1358925.613		ppb	2.080	1341620.348
203	Tl		662204.428	97.148628	ppb	2.403	154.001
207	Pb		2045388.747	109.104075	ppb	0.804	620.008
209	Bi	>	689409.172		ppb	0.302	698471.606

QC Out of Limits

alyte Mass Out of Limits Message

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EPA METHOD 200.8

RUN LOGS

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PDS / PDSD M071117C

Dataset Report

Water 0.1 ml → 10 ml
Soil 0.025 ml → 10 ml
Filter 0.025 ml → 10 ml

User Name: UFLE
Instrument Name: ICP/MS 3
Dataset File Path: W:\dataset\2018\180327B1\
Report Date/Time: Wednesday, March 28, 2018 07:31:21

Tuning	MS092817A
Int STD	MS032018B
R.B.	MR031318A
Carrier	MR031318C
Wash Sol.	MR031318D

The Dataset

Analyst	Time and Date	Description	Sample File Name	
SmartTune	09:40:20 Tue 27-Mar-18	solution	W:\dataset\2018\180327B1\Mass Calibration and Resolution.001	
SmartTune	09:42:09 Tue 27-Mar-18		W:\dataset\2018\180327B1\AutoLens.002	
SmartTune	09:57:05 Tue 27-Mar-18		W:\dataset\2018\180327B1\Daily Performance Check.003	
598	10:07:46 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.004	
598	10:11:04 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.005	
598	10:13:33 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.006	
598	10:16:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.007	
598	10:18:30 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.008	
598	10:20:58 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.009	
598	10:23:27 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.010	
598	10:25:56 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.011	
598	10:28:25 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.012	
	10:30:54 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.013	
	10:33:22 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.014	
	10:35:52 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.015	
	10:38:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.016	
	10:40:50 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.017	
	10:43:20 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.018	
	10:45:50 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.019	
	10:48:19 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.020	pass
	10:50:47 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.021	
	10:53:16 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICS-A - MS092817B.022	
	10:55:45 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICS-AB - MS092817C.023	
	10:58:12 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.024	
	11:00:41 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.025	
	11:03:10 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.026	
598	11:05:39 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1217x10-3.027	
598	11:08:08 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 ms.028	
	11:10:39 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.029	pass
	11:13:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.030	
	11:15:37 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.031	
598	11:18:08 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 msd.032	
598	11:20:36 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 .033	
598	11:23:04 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-1.034	
598	11:25:32 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 ms.035	
598	11:28:00 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 msd.036	
598	11:30:28 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 .037	
598	11:32:56 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-2.038	
	11:35:26 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.039	pass
	11:37:55 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.040	
	11:40:24 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.041	
598	11:49:17 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.042	
598	11:51:45 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1704-f-1 ms.043	
598	11:54:13 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1704-f-1 msd.044	

Reviewed/Assign to Logbook Date: 03-28-18
Analysis 6200/200.8 Sequence No: 996
Logbook Page: 36 Instrument ID: 2p/MS3

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598	19:02:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\LCS 6 hours.213	
	19:04:52 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.214	pass
	19:07:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.215	
	19:09:49 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.216	
598	19:22:35 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.217	
	19:25:03 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.218	
	19:27:30 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.219	
	19:30:00 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.220	
	19:32:30 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.221	
	19:34:59 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.222	
	19:37:29 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.223	
	19:40:00 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.224	
	19:42:28 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.225	pass
	19:44:57 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.226	
	19:47:26 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.227	
	19:49:55 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.228	
598	19:52:25 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2042-1.229	
598	19:54:55 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-ba-2.230	
598	19:57:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-la-2.231	
598	19:59:51 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-1.232	
598	20:02:19 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-2.233	
598	20:04:47 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-3.234	
598	20:07:14 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 ms.235	
598	20:09:43 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 msd.236	
598	20:12:10 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 .237	
	20:14:40 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.238	pass
	20:17:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.239	
	20:19:37 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.240	
598	20:22:07 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-2.241	
598	20:24:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-3.242	
598	20:27:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-4.243	
598	20:29:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-5.244	
598	20:31:57 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-6.245	
598	20:34:24 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-7.246	
598	20:36:53 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-ba-3.247	
598	20:39:21 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-la-3.248	
598	20:41:48 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 ms.249	
598	20:44:16 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 msd.250	
	20:46:45 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.251	pass
	20:49:14 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.252	
	20:51:42 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.253	
598	20:54:11 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 .254	
598	20:56:39 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-1.255	
598	20:59:06 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-3.256	
598	21:01:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-4.257	
598	21:04:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-5.258	
598	21:06:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-6.259	
598	21:08:58 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.260	
598	21:11:27 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-ba-7.261	
598	21:13:55 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-la-7.262	
598	21:16:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-1 ms.263	
	21:18:53 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.264	pass
	21:21:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.265	
	21:23:49 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.266	
	21:26:16 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.267	
	21:28:44 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.268	

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Analysis: 6020/200.8 [illegible] 996
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	21:31:13 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.269	
	21:33:43 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.270	
	21:36:11 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.271	
	21:38:40 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.272	
	21:41:10 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.273	
	21:43:39 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.274	pass
	21:46:07 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.275	
	21:48:36 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.276	
	21:51:04 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.277	
598	21:53:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-1 msd.278	
598	21:56:01 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-1 .279	
598	21:58:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-2.280	
598	22:00:56 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-3.281	
598	22:03:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-4.282	
598	22:05:52 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-1.283	
598	22:08:19 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-2.284	
598	22:10:46 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-3.285	
598	22:13:14 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-4.286	
598	22:15:41 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-f-1.287	
	22:18:11 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.288	pass
	22:20:40 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.289	
	22:23:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.290	
598	22:25:38 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-f-2.291	
598	22:28:05 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-f-3.292	
598	22:30:33 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-1.293	
598	22:33:00 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-2.294	
598	22:35:27 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-3.295	
598	22:37:55 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1887-1.296	
598	22:40:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1887-2.297	
598	22:42:51 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1795-1.298	
598	22:45:18 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-f-1.299	
598	22:47:45 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-f-2.300	
	22:50:15 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.301	pass
	22:52:43 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.302	
	22:55:11 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.303	
598	22:57:41 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-f-3.304	
598	23:00:09 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-1.305	
598	23:02:37 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-2.306	
598	23:05:04 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-3.307	
598	23:07:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-ba-1.308	
598	23:10:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-ba-2.309	
598	23:12:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-la-1.310	
598	23:14:57 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-la-2.311	
598	23:17:24 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-2 ms.312	
598	23:19:52 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-2 msd.313	
	23:22:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.314	pass
	23:24:49 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.315	
	23:27:17 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.316	
	23:29:47 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.317	
	23:32:17 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.318	
	23:34:46 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.319	
	23:37:14 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.320	
	23:39:42 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.321	
	23:42:11 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.322	
	23:44:39 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.323	
	23:47:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.324	

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Analysis 6020/200.8 [illegible] 776
Logbook Page 41 [illegible] pass

	23:49:35 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.325	
	23:52:03 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.326	
	23:54:33 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.327	
598	23:57:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.328	
598	23:59:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check .329	
598	00:01:56 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-2 .330	
598	00:04:23 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-1.331	
598	00:06:50 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-3.332	
598	00:09:17 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-4.333	
598	00:11:44 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-5.334	
598	00:14:11 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-6.335	
598	00:16:38 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-1 ms.336	
598	00:19:05 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-1 msd.337	
	00:21:33 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.338	pass
	00:24:00 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.339	
	00:26:28 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.340	
598	00:28:56 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.341	
598	00:31:23 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.342	
598	00:33:51 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-1 .343	
598	00:36:18 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-2.344	
598	00:38:45 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-3.345	
598	00:41:12 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-4.346	
598	00:43:39 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-5.347	
598	00:46:06 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-6.348	
598	00:48:33 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-7.349	
598	00:51:02 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\180326-ba-5.350	
	00:53:30 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.351	pass
	00:55:57 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.352	
	00:58:24 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.353	
598	01:00:53 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\180326-la-5.354	
598	01:03:20 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1927-1 ms.355	
598	01:05:47 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1927-1 msd.356	
598	01:08:14 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1927-1 .357	
598	01:10:44 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890x10-1 ms.358	
598	01:13:10 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890x10-1 msd.359	
598	01:15:37 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890x10-1.360	
598	01:18:04 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890x10-2.361	
598	01:20:32 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890-1 ms.362	
598	01:22:59 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890-1 msd.363	
	01:25:26 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.364	pass
	01:27:54 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.365	
	01:30:23 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.366	
	01:32:51 Wed 28-Mar-18		W:\dataset\2018\180327B1\Blank.367	
	01:35:21 Wed 28-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.368	
	01:37:50 Wed 28-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.369	
	01:40:19 Wed 28-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.370	
	01:42:47 Wed 28-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.371	
	01:45:16 Wed 28-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.372	
	01:47:45 Wed 28-Mar-18		W:\dataset\2018\180327B1\ICB.373	
	01:50:14 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.374	pass
	01:52:42 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.375	
	01:55:11 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.376	
	01:57:40 Wed 28-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.377	
598	02:00:08 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890-1.378	
598	02:02:35 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890-2.379	
598	02:05:03 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1845x10-f-4 ms.380	

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Analysis: 6020/200.8 [illegible]: 996

Logbook Page: 42 Instrument ID: icp/ms3

EPA METHOD 200.8

PREPARATION LOGS

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Metals Sample Preparation Logbook (Aqueous)

METHOD		MATRIX	EQUIPMENT ID #	REAGENT ID #	STANDARD ID #
☐ EPA 3005A	☐ EPA 200.7	Aqueous	Thermometer Hp-18 (CF +4.0 °C)	HNO_3 Mcc6-045-09 3.0 mL	Spike 1 M0420178
☐ EPA 3010A	☑ EPA 200.8		Block Digester #2	HCl MR110117B 0.5 mL	Spike 2 M0420171A
☑ EPA 3020A	☐ 5% HNO_3		Pipetter / Dispenser P-116/P069/D081/MD022	(Specify)	Spike 3 M3101017A

BATCH NUMBER	SUPPLY LOT #	ACID PRESERVATION AND FILTRATION	TURBIDITY ANALYSIS
MS/MSD 180326SA1	Digestion Tube 160617	☑ None ☐ Lab Filtered ☐ Lab Preserved	☐ Yes ☐ No ☑ N/A
(Specify) 991 3/26/18	Filter	Book # ______ Page # ______	Book # ______ Page # ______

DIGESTION														
	START			END						SAMPLE		SPIKE STANDARD		
DATE	TIME	TEMP W/O CF (°C)	PREP TECH ID #	TIME	TEMP W/O CF (°C)	PREP TECH ID #	INITIAL pH	ECI ID #	ANALYTE(S)	INITIAL (mL)	FINAL (mL)	1 (µL)	2 (µL)	3 (µL)
03/26/18	11:10	95	1058	13:40	95	1058	<2	MS 18-03-1798-1B	Metals	50	50	50	50	250
							<2	MSD						
								LCS 180326LA1						
								LCSD / MB 180326BA1						
							<2	18-03-1798-1B						
							<2	2B						
							<2	3B						
							<2	4B						
							<2	5B						
							<2	6B						
							<2	7B						

COMMENTS:

EPA METHOD 200.8

STANDARD PREPARATION LOGBOOKS

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
03/10/17	M031017B	ORI.P6	Calib STD	M040816A	0.1 mL	1000 ppm	20 mL	5 ppm	Calib blk	R1122160I	03/11/17	598	
	C				0.02 mL			1 ppm					
	D				5 mL			0.2 ppm					
	E		ICV		0.1 mL			5 ppm					
03/20/17	M032017A	6020/200.8	Cal Std #2	M006-041-13	0.5 mL	100 ppm	25 mL	2 ppm	2.5 mL HNO3	M006-041-14	2/24/18	598	
			Cal Std #3	M006-041-14	2.5 mL	1000 ppm		10 ppm					
			BORON	M032017B	1.25 mL	100 ppm		500 ppb					
	M032017B		BORON ICV+Fe - SP2	M006-042-04	10 mL	1000 ppm	100 mL	100 ppm	DI-WATER	D 032017A	3/20/18		
			598 3/20/17 -SP2										
			-Fe										
03/23/17	M032317A	1631	100 ppb STD	M021517A	1 mL	10 ppm	100 mL	100 ppb	2 m HCl	M006-037-02	04/23/17	1010	
	M032317B		100 ppb ICV	M021517B	1 mL	10 ppm	100 mL	100 ppb					
	M032317C		100 ppt STD	M032317A	1 mL	100 ppb	1000 mL	100 ppt					
	M032317D		100 ppt ICV	M032317B	1 mL	100 ppb	100 mL	100 ppt					
	M032317E	1631	5 ppb	M032317A	0.5	100 ppb	10 mL	5 ppb					

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PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
4/18/17	M041817B	6010/200.7	ICV - Li	M006-38-20	0.01mL	10,000 PPM	100mL	1PPM	6% HNO_3 5% HCl	M006-38-25 M006-38-24	4/18/18	945	
			- Bi	M006-38-21	0.1mL	1,000PPM							
			- S	M006-038-19	0.01mL	10,000 PPM							
4/20/17	M042017A	Metals	Ag Std. Spike 2	M006-40-19	5.0mL	1000ppm	1.0L	50ppm	100mL HNO_3 DI H_2O	M006-41-22	4/20/18	1030	
			Al Std.	M006-40-14	10.0mL	10000ppm	1.0L	100ppm					
			Ba Std.	M006 40-02									
			Boron Std.	M006-40-15									
			Si Std.	M006-40-07									
			Na Std.	M006-39-20	100mL			1000ppm					
			K Std.	M006-41-03									
	M042017B	Metals	Sb Std. Spike 1	M006-39-23	10.0mL	1000ppm	1L	100ppm	100mL HNO_3 DI H_2O	M006 041-22	04/20/18	1030	
			As	M006-038-09									
			Be	M006-39-25									
			Cd	M006-41-05									
			Ca	M006-40-01									

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PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
04/20/17	M041017B	Metals	Cr Std. Spikel	M006-40-21	10mL	10,000ppm	1L	100ppm	100mL HNO_3 DI H_2O	M006-41-22	04/20/18	JO	
			Co	M006-40-22									
			Cu	M006-39-24									
			Fe	M006-39-11									
			Pb	M006-39-17									
			Mg	M006-39-12									
			Mn	M006-39-19									
			Mo	M006-41-06									
			Ni	M006-40-23									
			P	M006-41-02									
			Se	M006-39-16									
			Sr	M006-39-14									
			Tl	M006-39-13									
			Sn	M006-39-21									
			Ti	M006-39-15									

Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
04/20/17	M042017B	Metals	V Std. Spike 1	M006-40-25	10.0 mL	10,000 ppm	1 L	100 ppm	100 mL HNO_3 DI H_2O	M006-41-22	04/20/18	1030	
			Zn Std. Spike 1	M006-39-18									
04/25/17	M042517A	1631	10 ppm Std. Hg ~~M021517A~~	M021517A	1.0 mL	10 ppm	100 mL	100 ppb	2.0 mL HCl DI H_2O	M006-37-22	05/25/17	1030	
	M042517B		10 ppm ICV Hg ~~M021517B~~ 10... 4/25/17	M021517B									
	M042517C		100 ppb Std Hg	M042517A	0.1 mL	100 ppb		100 ppt					
	M042517D		100 ppb ICV Hg	M042517B									
	M042517E		100 ppb Std. Hg	M042517A	2 mL	100 ppb	40 mL	5 ppb					
04/26/17	M042617A	6010/200.7	ICP-MCS-1 JH 4/28/17	M006-41-17 ~~M006-41-18~~	15 mL	See SOP App. C	1 L	See SOP App. C	60 mL HNO_3 50 mL HCl DI H_2O	M006-41-22 ~~M006-41-23~~ M006-41-24 JH 4/28/17	04/~~26/18~~ 10/13/17	1030	Cal. Std. 3 ICP
			ICP-MCS-7	M006-41-18 ~~M006-41-17~~	15 mL								
			ICP-MSS-8	M006-41-16	60 mL								
			ICP-MCS-10	M006-38-13	7.5 mL								
			ICP-AM-11	M006-41-19	6.0 mL								
			Na Std.	M006-41-01	6.0 mL	~~[illegible]~~ 935 ppm JH 4/28/17							
			K Std.	M006-38-16	3.0 mL								
			P Std.	M006-40-09	1.2 mL								

Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
4/27/17	M042717A	6010/200.7	Na [10,000 PPM]	M006-1223-23	1 ml	See SOP Appx C	200 ml	See SOP Appx C	12 ml HNO3 10 ml HCl	M006-041-22 ~~M006-042-23~~	12/31/17 ~~4/27/18~~ ~~12/13/17~~	935	
			Sn [10,000 PPM]	-16	0.05 ml					M006-041-24 4/27/17			
			Si [1,000 PPM]	040-03 ~~M006-039-10~~ 935 4/27/17	1.77 ml								
4/27/17	M042712 Q	1640	100 ppm Se	M006-42 -11	0.25 g	powder	1 L	100 ppm	H2O	N/A	4/27/18	110	
4/28/17	M042717C	6010/200.7	Internal std Conc.										
			Sc	M006-042-04	100 mL	1000 ppm	50 mL	2 ppm	5 mL HNO3	M006-41-22	3 yr	BY	05/2021
			Ge	M006-042-03	50 mL			100 ppm					11/2021
			Ga	M006-042-05	50 mL			/					11/2020
			In	M006-042-04	100 mL			2 ppm					03/2018
			Ho	M006-042-07	10 mL								04/2021
			Tb	M006-042-06	10 mL								04/2021
			Bi	M006-042-08	10 mL								04/2022
	M041717D		Internal std	M041717C	5 mL	2 ppm	1 L	10 ppm	10 mL HNO3				
5/3/17	M050317A	Hg	100 ppm Hg	M006-36-15	10 mL	1000 ppb	100 mL	100 ppb	5 mL HNO3	M006-41-22	12/20/17	868	
	M050317B		1 ppm STD	M050317A	1 mL	100 ppb	100 mL	1 ppm	5 mL HNO3	M006-41-22	6/3/17	868	

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
07/07/17	M070717F	Org. Pb	ICV	M060817H	0.1mL	1000ppm	20mL	5 ppm	Cal BLK	R1122601	07/08/17	1080	7/7/17 1080
07/11/17	M071117A	6020/200.8	ICV #1 - Sp1	M042017B	0.1 mL	100 ppm	100 mL	100 ppb	1mL HNO3	M006-042-21	04/20/18	776	* 776 7/11/17
			Fe	M006-039-11	0.049mL	10,000 ppm		5 ppm					
	M071117B		ICV #2 - Sp2	M042017A	0.1 mL	100 ppm		100 ppb					
	M071117C		10 ppm SpTke #1	M042017B	5 mL	100 ppm	50 mL	10 ppm	5mL HNO3 5mL HCl	M006-042-21 M006-042-22			
			#2	M042017A	5 mL								
7/14/17	M071417A	Org. Pb	Cal STD	M060817G	0.2mL	1000ppm	20mL	10ppm	Cal blk	R1122601	7/15/17	1080	
	B				0.1mL			5ppm					
	C				0.04mL			2ppm					
	D				0.02mL			1 ppm					
	E				5mL			0.2ppm					
	F		ICV	M060817H	0.1mL	1000ppm	20mL	5 ppm	Cal blk	R1122601			*
7/18/17	M071817A	6020/200.8	Cal STD - U	M005-22-14	0.02mL	1000ppm	100 mL	200ppb	1mL HNO3	M006-042-21	03/31/18	776	
	M071817B		ICV - U	M006-037-77	1 mL	10 ppm	100 mL	100 ppb			09/30/17		
07/20/17	M072017A	1631	100ppm STD.	M006-093-82	10mL	100ppm	100mL	10ppm	2 mL HCl	M006-037-22	12/20/17	1030	

Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	092117	E	org. Pb	MP-060/P-015	M060817G	5 mL	R0609170I	20ml	0.2 ppm	9/22/17	1080
MS	|	F	|	|	M060817H	0.1 mL	|	|	5 |	|	|
MS	C92217	A	1631	P007/P-109/P-030	M072017A	1.0mL	M006-37-22	100mL	100ppb	10/22/17	1030
MS	|	B	|	|	M072017 B	1.0mL	|	|	100 ppb	|	|
MS	|	C	|	|	M092217A ~~M082517~~ 9/22/17 1030	100mL	|	|	100ppt	|	|
MS	|	D	|	|	M092217 B	100mL	|	|	100ppt	|	|
MS	|	E	|	|	M092217A	500mL	|	10mL	5ppb	|	|
MS	092817	A	6020/200.8	MP-058/MP-056	M006-044-01	0.5 mL	M006-043-08 5mL	500 mL	10 ppb	08/30/18	776
MS	|	B	|	|	M006-043-24	5 mL	|	|	~~0.2 - 200 ppm~~	776 9/29/17	|
MS	|	C	|	|	M006-043-24 M006-043-25	5 mL 0.5 mL	|	|	~~0.2 - 200~~ ppm 5 - 20 ppb	|	|
MS	092817	D	Org Pb	MP-060/P-015	M060817G	0.2mL	R0609170I	20mL	10 ppm	9/29/17	1680
MS	|	E	|	|	|	0.1	|	|	5	|	|
MS	|	F	|	|	|	0.04	|	|	2	|	|
MS	|	G	|	|	|	0.02	|	|	1	|	|
MS	|	H	|	|	|	5	|	|	0.2	|	|
MS	|	I	|	|	M060817H	0.1	|	|	5	|	|
MS	092917	A	6020/200.8	MP-053/MP-058/MP-056 ~~Cal STD - U~~	M005-022-14	0.02 mL	M006-043-08 1mL	100 mL	200 ppb	03/31/18	776
MS	|	B	|	~~Fcv - U~~	M006-044-01	1 mL	|	|	100 ppb	08/30/18	|

776 9/29/17

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Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	100517	A	Org. Pb	MP-060/P015	M060817G	0.2 mL	R06091701	20mL	10 ppm	10/5/17	JH
MS	↓	B	↓	↓	↓	0.1 mL	↓	↓	5 ppm	↓	↓
MS	↓	C	↓	↓	↓	0.04 mL	↓	↓	2 ppm	↓	↓
MS	↓	D	↓	↓	↓	0.02 mL	↓	↓	1 ppm	↓	↓
MS	↓	E	↓	↓	↓	5 mL	↓	↓	0.2 ppm	↓	↓
MS	↓	F	↓	↓	M060817H	0.1 mL	↓	↓	5 ppm	↓	↓
MS	100617	A	Org Pb.	MP-060/P015	M060817G	0.2 mL	R06091701	20mL	10 ppm	10/7/17	1080
MS	↓	B	↓	↓	↓	0.1 mL	↓	↓	5	↓	↓
MS	↓	C	↓	↓	↓	0.04mL	↓	↓	2	↓	↓
MS	↓	D	↓	↓	↓	0.02mL	↓	↓	1	↓	↓
MS	↓	E	↓	↓	↓	5 mL	↓	↓	0.2	↓	↓
MS	↓	F	↓	↓	M060817H	0.1 mL	↓	↓	5	↓	↓
MS	101017	A	6020/200.8	MP-053/MP-058/MP-056	M06-040-01	10 mL	M06-044-17 1mL M06-041-12 1mL	100mL	100ppm	10/10/18	776
MS	↓	↓	↓	↓	M06-035-08	↓	↓	↓	↓	↓	↓
MS	↓	↓	↓	↓	M06-044-19	↓	↓	↓	↓	↓	↓
MS	101117	A	Org. Pb	MP-060/P-015	M060817G	0.2 mL	R06091701	20mL	10 ppm	11/12/17	1080
MS	↓	B	↓	↓	↓	0.1mL	↓	↓	5	↓	↓
MS	↓	C	↓	↓	↓	0.04 mL	↓	↓	2	↓	↓

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Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	022518	A	6020/200.8	MP-058/P-117	M006-041-13 M006-041-14 M022017B	0.5 mL 2.5 mL 1.5 mL	M006-041-02 2 L	250 mL	0.2 ppm 10.2 ppm 0.5 ppm	2/24/18	SV
MS		B		MP-058/MP-058	M006-042-12 B M006-044-19	0.1 mL 0.045 mL	M006-041-02 1.0	100 mL	100 µg/L		
MS		C			M042017A	0.1			100 ppb		
MS		D			M042017A	0.5			5 ppm		
MS		E		P-117	M006-045-16 M006-045-17 M006-044-15	100 mL 100 mL 100 mL	M006-045-02 10mL M006-041-N 10	1 L	1000 ppm	4/30/23	
MS	02/21/18	A		MP-057/P-117	M006-045-23 M006-045-24 M022017B	4 mL 20 mL 10 mL	M006-045-02 20 mL	2 L	0.2 ppm 10.2 ppm 0.5 ppm	2/24/18	SV
MS		B		MP-058/P-117	M042017B AT M006-044-15 N	1.0 mL 1.0 mL	M006-045-02 10 mL	1 L 100 mL BY 250 mL	100 ppb 5 ppm	4/30/18	
MS		C			M042017A	1.5 mL 5V 2/14/18		1	100 ppb		
MS		D			MS1017A	5 mL		1 L	5 ppm		
MS	02/2 022518	A		MP-057/P-117	M006-045-23 M006-045-22 M022018	4 mL 20 mL 10 mL	M006-045-N 20mL	2 L	0.2 ppm 10.2 ppm 0.5 ppm	1/20/19	SV
MS	022118	A	org Pb	PILS/P-015	MS121417A	0.2 mL	MK121417D	20mL	10 ppm	2/15/18	CD
MS		B				0.1			5		
MS		C				0.04			2		
MS		D				0.02			1		
MS		E				0.004			0.2		
MS		F			MS012418A	0.1			5		
MS	022118	A	1631	P-007/P-109/P-030	CCV MS011618A	1.0 mL	HCl M006-037-22	100mL	100 ppb	3/31/18	CD
MS		B			CCV MS011618B	1.0 mL			100 ppb		

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Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	032018	A	ICP/ms	MY-058/P117	M006-042-04	10 mL	5 mL HNO3 M006-045-02	500 mL	200 ppm	11/30/20	SJR
MS					M006-042-03	50 mL			100 ppm		
MS					M006-042-05						
MS					M006-042-14	10 mL			20 ppm		
MS					M006-042-07						
MS					M006-052-11						
MS					M006-042-18						
MS	032018	B			M032018A	5 mL	10 mL HNO3 M4-042-L	1 L	0.2 ppm → 1 ppm		
MS	032018	C			M006-045-21	0.2 mL			200 ppb	1/31/19	
MS					M006-045-22	0.05 mL			0.80 ppm		
MS					MS060718J	1 mL			1 ppm		
MS					MS032018C	0.3 mL			0.06–0.5 ppm		
MS											
MS											
MS											
MS											
MS											
MS											

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Reagent Preparation Logbook

PREP DATE	NEW REAGENT ID #	TEST METHOD	REAGENT DESCRIPTION	SOURCE CHEMICAL(S) NAME	SOURCE CHEMICAL(S) ID #	SOURCE CHEMICAL(S) INITIAL AMOUNT	SOLVENT NAME	SOLVENT ID #	FINAL VOLUME	EXPIR. DATE	PREP BY	COMMENTS
07/31/17	R07311701	Metal	1N. NaOAC	Sodium Acetate	M06-17-09	2720g	DI H2O	NA	20L	07/30/18	805	03/13/19
08/01/17	R0801/1701	metals	1:1 HNO3	HNO3	M006042008	1.25x30	DI H2O	NA	2.5x30	08/01/18	710	
8/2/17	R0802170	Hg	1%NaCl NH2OH	NH2OH·HCl NaCl	M004-43-12 M006-47-20	1.2Kg 1.2Kg	DI H2O	NA	10L	8/2/18	808	
08/09/17	R0809170	TCLP	1N. NaOH	NaOH	M006-34-15	160g	DI H2O	D0809170 NA	4Lx8	08/08/18	805	Source - 02/22/21.
08/11/17	R0811170	Metals	1:2 HCl	HCl	M006-41-23	800x20	DI H2O	NA	24Lx20	08/11/18	710	
8/11/17	R0811702	↓	1:1 HNO3	HNO3	M006-043-08	250ml ~~500ml~~	DI H2O	N/A	500ml	8/11/18	935	
↓	R08111703	↓	1:1 HCl	HCl	M006-042-22	↓ 935 8/11/17	↓	↓	↓	↓	↓	
8/14/17	R0814701	1640	BUFFER	HAc NH4OH	M006-34-13 G007-79-14	140mL 160mL	DI H2O	N/A	1L x 2 ~~2L~~ 53, 8/14/17	8/14/18	53	
↓	R0814701	↓	Hydride H2O2	HNO3 H2O2	M006-43-09 M006-40-16	4mL 20mL	↓	↓	1L	↓	↓	
↓	R0814703	↓	Hydride	NaOH NaBH4	M006-19-24 F006-12-01	0.45 4.0g	↓	↓	200mL x2	↓	↓	
↓	R0814704	↓	4M HCl	HCl	M006-37-22	200mL	↓	↓	500mL x2	↓	↓	
↓	R0814705	↓	1% HNO3 (1L)	HNO3	M006-43-09	10mL	↓	↓	1L	↓	↓	
↓	R0814706	↓	1% HNO3 (2L)	↓	↓	20mL	↓	↓	2L x 2	↓	↓	
↓	R0814707	↓	Sea Water Blank	↓	M006-43-09 M006-44-03	10mL 33.33mL	↓	↓	1L	↓	↓	
8/2/17	R0802176	Hg	5% KMnO4	KMnO4	M006-37-01	500g	DI H2O	NA	10L	8/2/18	808	

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Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	120717	A	metals		M006-045-01	833mL	DI-H2O	2.5L	1:2 HCl	12/7/18	1080
MR	121117	A	6010/200.7	D044/F002	M006-045-02 M006-045-01	50mL 50mL	DI-H2O	1LX2	6% HNO3, 5% HCl	12/11/18	935
MR		B									
MR		C				100mL 100mL		1L x4	10% HNO3 10% HCl		
MR		D						1L x2			
MR	121217	A	SPLP		Era 6.44-2/H2SO4 M006-045-02/HNO3	6ml 40ml	DI-H2O	100 ml	6% H2SO4 40% HNO3	12/11/18	805
MR	121417	A	Org. Pb	Pipette 04-12016 MIBK D-054	Aliquot 336 M006-35-24	20mL	M006-094-02 MIBK 180mL	200mL	10%: 336/MIBK	6/14/19	1080
MR	121417	B	Org Pb	Pipette 04-12016 MIBK D-054	10% 336/MIBK MR121417A	20mL	M006-094-02 MIBK 180mL	200mL	1%: 336/MIBK	6/14/18	1080
MR	121417	C	Org Pb	Balance 61 Pipette 01-07-2016	Iodine M007-04-19	6g	M006-09-09 Benzene	200mL	I_2 3%	6/14/18	1080
MR	121417	D	Org Pb	D-054/D-055/Pipette 04012016	Xylene M006-014-14	200mL			BLANKS	6/14/18	1080
MR					MIBK M006-094-02	250mL					
MR					1% 336 MR121417B	50mL					
MR					3% I_2	1mL					
MR	12617	A	metals		M006-045-02	1.25L	DI-H_2O	2.50L	1:1 HNO_3	12/16/18	1080
MR	011218	A	Hg	Bal #59	M006-43-01	50 1000g	DI-H_2O	20L	5% $KMnO_4$	1/12/19	868
MR	011218	B	Hg	Bal #59	M006-43-025 M006-42-20	1.2kg 1.2kg	DI-H_2O	10L	1% NaCl-NH_4OH	1/12/19	868
MR	~~01/30/18~~ 01/30/19	A	METALS	—	M006-045-09	4X 1.25L 500mL	DI-H_2O	4X 1200mL	1:1 HNO_3	01/30/19	710
MR	~~01/31/18~~ 01/31/19	A	metals		M006-042-22	833mL	DI-H_2O	2.5L	1:2 HCl	1/31/19 19/01/18 1080	1080

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Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	03/12/18	Q	Metals	—	MM06-0460-01	1.25L	DI H2O	2.5L	1:1 HNO_3	03/12/19	[illegible]
MR	"	R	"	"	"	"	"	"	"	"	"
MR	"	S	"	"	"	"	"	"	"	"	"
MR	"	T	"	"	"	"	"	"	"	"	"
MR	"	U	"	"	"	"	"	"	"	"	"
MR	"	V	"	"	"	"	"	"	"	"	"
MR	"	W	"	"	"	"	"	"	"	"	"
MR	"	X	"	"	"	"	"	"	"	"	"
MR	03/13/18	A	Iso/Mn	P-117	MM06-0455L	10mL	DI-H_2O	1L	1% HNO_3	3/13/19	[illegible]
MR	"	B	"	"	"	10mL	"	"	1%	"	"
MR	"	C	"	"	"	20mL	"	"	2%	"	"
MR	"	D	"	"	MM06-045-02 MM06-045-01	120 mL 80 mL	"	4L	3% HNO_3 2% HCl	"	"
MR	"	E	"	"	"	"	"	"	"	"	"
MR	"	F	"	"	"	"	"	"	"	"	"
MR											
MR											
MR											
MR											

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Hydroxylamine	Acros	5478-11-1	A0332752	10/1/16	500g x 20	P	10/1/13	769	10/1/13	769	
2	Multielement Calib. Std - # 1	High-Purity	ICP-MCS-1	1227704 1312925	09/26/14	250ml	P	10/03/13	469	10/03/13	469	
3	" - 7	"	" -7	469 10/13 1312219	"	"	"	"	"	"	"	
4	" - 8	"	" -8	1312925	"	500ml x 2	"	"	"	"	"	
5	" - 10	"	" -10	1319312	"	125ml	"	"	"	"	"	
6	" - 11	"	ICP-AM-11	1307750	"	"	"	"	"	"	"	
7	Tungsten Standard	"	100063-3	1309114	3/26/15	"	"	"	"	"	"	
8	Nitric Acid	EMD	NX-0407-2	53099	10/7/16	2.5L x 8	G	10/6/13	879	10/8/13	879	
9	HCL	EMD	HX0607-2	53010	10/7/16	2.5L x 8	G	10/6/13	879	10/8/13	879	
10	Sulfuric Acid	EMD	SX1247-2	53128	10/15/16	2.5L x 5	G	10/15/13	769	10/15/13	769	
11	Nitric Acid	EMD	NX0407-2	53099	10/15/16	2.5L x 8	G	10/15/13	879	10/16/13	879	
12	Nitric Acid	EMD	NX0407-2	53055	10/24/16	2.5L x 10	G	10/24/13	TR	10/24/13	TR	
13	HCL	EMD	HX0607-2	53010	10/29/16	2.5L x 8	G	10/29/13	879	10/29/13	879	
14	Indium	Accustandard	ICP-MS-2TM-0.1X-1	213025049	03/2018	100mL	P	11/01/13	TR	11/01/13	TR	
15	Scandium		ICP-MS-50N-0.1X-1	213055044	05/2014							
16	Boron		ICP-07W-1	212050017	10/2017							
17	Tungsten		ICP-6TW-1	211105145	11/2016							
18	Lithium											
19	Acetic Acid	Fisher	A38C-212	133363		2.5L x 6	G	11/05/13	805	11/5/13	805	CTF: ICP #3 p15-15 ICP-MS #3 p15-16
20	HNO_3	EMD	NX-0407-2	53099	11/05/16	2.5L x 10	G	11/05/13	781	11/05/13	781	
21	"	"	NX0407/4	52174	"	2.5L x 02	"	"	"	"	"	
22	Lithium 6	High-Purity	100025-6I	1231246	05/01/15	100mL	P	11/07/13	TR	11/07/13	TR	
23	HNO_3	EMD	NX0407-2	53099	11/13/16	2.5L x 10	G	11/13/13	781	11/13/13	781	
24	HCL	EMD	HX0609-2	53010	11/13/16	2.5L x 5	G	11/14/13	805	11/14/13	805	
25	Hydrogen Peroxide H_2O_2	EMD	HX0635-2	53115331	5/31/2015	1L x 8	P	11/25/13	879	11/26/13	879	

COMMENTS:

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LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED		OPENED		COMMENTS
								DATE	WHO	DATE	WHO	
1	Nitric Acid	EMD	NX0407-2	55006	5-27-18	2.5x10	G	5-27-15	710	5-27-15	710	
2	Hydrochloric Acid	EMD	HX0607-2	54169	5-27-18	2.5x4	G	5-27-15	710	5-27-15	710	
3	Sulfuric Acid	EMD	SX-1247-2	54132	4/24/18	2.5Lx4	G	5/27/15	9ar	5/28/15	9ar	
4	Boron	AccuStandard	ICP-07W-1	214065136	7/1/15	100mL	P	5/27/15	57	5/27/15	57	
5	QCS-01-1		QCS-01-1	214105086	10/4/16	100mL	P					
6	QCS-02-1	SPEX	QCS-02-1	213125083-01	11/13/16	100mL						
7	CL-CAL-3	~~AccuStandard~~ CL-CAL-3	CL-CAL-3 ~~CLH-54PP4~~	CL11-54PP4	5/30/16	125mL						
8	CL-~~CAL~~INT-A1	~~AccuStandard~~ ~~CL-INT-A1~~ SPEX	CL-INT-A1 ~~CL12-65PPP~~	CL12-69PP4								
9	Nitric Acid	EMD	NX0407	55006	5-29-18	2.5x6	G	5-29-15	710	5-29-15	710	
10	Hydrochloric Acid	EMD	HX0607-2	54310	5-29-18	2.5x3	G	5-29-15	710	5-29-15	710	
11	Ytterbium	High Purity	10M66-1	1401628	11/20/16	100ml	P	6/1/15	935	6/1/15	935	
12	Holmium		10M23-1	1400209								
13	Terbium		10M57-1	1425501								
14	Li6		100029-6I	1428030	11/20/16	100mL	P	6/3/15	57	6/3/15	57	
15	Calibration Std. 3	SPEX	CL-CAL-3	CL12-70PP4	5/30/16	125mL x2	P	6/3/15	57	5/30/16	57	
16	NaCl	Fischer	S-271-10	146640	6/4/18	10 kg	Bucket	6/4/15	9ar	6/4/15	915	
17	SnCl$_2$	Fischer	~~1140 S260~~	148075	6/4/18	500g x1	B	6/4/15	9ar	6/4/15	9ar	
18	$K_2S_2O_8$	Fischer	P-281-500	147150	6/4/18	500g x1	B	6/4/15	9ar	6/4/15	9ar	
19	$SnCl_2 \cdot 2H_2O$	↓	T169-500	148074	6/4/18	500g	P	6/4/15	110	6/4/15	110	
20	H_2O_2	↓	H325-500	148097	6/4/17	500g	P	6/4/15	110	6/4/15	110	
21	HCl	↓	A508-P212	411450	6/18/17	2x2.5L	P	6/4/15	110	6/4/15	110	
22	HNO_3	↓	A467-2	1214670	7/24/17	2x2.5L, 2x2L	P	6/4/15	110	6/4/15	110	
23	Hydrogen Peroxide	Fisher	H325-4	147967	6/9/18	4Lx4	P	6/9/15	710	6/9/15	710	
24	Nitric Acid	EMD	NX0407-2	55006	06/12/18	2.5Lx8	G	06/12/15	942	06/12/15	942	
25	↓	↓	↓	54339	↓	2.5Lx2	↓	↓	↓	↓	↓	

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1	HCl	EMD	HX0607-2	55253	03/24/19	2.5Lx10	G	03/24/16	1039	03/24/16	1039	
2	Aluminum Standard	ULTRA	ICP-113	CM-1334	04/30/22	125ml	P	03/28/16	110	03/28/16	110	#1
3	Beryllium Standard		ICP-104	CP-0170	02/28/23	125	P					#2
4	Chromium Standard		ICP-124	CM-6110	12/31/22	125mL	P					
5	Iron Standard		ICP-126	CP-0549	02/28/23	125mL	P					
6	Zinc Standard		ICP-130	CP-0155	02/28/23	125mL	P					
7	Manganese Standard		ICP-125	CM-2432	06/30/22	125mL	P					
8	Magnesium Standard		ICP-112	CM-4445	09/30/22	125mL	P					
9	Calcium Standard		ICP-120	CP-0877	04/30/23	125mL	P					
10	Silicon Standard		ICP-014	TC0497	05/31/21	125mL	P					
11	Terbium standard		ICP-065	CM-4138	08/31/22	125mL	P					
12	Xylene	Fisher	XS-4	158943	4/1/19	4Lx4	G	4/1/16	91Y			
13	HNO_3	EMD	HX0407-2	55323	04/13/19	2.5Lx10	G	04/13/16	1039	04/13/16	1039	
14	BOILING STONES	SAINT-GOBAIN	D1064103	K774-4K016	04/19/2021	450gx2	P	04/19/16	710	04/19/16	710	
15				R674-6A002		450gx2						
16				S071-6A030		450gx2						
17	Citric Acid Anhydrous	Fisher	A940-1	160479	04/20/2021	1kgx12	P	04/21/16	805	04/21/16	805	[illegible]
18	$K_2S_2O_8$	Acros	UN-1492	A0367996	4/21/21	500gx2	P	4/4/16	aw	4/22/16	aw	
19	Amine dischubble Soln.	Life technologies	A10496	1745205	4/21/19	50ml	P	4/21/16	air	4/21/16	air	
20	H_2SO_4	EMD	SX1247-2	53128	4/27/19	2.5x4	G	4/27/16	710	4/27/16	710	*
21	Hydrochloric Acid	EMD	HX0607-2	55777	05/02/19	2.5x8	G	05/02/16	710	05/2/16	710	[illegible]
22	Nitric Acid	EMD	NX0407-2	55148	05/02/19	2.5x11	G	05/02/16	710	05/02/16	710	
23	Nitric Acid	Fisher	UN2031	1216010	05/26/19							*
24	Aliquat 336	Aldrich	205613-250mL	MKBV4736V	5/24/[illegible]	250mL	G	5/24/16	53F	5/24/16	53F	
25	HNO_3	EMD	HX0407-2	55323	04/13/17	2.5Lx26	G	05/26/16	1030	05/26/16	1030	

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1	Hydrochloric Acid	EMD	~~HX0607-2~~ 56027	56027	10/21/19	2.5x10	G	10/21/16	710	10/21/16	710	
2	Nitric Acid	↓	NX0407-2	56020	1030 11/01/16	2.5x11	↓	↓	↓	↓	↓	
3	ICS-INT-01-1	AccuStandard	INT-01-1	2150 35036-01	~~06/30/18~~ 05/31/18	100mL	P	11/01/16	1030	11/01/16	1030	
4	ICS-INT-02-1		INT-02-1	212075023-03	06/30/18							
5	ICS-INT-03-01		INT-03-01	216065010	06/30/18							
6	ICS-INT-04-5	↓	INT-04-5	213065097-02	05/31/18	500mL	↓	↓	↓	↓	↓	
7	HNO3	EMD	NX0407-2	5-6048	9/11/19	25x20	G	1/09/16	710	1/09/16	710	
8	HCl	EMD	HX0607-2	56027	11/19/19	25x11	G	↓	↓	↓	↓	
9	Arsenic Standard	ULTRA	ICP-433	CP-5341	11/30/23	125mL	P	11/9/16	996	11/9/16	996	
10	ICP Multielement Cal. Std. #1	High Purity	ICP-MCS-1	1515602	10/13/17	250mL	P	11/10/16	935	11/10/16	935	
11	#7		ICP-MCS-7	1518~~6~~018	935 11/10/16	↓						
12	#8		ICP-MCS-8	1520834	-	500mL						
13	#10		ICP-MCS-10	1515415		250mL						
14	#11		ICP-AM-11	1623105	↓	↓						
15	Sodium - Std.		#10M52-1	1609122	4/13/18	125mL						
16	Potassium - Std.		#10M41-1	1625027								
17	Phosphorus - Std.		#10M39-1K	1609716								
18	Zinc - Std.		#10M68-1	1617621		↓	↓					
19	Sulfur - Std		#10M54-5	1528619								
20	Lithium - Std.		#10M29-1	1604136		↓						
21	Bismuth - Std.		#10006-1	1605722	935 11/10/16 60 ↓	60mL						
22	$NaBH_4$	Alfa Aesar	16940-66-2	P08C022	11/22/22	100g x2	P	11/22/16	534	11/22/16	534	
23	Xylenes	fisher	X5-4	166464	11/28/19	4Lx4	G	11/28/16	935	11/28/16	935	
24	HCL	EMD	HX0607-2	56208	12/02/19	2.5x10	G	12/02/16	1058	12/02/16	1058	
25	HNO3	EMD	NX0407-2	56020	12/02/19	2.5x17	G	12/02/16	1058	12/02/16	1058	

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1	SCP Science 50ml DigiTubes	SCP Science	010-500-263	J232266-63600	NA	500px	P	12/14/16	[illegible]	12/14/16	[illegible]	[illegible]
2	Methyl iso-Butyl Ketone	Fisher Chem.	M213-4	162092	12/14/19	4L x 4	G	12/14/16	935	12/14/16	935	
3	Hydrogen Peroxide	EMD	HX0635-2	56258639 [illegible]	12/16/19	20 x 1L	P	12/16/16	1058	12/16/16	1058	
4	Mixed Standard Solution I	Ultra	ICM-601	CP-1893	5/31/20	125ml	P	12/15/16	935	12/15/16	935	
5	II		ICM-602	CM-3432	7/31/19	125ml						
6	III		ICM-603	CP-3418	8/31/20	125ml						
7	IV		ICM-604	T00621	6/30/18	125ml						
8	V		ICM-605	T00611	6/30/18	125ml						
9	Interference Check Std #1		ICM-221	R01207	12/31/17	50ml						
10	Silicon 1000 mg/ml	High Purity	100050-3	1514036	9/30/17	60ml						
11	Iron	Ultra	ICP-126	CP-4457	5/30/27	125mL	P	12/20/16 ~~12/16/16~~ [illegible] 12/20/16	[illegible]	12/20/16 ~~12/16/16~~ [illegible] 12/20/16	[illegible]	
12	Magnesium		ICP-112	CM-4445	9/30/22							
13	Thallium		ICP-181	CP-2010	05/31/23							
14	Strontium		ICP-138	CM-4363	03/30/22							
15	Titanium		ICP-122	CM-1138	04/30/22							
16	Selenium		ICP-134	CM-5316	11/30/22							
17	Lead		ICP-182	CM-3300	7/31/22							
18	Zinc		ICP-130	CP-0155	2/28/23							
19	Manganese		ICP-125	M00334	4/30/18							
20	Sodium		ICP-111	CP-3178	05/30/23							
21	Tin		ICP-150	T00753	7/31/21							
22	Potassium		ICP-119	CP-0352	2/28/23							
23	Antimony		ICP-151	CP-2412	6/30/23							
24	Copper		ICP-129	R00852	5/30/20							
25	Beryllium		ICP-104	CP-0170	2/28/23							

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1	Calcium	Ultra	ICP-120	CP-4462	9/30/23	125mL	P	12/20/16	SJL	12/20/16	SJL	
2	Barium	〃	ICP-158	CM-6544	1/31/23	〃	〃	〃	〃	〃	〃	
3	Silicon	〃	ICP-114	CP-1238	4/30/23	〃	〃	〃	〃	〃	〃	
4	Nitric Acid	EMD	NX0407-2	56048	12/30/19	2.5x20	G	12/30/16	710	12/30/16	710	
5	hydrochloric Acid	EMD	HX0607-2	58208	12/30/19	2.5/x20	G	12/30/16	710	12/30/16	710	
6	H_2SO_4	EMD	SX1249-2	55329	01/09/20	2.5L	G	01/09/17	776	01/09/17	776	
7	HNO_3	EMD	NX0407-2	56020	01/11/20	2.5Lx4	G	01/11/17	1058	01/11/17	1058	
8	HNO_3	EMD	NX0407-2	56018	01/11/20	2.5x2	G	01/11/17	1058	01/11/17	1058	
9	Phosphorus 10,000 mg/mL	High Purity	10M39-1	1630829	7/10/18	125ml	P	1/11/17	935	1/11/17	935	
10	PH Tape	Micro Essential	#140	216814	06/15/17	4 Rolls	P	01/16/17	1058	01/16/17	1058	
11	HNO_3	Fisher	A509-P212 ~~[illegible]~~	1116080	03/26/2018	2.5L/x18	P	01/23/17	710	01/23/17	710	
12	HCl	〃	A508-P212 ~~UN1789~~	4116060	03/26/19	2.5L/x4	P	01/23/17	710	01/23/17	710	
13	H_2O_2	EMD	HX0635-2	56258639	~~[illegible]~~ 9/30/18	~~4~~ 1/4L x20	P	02/06/17	710	2/06/17	710	4 710 2/6/17
14	Al Standard	Ultra	ICP-113	CP 3976	9/30/2023	125ml	P	02/06/17	1030	02/06/17	1030	
15	Boron	Ultra	ICP-105	K009924A	11/31/21	125mL	P	02/06/17	1030	02/06/17	1030	
16	Hydrogen peroxide	Fisher	H325-500	165728	2/10/2020	500ml x2	P	2/10/17	110			
17	Nitric Acid	Fisher	A467-2	1216080	08/07/2019	2Lx2	P	2/10/17	110			Clean room
18	Nitric Acid	Fisher	A509 P212	1116100	11/10/2018	2.5x20	P	2/13/17	710	02/13/17	710	metals Dr.
19	Silver	Ultra	ICP 047	CP-4409	09/20/23	125mL	P	2/20/17	1030	02/20/17	1030	
20	Silver	Ultra	ICP 047	CP-4495	09/30/23	125mL	P	〃	〃	〃	〃	
21	Chromium	〃	ICP-124	CP-1768	05/31/23	〃	〃	〃	〃	〃	〃	
22	Cobalt	〃	ICP-127	CP-2011	〃	〃	〃	〃	〃	〃	〃	
23	Nickel	〃	ICP-128	CP-0006	02/28/23	〃	〃	〃	〃	〃	〃	
24	Sulfur	〃	ICP-116	CM-5373	11/30/22	〃	〃	〃	〃	〃	〃	
25	Vanadium	〃	ICP-123	CP-3591	08/31/23	〃	〃	〃	〃	〃	〃	

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1	Sodium	Ultra	ICP-111	CP 3948	9/30/23	125 mL	P	2/20/17	1070	2/20/17	1030	
2	Phosphorus		ICP-115	CP-4381								
3	Potassium		ICP 119	CP-0352	2/28/23							
4	Lithium		ICP-103	T 00356	5/31/21							
5	Cadmium		ICP-148	CP-0166	2/28/23							
6	Molybdenum		ICP-142	CL-7360	08/31/21							
7	Bismuth		ICP-183	CP-2124	6/30/23							
8	Sulfuric Acid.	EMD	SX1247-2	~~SX124712~~ 653292 (848 2/20/17)	2/20/20	2.5L	G	2/20/17	848	2/20/17		
9	Potassium Persulfate	Acros Organics	424185000	A0371662	1/11/19	500g x12	P	2/27/17	848	2/27/17		
10	Sodium Chloride	ALPHA	10862	25752	2/17/20	25 x	P	2/17/17	110	2/27/17	110	
11	HNO3	Fisher	A509-P212	1116100	11/10/18	2.5L x10	P	2/28/17	1058	2/28/17	1058	
12	HCL	Fisher	A508-P212	4116090	10/19/19	2.5L x20	P	2/28/17	1058	2/28/17	1058	
13	Instrument Calibration Standard 2	SPEX	CL-CAL2	CL1-179MKBY	2/24/18	125mL x2	P	3/6/17	SJ	3/6/17		
14	3	SPEX	CL-CAL 3	CL2-117M EBY	2/24/18	125mL x4	P					
15	ICP Multielement Calibration Std-10	High Purity	ICP-MCS-10	1515415	2/21/18	250mL	P	3/22/17	935	3/22/17	935	
16	-8		ICP-MCS-8	1637121		500mL x2						
17	-1		ICP-MCS-1	1515602		500mL						
18	-7		ICP-MCS-7	1705326	2/24/18	500mL						
19	-11		ICP-~~MCS~~-AM11 (935 3/22/17)	1705327		125 mL						
20	Acetic Acid, Glacial	Fisher	A38C-212 (2.5L)	LOT# 166899	04/03/20	2.5L x4	G	04/04/17	805	04/04/17	805	
21	Nitric Acid	Fisher	A509-P212	1116080	~~03~~/26/2018	2.5 x1	P	4/6/17	710	4/6/17	710	
22				1116100	11/10/2018	2.5 x18	P					
23				1116080	11/30/2018	2.5 x8	P					
24	HCl	Fisher	A508-P212	4116090	11/19/2019	2.5 x20	P					
25	Sodium Borohydride	Fisher	S678-25	161188	1/10/2022	2 x 25g	P	4/10/17	110	4/10/17	110	

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1	Sodium Selenate decahydrate	Aldrich	450294-5G	MKCB4724	4/UL	5g	G	4/11/17	110	4/13/17	110	
2	Ammonium Hydroxide	Fisher	A572-P500	#711090	10/16/2018	500mLx6	P	04/17/17	805	04/19/17	805	
3	Ci-6	AccuStd	ICP-MS-15-L16-10X-1	216115021	11/2021	100mL	P	04/20/17	53r	04/20/17	53r	
4	Sc		ICP-AS-50N-0.1X-1	216055006	05/2021	100mL	P					
5	Ga		ICP-MS-WN 0.1X-1	215110067	11/2020	100mL	P					
6	Tb		ICP-MS-53N-0.1X-1	213125126-01	02/2021	100mL	P					
7	Ho		ICP-MS-24N-0.1X-1	217045020	04/2022	100mL	P					
8	Bi		ICP-MS-06N-0.1X-1	217045044	04/2022	100mL	P					
9	Stannous Chloride Dihydrate	Fisher	T163-500	163999	04/2022	500g X6	P	04/25/17	1030	04/25/17	1030	
10	Hydro chloric Acid	Aristar Ultra	87003-216	4216110	01/2020	500mL	P					
11	Na_2SeO_4	Alfa Aesar	1:613	71408-04	04/2022	50g	G	04/25/17				
12	$SnCl_2$	Fisher	T1-142 500	145293A	4/2020	500g*1L	P	4/25/17	848	4/26/17	868	
13	BOILING STONES	Saint-Gobain	D1069103	Lot# T774-TC002	04/26/22	450g x8	P	04/27/17	805	04/27/17	805	CTF: 3 P30-24, P30-25
14	XYLENE	Fisher	XS-4	168622	4/28/20	4L x4	G	4/28/17	52r	4/28/17	52r	
15	HCl.	Fisher	A508-P212	4116090	~~4/28/19~~ 10/9/19	2.5x20.	P	4/28/17	710	4/28/17	710	710 4/28/19
16	HNO3	Fisher	A509-P212	1116110	11/30/18	2.5x20	P	4/28/17	710	4/28/17	710	
17	Sodium [10,000µg/mL]	Ultra	ICP-111	CP-3978	9/30/23	1L	P	5/2/17	935	5/2/17	935	
18	Potassium [10,000µg/mL]		ICP-119	CR-0917	4/30/24	1L	P	5/2/17	935	5/2/17	935	
19	Hydrogen Peroxide	EMD	HX0635-2	56258639	09/30/18	1L	P	05/05/17	710	5/5/17	710	
20	Sodium Chloride	Fisher.	S271-10	161535	5/15/20	10Kg	P	5/15/17	848	5/15/17	848	
21	Nitric Acid	Fisher	A509-P212	1117010	12/31/19 ~~5/23/19~~	2.5x20	P	5/23/17	710	5/23/17	710	710 5/23/17
22	HCl	Fisher	A508-P212	4116090	10/9/19	2.5X20	P	5/23/17	710	5/23/17	710	
23	Hydrogen peroxide	EMD	HX0635-2	56273642	10/31/18	1L X 5	P	5/26/17	710	5/26/17	710	
24	Lead II Chloride	Alfa Aesar	12345	M22B018	5/31/23	50g	P	5/3/17	52r	5/3/17	52r	
25	Buffer pH7.200 Solution (STD)	Fisher	SB36-500	171346.	05/31/2019 ~~06/06/19~~ 805 06/06/19	[500mL X1]	P	06/06/17	805	06/06/17	805	CTF: 3. P31-23

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1	Potassium Permanganate	VWR	~~2-31-1602~~ 97065-676	3166C309	7/18/18		P	7/18/16	868	6/13/17	868	* Fridge!
2	PH Tape	Micro Essential Lab	~~21675~~ 140 1058 06/13/17	216315	06/15/18	10 rolls	P	06/07/17	1058	06/07/17	1058	
3	ADPC	Sigma	P8765-5G	SCBG64HV	6/18/22	100g	S	6/13/17		6/13/17		
4	H_2SO_4	Fisher	~~34-5080~~ UN1830 1030 06/22/17	3115080	11/25/18	2.5L	P	06/22/17	1030	06/22/17	1030	
5	Nitric Acid	Fisher	A467-2	1216120	01/04/20	2.5L	T	6/28/17	53r	6/28/17		
6	Acetic Acid	|	A38C212-6	56160	6/28/20	1L X 2	T	|		|		
7	100 mg/mL Hg	SPEX	PLHG2-1Y	22-93HGY	6/30/18	125mL	P	6/29/17	868	6/29/17	868	
8	HNO_3	Fisher	A509-P212	1116120	12/16/2018 ~~7/14/17~~ *	2.5L X 2	P	7/14/17	710	7/14/17	710	* 710 7/14/17
9	Nitric Acid	Fisher	A467-2	1217010	01/31/20	2L X 2	T	7/27/17	53r	7/27/17	53r	
10	Sodium Chloride	Alfa Aesar	10862	25313	7/31/22	500g	P	7/31/17	53r	7/31/17	53r	
11	Sodium Chloride	|	|	25152		25g	|	|	|	|	|	
12	Hydroxylamine Hydrochloride	Fisher	H330-500	163471	8/2/22 ~~11/24/17~~	500g X 6	P	7/24/17	868	8/2/17	868	
13	|	|	|	164543	8/2/22	500g X 6	P	|	|	|		
14	Sulfuric Acid	Fisher		3116090	11/2/19	2.5L	G P	8/7/17	868	8/7/17	868	
15	Tetraethyl Lead	SPEX	SVC-CSEL-8-500	TS170731012	8/2/18	500mL	G	8/8/17	1080	8/8/17	1080	
16	Gold III Chloride	Acros	43708	A0366219	8/11/22	5g	G	8/4/17	110	8/4/17	110	
17	ICP-MS-QC2-1	AccuStandard	ICP-MS-QC2-1	215075097-02	06/30/19	100mL	P	08/11/17	53r	08/11/17	53r	
18	Beryllium ICP-MS-05N-0.01X-1	|	ICP-MS-05N-0.01X-1	217015012	01/09/22	100mL	P	|	|	|	|	
19	Manganese ICP-MS-33N-0.01X-1	|	ICP-MS-33N-0.01X-1	217035131	03/28/22	100mL	P	|	|	|	|	
20	Aluminum ICP-MS-01N-0.1X-1	|	ICP-MS-01N-0.1X-1	217045036	04/14/22	100mL	P	|	|	|	|	
21	Zinc ICP-MS-70N-0.1X-1	|	ICP-MS-70N-0.1X-1	216035086	03/23/21	100mL	P	|	|	|	|	*
22	Iron ICP-MS-27N-0.1X-1	|	ICP-MS-27N-0.1X-1	216015101	02/17/21	100mL	P	|	|	|	|	
23	Chromium ICP-MS-13N-0.1X-1	|	ICP-MS-13N-0.1X-1	216055077	05/25/21	100mL	P	|	|	|	|	
24	Interferents A	SPEX	CL-INT-A1	CL3-158MKBY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	
25	Analytes B	SPEX	CL-INT-B1	CL3-14MKBY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	

COMMENTS:

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Tuning Solution 1	SPEX	CL-TUNE-1	CL3-79MKBY	08/30/18	125 mL	P	08/11/17	776	08/11/17	776	
2	Sodium	SPEX	PLNA2-3Y	A017-4NAY	08/30/18	125 mL	P	08/11/17	776	08/11/17	776	
3	Ultrapure Sodium Chloride	ESI	seaBlank-0500	170341	08/14/20	500mL x 3	P	08/14/17	SR	08/14/17	SR	
4	Nitric Acid	Fisher	A467-2	1217010	08/16/20	2L x 2	T	8/16/17	SR	8/16/17	SR	
5	Nitric Acid	Fisher	A467-2	1116120	12/16/2018	2.5L x 5	P	08/23/17	1030	08/23/17	1030	
6	Nitric Acid	Fisher	A509-P212	1116111	03/15/19	2.5L x 19	P	08/23/17	1030	08/23/17	1030	
7	HCl	Fisher	A508-P212	4116090	10/19/19	2.5L x 20	P	08/23/17	1030	08/23/17	1030	
8	Sodium Selenate decahydrate	Aldrich	450294-5G	MKBN4778V	09/15/20	10	G	09/15/17	1030	09/15/17	1030	
9	Hydrogen Peroxide	EMD	HX0635-2	56273642	10/31/18	1L x 6	P	9/15/17	1080	09/15/17	1080	
10	Nitric Acid	Fisher	A467-2	1217020	02/22/20	2L x 4	T	09/18/17	SR	09/18/17	SR	
11	ultrapure Sodium Chloride	ESI	seaBlank-0500	170610	09/20/20	500mL x 2	P	9/20/17	SR	9/20/17	SR	
12	Hydrogen Peroxide	EMD	HX0635-2	56321712	11/30/18	1L x 14	P	9/27/17	1080	9/27/17	1080	
13	Puradisc 25mm 1.0 μm	Whatman	678-0-2510	9816517	02/2022	2 Box x 50	P	09/27/17	1058	09/27/17	1058	
14	Xylenes	Fisher	XS-4	173323	9/29/20	4L x 4	G	9/29/17	1080	9/29/17	1080	
15	Ultra Pure Sodium Chloride	ESI	seaBlank-0500	170603	10/02/20	500 x 3	P	10/2/17	SR	10/2/17	SR	
16	PTFE BOILING STONES-450GRAM	chemware	D1069103	22569054	~~10/06/17~~ N/A	(452gm) 1602	P	10/06/17	710	10/06/17	710	710 10/06/17
17	Nitric Acid	Fisher	A509-P212	1117140	04/05/2019	2.5L x 18	P	10/06/17	710	10/06/17	710	
18	Sodium borohydride	ACROS ORGANICS	200050250	AC353456	10/06/22	25g x 4	G	10/09/17	SR	10/09/17	SR	
19	Iron Standard	ULTRA	ICP-126-L	CR-3137	08/31/24	1L	P	10/10/17	776	10/10/17	776	
20	Soda Lime	Teledyne Leeman Labs	606-00015	8006-28-8	N/A	200g x 2	P	10/18/17	1080	10/18/17	1080	
21	Sulfuric Acid	Omni Trace	SX1247-2	56175	10/25/18	2.5 L	G	10/25/17	868	10/25/17	868	
22	ICP Analytical Mixture 11	High Purity	ICP-AM-11	1705327	10/18	125 mL	P	10/30/17	935	10/30/17	935	
23	ICP Multi-element Cal. Standard 8	↓	ICP-MCS-8	1635121	↓	500mL x 2	↓	↓	↓	↓	↓	
24	Potassium (10,000 mg/mL)	↓	10M41-1	1723447	4/19	125 mL	↓	↓	↓	↓	↓	
25	APDC	SIGMA	P8765-100G	BCBR189V	10/31/22	100g	G	10/31/17	776	10/31/17	776	

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	HCl	Fisher	A508-P212	4117010	03/02/20	2.5x20	P	11-09-17	710	11-09-17	710	
2	(HNO3) Nitric Acid	↓	A509-P212	1117042	05/25/19	2.5x12	P	↓	↓	↓	↓	
3	Buffer pH 4.0 Solution (I.C.V.)	VWR	E452-500mL	1252C3/2	11/15/18	500ml x 1	P	11/16/17	805	11/16/17	805	For: pH #5 REF: pH #C-Logbook p. 97
4	M.I.B.K	Fisher	M213-4	171549	11/21/20	4L x 4	G	11/20/17	935	11/21/17	935	
5	P Hydroxylamine Hydrochloride	Fisher	H 330-500	172066	12/1/22	500g x 12	P		848	12/1/17	848	
6	Zirconium	BICCA	MSZRIKN...	4711426	4/2017	100mL	P	12/06/17	Jr	12/06/17	Jr	
7	Buffer pH 4.0 Solution (Standard)	Fisher	SB101-500	173425	04/30/19	500ml x 2	P	12/12/17	805	12/12/17	805	REF: pH Logbook #10 p. 60
8	Buffer pH 7.0 Solution (I.C.V.)	Fisher	SB108-500	170679	01/31/19	500ml x 2	P	12/12/17	805	12/12/17	805	REF: pH Logbook # p. 60
9	Nitric Acid	Fisher	A509-212	1117060	05/15/19	2.5x20	P	11/17/17	710	11/17/17	710	
10	Interferents A	SPEX	CL-INT-A1	CL3-157MERY	12/30/18	125mL	P	12/19/17	53r	12/19/17	53r	
11	Terbium 10,000 µg/mL	High Purity	10M57-1	1716539	6/2019	125ml	P	12/19/17	935	12/19/17	935	
12	0.45 PVDF Filters (For STLC)	MILLEX	SLHVO33NK	R7CA90140	01/08/21	NA	P	01/09/18	805	01/09/18	805	REF: CIF #3 P. 31-32
13	EPA Method 200.7 Int. Check STD#1	Ultra	ICM-221	R01207A	3/31/21	50ml	P	1/10/17	935	1/10/18	935	
14	EPA Method 6010A Mixed STD. Sol. V	↓	ICM-605	CR-3299	8/31/20	125ml	↓	1/10/17	935	1/10/17	935	
15	Hg mercury 1000µg/mL 2% HCl	High purity standards	100033-2	1723615	7/1/19	250mL	P	1/11/17	1080	1/11/17	1080	
16	Calcium	Ultra	ICP-120-L	CR-3808	9/30/24	1L	P	1/15/18	53r	1/15/18	53r	
17	Magnesium	|	ICP-112-L	CP-0678	9/30/23	1L	P	|	|	|	|	
18	Lead (II) Chloride	ALDRICH	203572-10G	MKCC3373	1/22/2023	10g	P	1/22/18	710	–		
19	Sodium hydroxide monohydrate	Alfa Aesar	41200	61701011	1/22/23	25g	P	1/22/18	53r	1/22/18	53r	
20	Sulfuric Acid	Fisher	A300-212	3116493	5/4/20	2.5L	P	1/31/18	805	1/31/18	848	
21	Instrument Calibration Standard 2	SPEX	CL-CAL-2	CL4-41MLBY	01/30/19	125mL	P	1/31/18	Fr	1/31/18	Fr	
22	Instrument Calibration Standard 3	|	CL-CAL-3	CL4-01ME D4	01/30/19	125mL x 4	|	|	|	|	|	
23	Glass Mikrofiber TCLP filter	Whatman	1810-090	9691301	NA	4	NA	04/25/17	805	04/25/17	805	REF: CT #3 P. 30-[illegible]
24	Hydrogen Peroxide (H_2O_2)	EMD	~~HX~~ HX0635-2 (2-2-18 710)	56273642	10/31/18	1Lx10	P	02/02/18	710	02/02/18	710	
25	HNO3	Fisher	A509-P212	1117062	07/12/19	2.5x15	P	02/02/18	710	02/02/18	710	

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EPA 200.8 ICP/MS Metals

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RAW DATA

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EPA 200.8 ICP/MS Metals

Filtered

INITIAL CALIBRATION

ICV/ICB

CCV/CCB

ICSA/B

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EPA Method 200.8
Instrument Tuning

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Tuning Date: 03/27/18

Analyte	Exact Mass (amu)	Measured Mass (amu)	Mass Calibration		Mass Calibration DAC Value	Resolution DAC Value	Measured Peak Width (amu)	Resolution Check	
			Acceptance Criteria (amu)	Pass/Fail (P/F)				Acceptance Criteria (amu)	Pass/Fail (P/F)
C	12.000	12.025	± 0.100	P	2773	2064	0.704	< 0.900	P
Mg	23.985	23.975	± 0.100	P	5713	2056	0.739	< 0.900	P
Mg 25	24.986	25.025	± 0.100	P	5917	1996	0.743	< 0.900	P
Mg 26	25.983	25.975	± 0.100	P	6207	2076	0.720	< 0.900	P
Rh	102.905	102.925	± 0.100	P	24945	1899	0.699	< 0.900	P
Ce	139.905	139.875	± 0.100	P	33963	1839	0.698	< 0.900	P
Pb 206	205.975	205.975	± 0.100	P	50072	1705	0.687	< 0.900	P
Pb 207	206.976	206.975	± 0.100	P	50378	1768	0.716	< 0.900	P
Pb	207.977	208.025	± 0.100	P	50551	1696	0.687	< 0.900	P
U	238.050	238.025	± 0.100	P	57919	1668	0.688	< 0.900	P

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Tuning Filename: C:\Elandata\Tuning\Default.tun

Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

Analyte	Initial Calibration Verification					
	True	ICV-1		ICV-2		Control Limit
		Observed	%REC	Observed	%REC	
Copper	100.000000	100.821688	101	101.612800	102	90 - 110
Cadmium	100.000000	104.790273	105	104.043326	104	90 - 110
Lead	100.000000	103.931915	104	103.336073	103	90 - 110

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ICV-1 Filename: W:\dataset\2018\180327B1\ICV-1 - MS021218B.016
ICV-2 Filename: W:\dataset\2018\180327B1\ICV-1 - MS021218B.270

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Interference Check

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

Analyte	Interference Check					
	ICS-A		ICS-AB			
	Observed	Control Limit	True	Observed	%REC	Control Limit
Copper	0.098743	< 2.000000	20.000000	20.043472	100	80 – 120
Cadmium	0.064760	< 2.000000	10.000000	9.998683	100	80 – 120
Lead	0.016017	< 2.000000				

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ICS-A-1 Filename: W:\dataset\2018\180327B1\ICS-A - MS092817B.022
ICS-AB-1 Filename: W:\dataset\2018\180327B1\ICS-AB - MS092817C.023

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Continuing Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

Analyte	Continuing Calibration Verification					
	True	CCV-1		CCV-2		Control Limit
		Observed	%REC	Observed	%REC	
Copper	100.000000	101.902826	102	103.367420	103	90 - 110
Cadmium	100.000000	99.568692	100	99.528645	100	90 - 110
Lead	100.000000	98.821705	99	98.614265	99	90 - 110

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CCV-1 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.301
CCV-2 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.314

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L
Test Method: EPA 200.8

	Initial and Continuing Calibration Blanks				
Analyte	ICB-1	ICB-2	CCB-1	CCB-2	RL (No PF)
Copper	-0.001116	-0.010748	0.013350	0.014819	1.000000
Cadmium	0.018666	0.011791	0.005332	0.018702	1.000000
Lead	-0.000552	-0.000504	-0.003080	0.004772	1.000000

Preparation Factor (PF): 1 L/L
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ICB-1 Filename: W:\dataset\2018\180327B1\ICB.019
ICB-2 Filename: W:\dataset\2018\180327B1\ICB.273
CCB-1 Filename: W:\dataset\2018\180327B1\CCB.303
CCB-2 Filename: W:\dataset\2018\180327B1\CCB.316

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Internal Standard Summary

Work Order No.: 18-03-1798

Instrument ID: ICP/MS 03

Test Method: EPA 200.8 Control Limit: 60–125%

Sample	Analysis	IS-3		IS-4		IS-5	
CEL ID Number	Date/Time	Analyte	%RI	Analyte	%RI	Analyte	%RI
180326-ba-1	03/27/2018 23:07:34	Gallium	97	Indium	99	Bismuth	97
180326-ba-2	03/27/2018 23:10:02	Gallium	98	Indium	99	Bismuth	98
180326-la-1	03/27/2018 23:12:29	Gallium	99	Indium	99	Bismuth	97
180326-la-2	03/27/2018 23:14:57	Gallium	99	Indium	98	Bismuth	97
18-03-1798-f-2 ms	03/27/2018 23:17:24	Gallium	96	Indium	97	Bismuth	95
18-03-1798-f-2 msd	03/27/2018 23:19:52	Gallium	96	Indium	98	Bismuth	94

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial Calibration Verification

Work Order No.: 18-03-1798

Instrument ID: ICP/MS 03

Concentration Unit: µg/L

Analyte	Initial Calibration Verification			
	True	ICV-1 Observed	ICV-1 %REC	Control Limit
Copper	100.000000	102.922568	103	90 - 110
Cadmium	100.000000	103.277628	103	90 - 110
Lead	100.000000	104.307730	104	90 - 110

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ICV-1 Filename: W:\dataset\2018\180327B1\ICV-1 - MS021218B.320

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L
Test Method: EPA 200.8

Analyte	Initial and Continuing Calibration Blanks				
	ICB-1	CCB-1	CCB-2	CCB-3	RL (No PF)
Copper	-0.005770	0.025495	0.002749	-0.008352	1.000000
Cadmium	0.011174	0.033989	-0.000085	-0.005249	1.000000
Lead	-0.004297	0.023231	-0.001523	-0.008272	1.000000

Preparation Factor (PF): 1 L/L
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ICB-1 Filename: W:\dataset\2018\180327B1\ICB.323
CCB-1 Filename: W:\dataset\2018\180327B1\CCB.326
CCB-2 Filename: W:\dataset\2018\180327B1\CCB.340
CCB-3 Filename: W:\dataset\2018\180327B1\CCB.353

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Continuing Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

	Continuing Calibration Verification							
		CCV-1		CCV-2		CCV-3		Control
Analyte	True	Observed	%REC	Observed	%REC	Observed	%REC	Limit
Copper	100.000000	98.393064	98	98.631161	99	101.596181	102	90 - 110
Cadmium	100.000000	101.608430	102	100.394339	100	102.357981	102	90 - 110
Lead	100.000000	98.944028	99	99.681591	100	101.369803	101	90 - 110

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CCV-1 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.324
CCV-2 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.338
CCV-3 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.351

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Internal Standard Summary

Work Order No.: 18-03-1798

Instrument ID: ICP/MS 03

Test Method: EPA 200.8 Control Limit: 60-125%

Sample CEL ID Number	Analysis Date/Time	IS-3		IS-4		IS-5	
		Analyte	%RI	Analyte	%RI	Analyte	%RI
18-03-1798-f-2	03/28/2018 00:01:56	Gallium	97	Indium	101	Bismuth	98
18-03-1798-f-1	03/28/2018 00:04:23	Gallium	100	Indium	100	Bismuth	101
18-03-1798-f-3	03/28/2018 00:06:50	Gallium	98	Indium	100	Bismuth	100
18-03-1798-f-4	03/28/2018 00:09:17	Gallium	97	Indium	101	Bismuth	99
18-03-1798-f-5	03/28/2018 00:11:44	Gallium	99	Indium	100	Bismuth	101
18-03-1798-f-6	03/28/2018 00:14:11	Gallium	97	Indium	102	Bismuth	99
18-03-1798-1 ms	03/28/2018 00:16:38	Gallium	99	Indium	101	Bismuth	101
18-03-1798-1 msd	03/28/2018 00:19:05	Gallium	100	Indium	100	Bismuth	99
18-03-1798-1	03/28/2018 00:33:51	Gallium	104	Indium	101	Bismuth	102
18-03-1798-2	03/28/2018 00:36:18	Gallium	99	Indium	100	Bismuth	99
18-03-1798-3	03/28/2018 00:38:45	Gallium	101	Indium	100	Bismuth	99
18-03-1798-4	03/28/2018 00:41:12	Gallium	101	Indium	99	Bismuth	97
18-03-1798-5	03/28/2018 00:43:39	Gallium	97	Indium	102	Bismuth	97
18-03-1798-6	03/28/2018 00:46:06	Gallium	103	Indium	101	Bismuth	101
18-03-1798-7	03/28/2018 00:48:33	Gallium	100	Indium	102	Bismuth	100

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Instrument Tuning Report

Instrument Name: ICP-MS-03 US26INS00050
Analyst Name: UFLE
Sample Date/Time: Tuesday, March 27, 2018 09:40:20
File Name: Default.tun
File Path: C:\Elandata\Tuning\Default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
C	12.000	12.025	2773	2064	0.704	
Mg	23.985	23.975	5713	2056	0.739	
Mg 25	24.986	25.025	5917	1996	0.743	
Mg 26	25.983	25.975	6207	2076	0.720	
Rh	102.905	102.925	24945	1899	0.699	
Ce	139.905	139.875	33963	1839	0.698	
Pb 206	205.975	205.975	50072	1705	0.687	
Pb 207	206.976	206.975	50378	1768	0.716	
Pb	207.977	208.025	50551	1696	0.687	
U	238.050	238.025	57919	1668	0.688	

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Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Tuesday, March 27, 2018 09:57:05
Sample Description:
Method File: C:\elandata\Method\CEL\Cel-Daily Performance-2.mth
Dataset File: W:\dataset\2018\180327B1\Daily Performance Check.003
Tuning File: C:\Elandata\Tuning\Default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Pulse
Acq. Dead Time(ns): 55
Current Dead Time (ns): 55
Instrument Name: ICP/MS 3
User Name: UFLE

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	80443.4	80443.355	480.980	0.6
	In	114.9	499036.5	499036.548	5846.940	1.2
	Pb	208.0	219427.3	219427.314	1249.249	0.6
⌈	Ce++	70.0	6518.7	0.011	0.000	2.7
| >	Ce	139.9	587188.4	587188.372	7390.117	1.3
⌊	CeO	155.9	15865.8	0.027	0.000	1.2
	Bkgd	220.0	51.8	51.833	8.608	16.6

Current Optimization File Data

Current Value	Description
0.92	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
16.00	Plasma Gas Flow
6.50	Lens Voltage
1600.00	ICP RF Power
-1800.00	Analog Stage Voltage
1050.00	Pulse Stage Voltage
-3.00	Quadrupole Rod Offset Std [QRO]
-8.00	Cell Rod Offset Std [CRO]
22.00	Discriminator Threshold
-20.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.90	RPq
0.92	DRC Mode NEB
-16.00	DRC Mode QRO
-3.00	DRC Mode CRO
-37.00	DRC Mode CPV
0.00	Cell Gas A
3.00	Cell Gas B
200.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
350.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	13	21	5.0	6708.0

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Mg	24	21	4.5	87062.1
In	115	21	6.5	505297.9
Ce	140	21	6.5	597866.9
Pb	208	21	8.5	218523.0
U	238	21	9.0	460687.1

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: Blank

Autosampler Position: 2

Sample Date/Time: Tuesday, March 27, 2018 10:30:54

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\Blank.013

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		47189.830		ppb	0.500	
9	Be		54.333		ppb	16.599	
45	Sc	>	4982270.966		ppb	3.629	
10	B		154.668		ppb	9.706	
23	Na		309.529		ppb	16.624	
25	Mg		577.161		ppb	9.445	
27	Al		5474.315		ppb	1.441	
39	K		8443.921		ppb	1.898	
43	Ca		274.290		ppb	6.831	
44	Ca		39926.534		ppb	0.437	
45	Sc-1	>	4982270.966		ppb	3.629	
47	Ti		156.001		ppb	15.115	
49	Ti		162.668		ppb	3.756	
51	V		2493.845		ppb	9.675	
52	Cr		8871.660		ppb	0.773	
55	Mn		645.356		ppb	3.787	
54	Fe		31470.175		ppb	1.576	
57	Fe		11706.205		ppb	3.479	
59	Co		206.002		ppb	10.680	
60	Ni		209.336		ppb	13.421	
63	Cu		399.779		ppb	2.208	
65	Cu		183.806		ppb	20.707	
71	Ga	>	1433439.379		ppb	1.707	
75	As		7420.493		ppb	1.538	
75	As-1		-332.758		ppb	23.260	
78	Se		7727.417		ppb	1.775	
82	Se		2.919		ppb	741.926	
88	Sr		156.668		ppb	3.900	
66	Zn		1515.460		ppb	0.936	
68	Zn		1992.885		ppb	4.061	
95	Mo		380.008		ppb	16.941	
115	In-1	>	1105309.653		ppb	0.780	
107	Ag		114.001		ppb	1.754	
111	Cd		28.617		ppb	100.970	
118	Sn		685.359		ppb	8.328	
121	Sb		128.668		ppb	14.359	
135	Ba		89.334		ppb	5.634	
165	Ho		1307419.809		ppb	3.374	
159	Tb		1408994.867		ppb	2.898	
203	Tl		89.334		ppb	10.341	
207	Pb		586.007		ppb	3.464	
209	Bi	>	731930.875		ppb	2.006	

QC Out of Limits

ıalyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: STD-1 - MS021518A

Autosampler Position: 3

Sample Date/Time: Tuesday, March 27, 2018 10:33:22

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\STD-1 - MS021518A.014

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	45718.020		ppb	1.521	47189.830
9	Be	|	72554.078	200.000000	ppb	1.390	54.333
45	Sc	|>	4932291.153		ppb	2.626	4982270.966
10	B	⌊	54947.689	500.000000	ppb	3.452	154.668
23	Na	⌈	367308.582	10200.000000	ppb	2.443	309.529
25	Mg	|	5329005.961	10200.000000	ppb	1.403	577.161
27	Al	|	1131317.035	200.000000	ppb	3.216	5474.315
39	K	|	1291623.882	10200.000000	ppb	0.468	8443.921
43	Ca	|	150654.731	10200.000000	ppb	2.411	274.290
44	Ca	|	1942646.163	10200.000000	ppb	3.327	39926.534
45	Sc-1	|>	4932291.153		ppb	2.626	4982270.966
47	Ti	|	135454.977	200.000000	ppb	3.093	156.001
49	Ti	|	116120.120	200.000000	ppb	3.354	162.668
51	V	|	1917524.382	200.000000	ppb	1.799	2493.845
52	Cr	|	1728806.014	200.000000	ppb	1.233	8871.660
55	Mn	|	2639553.937	200.000000	ppb	0.766	645.356
54	Fe	|	6850818.905	10200.000000	ppb	1.764	31470.175
57	Fe	|	2888950.088	10200.000000	ppb	0.592	11706.205
59	Co	|	2336121.750	200.000000	ppb	1.430	206.002
60	Ni	⌊	503844.308	200.000000	ppb	1.721	209.336
63	Cu	⌈	1095952.380	200.000000	ppb	2.464	399.779
65	Cu	|	503460.022	200.000000	ppb	2.601	183.806
71	Ga	|>	1385716.288		ppb	1.075	1433439.379
75	As	|	332138.120	200.000000	ppb	1.938	7420.493
75	As-1	|	360901.503	200.000000	ppb	2.176	-332.758
78	Se	|	95640.867	200.000000	ppb	2.255	7727.417
82	Se	|	45603.043	200.000000	ppb	2.756	2.919
88	Sr	|	4114857.564	200.000000	ppb	2.769	156.668
66	Zn	|	316595.758	200.000000	ppb	1.347	1515.460
68	Zn	⌊	229331.936	200.000000	ppb	1.910	1992.885
95	Mo	⌈	690506.325	200.000000	ppb	2.044	380.008
115	In-1	|>	1089737.805		ppb	1.179	1105309.653
107	Ag	|	1877387.708	200.000000	ppb	2.537	114.001
111	Cd	|	418064.822	200.000000	ppb	1.033	28.617
118	Sn	|	1079510.865	200.000000	ppb	1.595	685.359
121	Sb	|	1260406.008	200.000000	ppb	2.018	128.668
135	Ba	|	371121.744	200.000000	ppb	2.077	89.334
165	Ho	|	1285227.233		ppb	1.929	1307419.809
159	Tb	⌊	1384490.647		ppb	2.863	1408994.867
203	Tl	⌈	1373845.183	200.000000	ppb	1.123	89.334
207	Pb	|	3802124.674	200.000000	ppb	0.842	586.007
209	Bi	⌊>	703920.965		ppb	1.431	731930.875

QC Out of Limits

ıalyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICV-1 - MS021218B
Autosampler Position: 206
Sample Date/Time: Tuesday, March 27, 2018 10:38:21
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICV-1 - MS021218B.016
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	46373.645		ppb	0.318	47189.830
9	Be	|	37528.643	102.820167	ppb	1.201	54.333
45	Sc	|>	4957708.042		ppb	2.726	4982270.966
10	B	⌊	286.671	1.202612	ppb	16.248	154.668
23	Na	⌈	331.435	0.659247	ppb	4.800	309.529
25	Mg	|	55423.699	104.493236	ppb	1.515	577.161
27	Al	|	5963.956	0.092207	ppb	2.074	5474.315
39	K	|	8696.826	2.375649	ppb	1.841	8443.921
43	Ca	|	2985.253	183.157878	ppb	4.198	274.290
44	Ca	|	74361.006	184.772898	ppb	1.082	39926.534
45	Sc-1	|>	4957708.042		ppb	2.726	4982270.966
47	Ti	|	69166.811	101.519074	ppb	1.054	156.001
49	Ti	|	58749.250	100.548439	ppb	1.549	162.668
51	V	|	1013182.122	104.973787	ppb	1.761	2493.845
52	Cr	|	914639.539	104.797159	ppb	1.256	8871.660
55	Mn	|	1387381.135	104.615758	ppb	2.395	645.356
54	Fe	|	3549183.542	5236.400940	ppb	0.911	31470.175
57	Fe	|	1466574.884	5132.502436	ppb	1.712	11706.205
59	Co	|	1163477.681	99.096961	ppb	1.424	206.002
60	Ni	⌊	261119.401	103.105761	ppb	2.122	209.336
63	Cu	⌈	576694.236	103.205872	ppb	1.973	399.779
65	Cu	|	258809.894	100.821688	ppb	2.365	183.806
71	Ga	|>	1412631.923		ppb	0.722	1433439.379
75	As	|	173636.594	100.418170	ppb	0.692	7420.493
75	As-1	|	184913.325	100.619193	ppb	0.315	-332.758
78	Se	|	53625.015	102.376031	ppb	1.152	7727.417
82	Se	|	23797.028	102.388908	ppb	1.399	2.919
88	Sr	|	2104320.564	100.321841	ppb	2.264	156.668
66	Zn	|	167676.679	103.453787	ppb	2.138	1515.460
68	Zn	⌊	115437.748	97.898633	ppb	1.550	1992.885
95	Mo	⌈	351274.117	101.578491	ppb	1.836	380.008
115	In-1	|>	1090737.595		ppb	1.308	1105309.653
107	Ag	|	224.003	0.011850	ppb	12.659	114.001
111	Cd	|	219295.234	104.790273	ppb	2.467	28.617
118	Sn	|	526221.324	97.344239	ppb	2.478	685.359
121	Sb	|	615607.236	97.592924	ppb	2.475	128.668
135	Ba	|	152.668	0.034726	ppb	4.211	89.334
165	Ho	|	1302154.631		ppb	2.391	1307419.809
159	Tb	⌊	1370336.842		ppb	2.292	1408994.867
203	Tl	⌈	680956.767	97.732437	ppb	1.285	89.334
207	Pb	|	2004619.320	103.931915	ppb	2.949	586.007
209	Bi	⌊>	713981.812		ppb	2.350	731930.875

QC Out of Limits

alyte Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICB

Autosampler Position: 2

Sample Date/Time: Tuesday, March 27, 2018 10:45:50

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICB.019

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	46643.707		ppb	1.573	47189.830
9	Be	|	61.334	0.020488	ppb	0.941	54.333
45	Sc	|>	4941567.437		ppb	0.904	4982270.966
10	B	⌊	233.336	0.726074	ppb	18.961	154.668
23	Na	⌈	256.194	-1.405556	ppb	10.362	309.529
25	Mg	|	528.587	-0.082958	ppb	12.468	577.161
27	Al	|	3339.280	-0.370521	ppb	0.537	5474.315
39	K	|	8625.424	1.988566	ppb	1.203	8443.921
43	Ca	|	291.433	1.311823	ppb	7.070	274.290
44	Ca	|	37751.570	-9.870153	ppb	1.633	39926.534
45	Sc-1	|>	4941567.437		ppb	0.904	4982270.966
47	Ti	|	160.668	0.008888	ppb	9.984	156.001
49	Ti	|	168.668	0.012700	ppb	9.585	162.668
51	V	|	2515.306	0.004513	ppb	10.637	2493.845
52	Cr	|	8690.820	-0.012621	ppb	1.694	8871.660
55	Mn	|	680.025	0.003023	ppb	4.149	645.356
54	Fe	|	30419.659	-1.180398	ppb	0.665	31470.175
57	Fe	|	11555.339	-0.191453	ppb	0.675	11706.205
59	Co	|	246.003	0.003553	ppb	7.226	206.002
60	Ni	⌊	295.338	0.034833	ppb	14.227	209.336
63	Cu	⌈	380.378	-0.002657	ppb	7.167	399.779
65	Cu	|	178.447	-0.001116	ppb	15.883	183.806
71	Ga	|>	1416456.213		ppb	1.642	1433439.379
75	As	|	7268.186	-0.038084	ppb	1.709	7420.493
75	As-1	|	-307.851	0.010967	ppb	19.955	-332.758
78	Se	|	7553.247	-0.180443	ppb	1.067	7727.417
82	Se	|	4.075	0.004253	ppb	551.687	2.919
88	Sr	|	258.004	0.004922	ppb	14.104	156.668
66	Zn	|	1485.455	-0.008245	ppb	9.331	1515.460
68	Zn	⌊	1967.546	-0.001665	ppb	3.190	1992.885
95	Mo	⌈	342.007	-0.009336	ppb	27.536	380.008
115	In-1	|>	1085777.686		ppb	1.780	1105309.653
107	Ag	|	258.004	0.015619	ppb	3.101	114.001
111	Cd	|	67.136	0.018666	ppb	50.845	28.617
118	Sn	|	2358.978	0.312935	ppb	15.639	685.359
121	Sb	|	1364.106	0.196586	ppb	23.368	128.668
135	Ba	|	94.001	0.003555	ppb	27.904	89.334
165	Ho	|	1278088.440		ppb	0.988	1307419.809
159	Tb	⌊	1374103.978		ppb	2.050	1408994.867
203	Tl	⌈	112.001	0.003674	ppb	15.465	89.334
207	Pb	|	558.673	-0.000552	ppb	16.839	586.007
209	Bi	⌊>	710013.349		ppb	1.830	731930.875

QC Out of Limits

ıalyte MassOut of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICS-A - MS092817B

Autosampler Position: 9

Sample Date/Time: Tuesday, March 27, 2018 10:53:16

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICS-A - MS092817B.022

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		44247.763		ppb	1.081	47189.830
9	Be		64.334	0.029883	ppb	14.692	54.333
45	Sc	>	4923595.043		ppb	2.464	4982270.966
10	B		250.670	0.894770	ppb	1.219	154.668
23	Na		882923.522	24560.846476	ppb	0.383	309.529
25	Mg		5026994.972	9637.883208	ppb	2.677	577.161
27	Al		55540647.286	9881.240939	ppb	4.803	5474.315
39	K		1219635.665	9644.208381	ppb	2.192	8443.921
43	Ca		428834.037	29108.298287	ppb	5.268	274.290
44	Ca		5511921.440	29384.160972	ppb	2.645	39926.534
45	Sc-1	>	4923595.043		ppb	2.464	4982270.966
47	Ti		160956.449	238.180018	ppb	0.860	156.001
49	Ti		117618.090	202.962165	ppb	1.485	162.668
51	V		492.388	-0.207224	ppb	130.039	2493.845
52	Cr		10264.461	0.174270	ppb	2.894	8871.660
55	Mn		16218.457	1.183310	ppb	1.786	645.356
54	Fe		16646347.526	24900.639827	ppb	0.121	31470.175
57	Fe		7002991.284	24825.002310	ppb	0.490	11706.205
59	Co		1076.730	0.074935	ppb	3.507	206.002
60	Ni		1781.508	0.626514	ppb	1.805	209.336
63	Cu		218.971	-0.028703	ppb	60.171	399.779
65	Cu		406.164	0.098743	ppb	18.928	183.806
71	Ga	>	1320431.879		ppb	0.601	1433439.379
75	As		7186.827	0.227120	ppb	0.580	7420.493
75	As-1		-181.391	0.072664	ppb	17.736	-332.758
78	Se		7392.450	0.654212	ppb	1.663	7727.417
82	Se		20.857	0.083979	ppb	145.961	2.919
88	Sr		24501.649	1.242213	ppb	2.006	156.668
66	Zn		2363.641	0.644433	ppb	2.769	1515.460
68	Zn		2002.221	0.153850	ppb	3.102	1992.885
95	Mo		694152.213	209.134062	ppb	0.869	380.008
115	In-1	>	1047667.855		ppb	1.527	1105309.653
107	Ag		395.342	0.031863	ppb	5.362	114.001
111	Cd		157.939	0.064760	ppb	43.133	28.617
118	Sn		3253.258	0.502349	ppb	15.698	685.359
121	Sb		1219.416	0.181233	ppb	8.556	128.668
135	Ba		356.674	0.152507	ppb	3.426	89.334
165	Ho		1272309.122		ppb	2.073	1307419.809
159	Tb		1347364.576		ppb	1.273	1408994.867
203	Tl		158.001	0.011870	ppb	16.601	89.334
207	Pb		818.680	0.016017	ppb	1.102	586.007
209	Bi	>	663974.350		ppb	1.638	731930.875

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICS-AB - MS092817C
Autosampler Position: 10
Sample Date/Time: Tuesday, March 27, 2018 10:55:45
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICS-AB - MS092817C.023
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		45480.149		ppb	0.528	47189.830
9	Be		52.333	-0.001581	ppb	13.557	54.333
45	Sc	>	4846281.806		ppb	1.193	4982270.966
10	B		217.336	0.621199	ppb	3.831	154.668
23	Na		859718.885	24290.852611	ppb	1.799	309.529
25	Mg		4890491.764	9524.011870	ppb	2.452	577.161
27	Al		54428302.143	9839.027758	ppb	1.644	5474.315
39	K		1204367.316	9672.578362	ppb	2.024	8443.921
43	Ca		426505.482	29416.967386	ppb	1.921	274.290
44	Ca		5542344.330	30021.937738	ppb	3.499	39926.534
45	Sc-1	>	4846281.806		ppb	1.193	4982270.966
47	Ti		159008.663	239.026056	ppb	1.116	156.001
49	Ti		114918.544	201.462424	ppb	1.409	162.668
51	V		196036.289	20.566247	ppb	0.639	2493.845
52	Cr		180836.946	20.375039	ppb	0.648	8871.660
55	Mn		276053.773	21.239154	ppb	1.338	645.356
54	Fe		16328686.552	24801.888878	ppb	3.355	31470.175
57	Fe		6869515.641	24733.699413	ppb	1.267	11706.205
59	Co		219372.853	19.088045	ppb	1.162	206.002
60	Ni		49254.415	19.814211	ppb	1.181	209.336
63	Cu		104709.726	19.854849	ppb	1.775	399.779
65	Cu		48562.986	20.043472	ppb	2.686	183.806
71	Ga	>	1329534.983		ppb	1.835	1433439.379
75	As		22974.436	10.323730	ppb	1.288	7420.493
75	As-1		17527.889	10.294514	ppb	1.702	-332.758
78	Se		11421.487	10.060912	ppb	2.677	7727.417
82	Se		2201.653	10.054955	ppb	0.882	2.919
88	Sr		24569.835	1.237504	ppb	2.210	156.668
66	Zn		16959.146	10.288792	ppb	2.863	1515.460
68	Zn		12254.922	9.541529	ppb	0.861	1992.885
95	Mo		680075.209	205.143460	ppb	2.108	380.008
115	In-1	>	1046184.807		ppb	1.722	1105309.653
107	Ag		45587.362	5.046801	ppb	1.314	114.001
111	Cd		20097.006	9.998683	ppb	3.757	28.617
118	Sn		1984.887	0.257371	ppb	16.595	685.359
121	Sb		1009.390	0.146583	ppb	8.918	128.668
135	Ba		361.341	0.155648	ppb	8.455	89.334
165	Ho		1266010.205		ppb	0.961	1307419.809
159	Tb		1352331.978		ppb	0.688	1408994.867
203	Tl		139.334	0.009198	ppb	14.378	89.334
207	Pb		752.678	0.012628	ppb	6.279	586.007
209	Bi	>	659010.434		ppb	1.748	731930.875

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: Blank

Autosampler Position: 2

Sample Date/Time: Tuesday, March 27, 2018 21:26:16

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\Blank.267

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	**Li**		40188.711		ppb	3.558	
9	**Be**		44.667		ppb	24.762	
45	**Sc**	>	4734242.801		ppb	2.905	
10	**B**		141.334		ppb	4.323	
23	**Na**		176.192		ppb	7.312	
25	**Mg**		312.386		ppb	13.328	
27	**Al**		2188.264		ppb	3.412	
39	**K**		8094.936		ppb	0.915	
43	**Ca**		233.336		ppb	21.916	
44	**Ca**		23646.906		ppb	0.679	
45	**Sc-1**	>	4734242.801		ppb	2.905	
47	**Ti**		164.668		ppb	23.966	
49	**Ti**		160.668		ppb	3.133	
51	**V**		2518.782		ppb	7.994	
52	**Cr**		8213.711		ppb	2.728	
55	**Mn**		844.039		ppb	4.521	
54	**Fe**		27690.319		ppb	2.004	
57	**Fe**		10771.047		ppb	2.605	
59	**Co**		180.002		ppb	1.111	
60	**Ni**		125.334		ppb	6.041	
63	**Cu**		302.985		ppb	8.291	
65	**Cu**		163.091		ppb	7.480	
71	**Ga**	>	1366388.245		ppb	2.779	
75	**As**		7058.145		ppb	2.935	
75	**As-1**		-281.356		ppb	28.221	
78	**Se**		7309.951		ppb	2.672	
82	**Se**		0.945		ppb	3184.827	
88	**Sr**		202.002		ppb	8.575	
66	**Zn**		1314.762		ppb	8.216	
68	**Zn**		1754.169		ppb	1.543	
95	**Mo**		350.007		ppb	21.351	
115	**In-1**	>	1057220.148		ppb	1.985	
107	**Ag**		164.001		ppb	9.680	
111	**Cd**		30.901		ppb	54.361	
118	**Sn**		2895.813		ppb	24.705	
121	**Sb**		1047.395		ppb	20.742	
135	**Ba**		186.002		ppb	11.631	
165	**Ho**		1276471.289		ppb	2.968	
159	**Tb**		1363627.612		ppb	2.631	
203	**Tl**		90.000		ppb	5.879	
207	**Pb**		534.006		ppb	6.233	
209	**Bi**	>	711392.616		ppb	1.483	

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: STD-1 - MS021518A

Autosampler Position: 3

Sample Date/Time: Tuesday, March 27, 2018 21:28:44

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\STD-1 - MS021518A.268

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	37068.148		ppb	3.519	40188.711
9	Be	|	66117.664	200.000000	ppb	2.516	44.667
45	Sc	|>	4699445.326		ppb	4.369	4734242.801
10	B	⌊	50388.043	500.000000	ppb	3.596	141.334
23	Na	⌈	344181.846	10200.000000	ppb	2.102	176.192
25	Mg	|	5416342.211	10200.000000	ppb	3.105	312.386
27	Al	|	1158378.165	200.000000	ppb	2.936	2188.264
39	K	|	1242640.397	10200.000000	ppb	1.796	8094.936
43	Ca	|	141655.382	10200.000000	ppb	1.941	233.336
44	Ca	|	1835098.957	10200.000000	ppb	4.409	23646.906
45	Sc-1	|>	4699445.326		ppb	4.369	4734242.801
47	Ti	|	133222.041	200.000000	ppb	3.953	164.668
49	Ti	|	111982.429	200.000000	ppb	4.580	160.668
51	V	|	1863559.929	200.000000	ppb	3.716	2518.782
52	Cr	|	1638860.594	200.000000	ppb	2.021	8213.711
55	Mn	|	2555406.347	200.000000	ppb	2.471	844.039
54	Fe	|	6579205.246	10200.000000	ppb	2.435	27690.319
57	Fe	|	2732808.099	10200.000000	ppb	2.019	10771.047
59	Co	|	2169425.806	200.000000	ppb	1.755	180.002
60	Ni	⌊	470081.948	200.000000	ppb	0.832	125.334
63	Cu	⌈	1020439.965	200.000000	ppb	2.971	302.985
65	Cu	|	463741.567	200.000000	ppb	2.878	163.091
71	Ga	|>	1296293.453		ppb	2.504	1366388.245
75	As	|	312329.312	200.000000	ppb	2.922	7058.145
75	As-1	|	340091.119	200.000000	ppb	3.188	-281.356
78	Se	|	92455.327	200.000000	ppb	3.785	7309.951
82	Se	|	44068.186	200.000000	ppb	3.341	0.945
88	Sr	|	3865701.456	200.000000	ppb	3.242	202.002
66	Zn	|	294960.884	200.000000	ppb	2.670	1314.762
68	Zn	⌊	213048.929	200.000000	ppb	2.138	1754.169
95	Mo	⌈	658491.302	200.000000	ppb	1.723	350.007
115	In-1	|>	1025883.866		ppb	2.396	1057220.148
107	Ag	|	1785009.059	200.000000	ppb	2.860	164.001
111	Cd	|	402588.289	200.000000	ppb	1.643	30.901
118	Sn	|	1018523.547	200.000000	ppb	2.789	2895.813
121	Sb	|	1211788.122	200.000000	ppb	2.400	1047.395
135	Ba	|	362425.160	200.000000	ppb	3.425	186.002
165	Ho	|	1257213.773		ppb	2.618	1276471.289
159	Tb	⌊	1351528.365		ppb	1.842	1363627.612
203	Tl	⌈	1311018.869	200.000000	ppb	3.435	90.000
207	Pb	|	3645739.893	200.000000	ppb	1.821	534.006
209	Bi	⌊>	668272.965		ppb	1.911	711392.616

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICV-1 - MS021218B

Autosampler Position: 206

Sample Date/Time: Tuesday, March 27, 2018 21:33:43

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICV-1 - MS021218B.270

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38640.058		ppb	4.577	40188.711
9	Be		33910.821	101.950896	ppb	2.429	44.667
45	Sc	>	4728890.848		ppb	4.630	4734242.801
10	B		208.669	0.675187	ppb	9.601	141.334
23	Na		192.383	0.509424	ppb	14.577	176.192
25	Mg		57278.109	106.587651	ppb	3.401	312.386
27	Al		3412.641	0.211522	ppb	2.438	2188.264
39	K		8121.627	0.390841	ppb	1.445	8094.936
43	Ca		2861.403	188.412215	ppb	2.038	233.336
44	Ca		57281.832	188.661347	ppb	1.515	23646.906
45	Sc-1	>	4728890.848		ppb	4.630	4734242.801
47	Ti		66792.819	99.510001	ppb	4.631	164.668
49	Ti		56845.926	100.874405	ppb	2.652	160.668
51	V		956872.257	101.974870	ppb	2.794	2518.782
52	Cr		872915.768	105.391306	ppb	3.272	8213.711
55	Mn		1339841.375	104.256418	ppb	2.424	844.039
54	Fe		3363347.581	5164.178932	ppb	2.806	27690.319
57	Fe		1416669.628	5240.047661	ppb	2.215	10771.047
59	Co		1101791.231	100.971440	ppb	3.008	180.002
60	Ni		248798.885	105.271271	ppb	3.245	125.334
63	Cu		552230.070	102.152104	ppb	1.729	302.985
65	Cu		249627.237	101.612800	ppb	2.229	163.091
71	Ga	>	1373553.934		ppb	4.122	1366388.245
75	As		166040.087	98.232285	ppb	1.899	7058.145
75	As-1		176609.593	98.174447	ppb	1.859	-281.356
78	Se		51879.825	98.376714	ppb	3.199	7309.951
82	Se		22898.125	98.171049	ppb	3.535	0.945
88	Sr		2022820.617	98.902286	ppb	3.080	202.002
66	Zn		163086.153	104.002390	ppb	1.830	1314.762
68	Zn		112375.463	98.783447	ppb	3.346	1754.169
95	Mo		333737.512	98.079611	ppb	1.850	350.007
115	In-1	>	1059302.902		ppb	2.602	1057220.148
107	Ag		188.669	0.002635	ppb	5.838	164.001
111	Cd		216307.365	104.043326	ppb	2.416	30.901
118	Sn		516541.383	97.981364	ppb	1.472	2895.813
121	Sb		593303.263	94.765134	ppb	1.665	1047.395
135	Ba		103.334	-0.044338	ppb	5.587	186.002
165	Ho		1274134.448		ppb	3.240	1276471.289
159	Tb		1348400.996		ppb	2.954	1363627.612
203	Tl		664766.716	96.351894	ppb	4.283	90.000
207	Pb		1982783.418	103.336073	ppb	1.813	534.006
209	Bi	>	703501.848		ppb	2.155	711392.616

QC Out of Limits

Analyte	Mass	Out of Limits Message
I	43	
I	44	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICB

Autosampler Position: 2

Sample Date/Time: Tuesday, March 27, 2018 21:41:10

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICB.273

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38229.941		ppb	3.326	40188.711
9	Be		43.667	-0.001986	ppb	18.652	44.667
45	Sc	>	4686831.404		ppb	2.283	4734242.801
10	B		192.002	0.520147	ppb	21.525	141.334
23	Na		152.382	-0.653950	ppb	5.413	176.192
25	Mg		415.248	0.201197	ppb	10.144	312.386
27	Al		2214.938	0.008250	ppb	7.819	2188.264
39	K		8148.317	1.130810	ppb	0.992	8094.936
43	Ca		243.813	0.917493	ppb	6.664	233.336
44	Ca		22863.000	-3.053527	ppb	0.507	23646.906
45	Sc-1	>	4686831.404		ppb	2.283	4734242.801
47	Ti		125.334	-0.057087	ppb	14.480	164.668
49	Ti		166.002	0.012106	ppb	10.294	160.668
51	V		2449.948	-0.004439	ppb	5.916	2518.782
52	Cr		8147.651	0.002618	ppb	2.637	8213.711
55	Mn		845.373	0.000817	ppb	2.862	844.039
54	Fe		27416.704	0.003082	ppb	3.726	27690.319
57	Fe		10836.462	0.672567	ppb	4.162	10771.047
59	Co		183.335	0.000481	ppb	4.919	180.002
60	Ni		111.334	-0.005312	ppb	19.376	125.334
63	Cu		356.216	0.011712	ppb	4.638	302.985
65	Cu		133.308	-0.010748	ppb	11.775	163.091
71	Ga	>	1330202.088		ppb	3.034	1366388.245
75	As		6977.895	0.068707	ppb	3.474	7058.145
75	As-1		-98.465	0.100296	ppb	20.135	-281.356
78	Se		7174.403	0.133966	ppb	3.358	7309.951
82	Se		47.118	0.203338	ppb	40.649	0.945
88	Sr		188.002	-0.000428	ppb	12.269	202.002
66	Zn		1292.759	0.008361	ppb	4.857	1314.762
68	Zn		1768.839	0.055325	ppb	7.624	1754.169
95	Mo		308.005	-0.011667	ppb	21.172	350.007
115	In-1	>	1045781.356		ppb	2.495	1057220.148
107	Ag		245.337	0.009185	ppb	11.795	164.001
111	Cd		54.864	0.011791	ppb	13.716	30.901
118	Sn		2713.757	-0.031174	ppb	26.557	2895.813
121	Sb		1581.475	0.087647	ppb	21.152	1047.395
135	Ba		213.336	0.015852	ppb	10.537	186.002
165	Ho		1282564.375		ppb	3.328	1276471.289
159	Tb		1362193.948		ppb	2.151	1363627.612
203	Tl		78.667	-0.001468	ppb	16.542	90.000
207	Pb		518.005	-0.000504	ppb	8.108	534.006
209	Bi	>	703466.400		ppb	2.567	711392.616

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCV - 0.5 x STD-1

Autosampler Position: 4

Sample Date/Time: Tuesday, March 27, 2018 22:50:15

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.301

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		41083.985		ppb	2.091	40188.711
9	Be		34641.233	103.538398	ppb	2.347	44.667
45	Sc	>	4748799.332		ppb	0.895	4734242.801
10	B		26786.744	262.148896	ppb	1.361	141.334
23	Na		179782.170	5260.520543	ppb	2.849	176.192
25	Mg		2681251.213	4991.879438	ppb	3.413	312.386
27	Al		579288.238	98.642156	ppb	2.809	2188.264
39	K		641629.136	5171.801262	ppb	3.371	8094.936
43	Ca		72074.124	5123.970330	ppb	1.045	233.336
44	Ca		1228024.118	6709.617789	ppb	2.663	23646.906
45	Sc-1	>	4748799.332		ppb	0.895	4734242.801
47	Ti		66425.816	98.550614	ppb	1.050	164.668
49	Ti		55570.778	98.091289	ppb	3.220	160.668
51	V		928164.104	98.425963	ppb	0.538	2518.782
52	Cr		827462.077	99.376735	ppb	2.043	8213.711
55	Mn		1288280.136	99.652674	ppb	2.710	844.039
54	Fe		3282624.192	5010.815741	ppb	3.333	27690.319
57	Fe		1385125.466	5092.280760	ppb	4.808	10771.047
59	Co		1093688.684	99.649605	ppb	4.860	180.002
60	Ni		236284.418	99.338748	ppb	3.546	125.334
63	Cu		515298.450	99.265713	ppb	3.833	302.985
65	Cu		240309.486	101.902826	ppb	3.493	163.091
71	Ga	>	1318139.099		ppb	1.909	1366388.245
75	As		158442.699	97.594752	ppb	1.408	7058.145
75	As-1		168638.069	97.625761	ppb	1.280	-281.356
78	Se		49707.767	98.127305	ppb	2.280	7309.951
82	Se		21964.475	98.060811	ppb	1.564	0.945
88	Sr		1962323.572	99.882642	ppb	1.301	202.002
66	Zn		153534.832	101.941819	ppb	3.737	1314.762
68	Zn		111175.954	101.864053	ppb	2.509	1754.169
95	Mo		322945.700	97.096430	ppb	0.922	350.007
115	In-1	>	1035512.235		ppb	1.882	1057220.148
107	Ag		902372.700	100.146593	ppb	1.209	164.001
111	Cd		202331.958	99.568692	ppb	0.838	30.901
118	Sn		504320.774	97.828997	ppb	2.408	2895.813
121	Sb		601057.744	98.206361	ppb	1.194	1047.395
135	Ba		178988.416	97.801934	ppb	2.808	186.002
165	Ho		1245919.042		ppb	2.192	1276471.289
159	Tb		1344484.100		ppb	0.420	1363627.612
203	Tl		660601.342	99.599152	ppb	1.892	90.000
207	Pb		1823520.610	98.821705	ppb	2.220	534.006
209	Bi	>	676425.247		ppb	1.869	711392.616

QC Out of Limits

Analyte	Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 1
Sample Date/Time: Tuesday, March 27, 2018 22:55:11
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCB.303
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	41605.685		ppb	2.133	40188.711
9	Be	|	47.333	0.006978	ppb	18.215	44.667
45	Sc	|>	4763505.796		ppb	4.275	4734242.801
10	B	⌊	152.001	0.097264	ppb	14.945	141.334
23	Na	⌈	211.431	0.982177	ppb	13.032	176.192
25	Mg	|	580.019	0.497069	ppb	9.030	312.386
27	Al	|	3145.218	0.162111	ppb	14.476	2188.264
39	K	|	8265.089	1.068833	ppb	1.695	8094.936
43	Ca	|	251.432	1.168357	ppb	11.972	233.336
44	Ca	|	22412.356	-7.505077	ppb	0.568	23646.906
45	Sc-1	|>	4763505.796		ppb	4.275	4734242.801
47	Ti	|	146.668	-0.027886	ppb	18.813	164.668
49	Ti	|	155.335	-0.010693	ppb	3.934	160.668
51	V	|	2490.150	-0.005018	ppb	10.017	2518.782
52	Cr	|	8207.704	-0.005609	ppb	1.844	8213.711
55	Mn	|	965.385	0.009220	ppb	8.187	844.039
54	Fe	|	28083.715	0.424151	ppb	2.869	27690.319
57	Fe	|	10669.592	-0.555146	ppb	1.877	10771.047
59	Co	|	225.336	0.004057	ppb	2.853	180.002
60	Ni	⌊	126.668	0.000370	ppb	15.007	125.334
63	Cu	⌈	383.912	0.015937	ppb	2.250	302.985
65	Cu	|	193.191	0.013350	ppb	3.638	163.091
71	Ga	|>	1350076.768		ppb	2.699	1366388.245
75	As	|	7030.858	0.038765	ppb	1.417	7058.145
75	As-1	|	-324.111	-0.025496	ppb	21.606	-281.356
78	Se	|	7262.840	0.098183	ppb	0.897	7309.951
82	Se	|	-21.826	-0.099530	ppb	60.576	0.945
88	Sr	|	388.675	0.009427	ppb	7.283	202.002
66	Zn	|	1541.464	0.158229	ppb	4.697	1314.762
68	Zn	⌊	1934.873	0.183137	ppb	3.837	1754.169
95	Mo	⌈	328.673	-0.004550	ppb	8.395	350.007
115	In-1	|>	1039011.912		ppb	0.879	1057220.148
107	Ag	|	208.002	0.005184	ppb	10.707	164.001
111	Cd	|	41.216	0.005332	ppb	9.265	30.901
118	Sn	|	2607.052	-0.046473	ppb	21.591	2895.813
121	Sb	|	250.670	-0.126974	ppb	16.475	1047.395
135	Ba	|	80.667	-0.055681	ppb	10.020	186.002
165	Ho	|	1249363.436		ppb	2.029	1276471.289
159	Tb	⌊	1337657.292		ppb	2.526	1363627.612
203	Tl	⌈	102.001	0.002168	ppb	13.726	90.000
207	Pb	|	460.004	-0.003080	ppb	0.435	534.006
209	Bi	⌊>	690055.249		ppb	0.578	711392.616

QC Out of Limits

alyte MassOut of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 4
Sample Date/Time: Tuesday, March 27, 2018 23:22:21
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.314
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38764.825		ppb	1.827	40188.711
9	Be		33566.200	100.762631	ppb	1.769	44.667
45	Sc	>	4729490.580		ppb	2.347	4734242.801
10	B		26287.288	258.343634	ppb	1.151	141.334
23	Na		177849.872	5228.335613	ppb	3.434	176.192
25	Mg		2749880.419	5142.872168	ppb	0.452	312.386
27	Al		591023.827	101.058777	ppb	3.471	2188.264
39	K		636484.029	5153.750627	ppb	3.052	8094.936
43	Ca		72429.579	5168.996355	ppb	3.885	233.336
44	Ca		1218779.288	6688.126729	ppb	1.314	23646.906
45	Sc-1	>	4729490.580		ppb	2.347	4734242.801
47	Ti		65822.921	98.036340	ppb	3.104	164.668
49	Ti		56475.555	100.110997	ppb	0.893	160.668
51	V		952327.797	101.407796	ppb	2.014	2518.782
52	Cr		824118.051	99.373316	ppb	3.132	8213.711
55	Mn		1276321.569	99.140774	ppb	2.491	844.039
54	Fe		3301284.067	5061.044526	ppb	2.553	27690.319
57	Fe		1396418.277	5157.360822	ppb	2.875	10771.047
59	Co		1107605.856	101.366387	ppb	2.344	180.002
60	Ni		240474.066	101.566066	ppb	3.423	125.334
63	Cu		523326.091	102.009763	ppb	2.740	302.985
65	Cu		240872.001	103.367420	ppb	2.358	163.091
71	Ga	>	1302060.793		ppb	0.708	1366388.245
75	As		158878.196	99.131851	ppb	1.299	7058.145
75	As-1		169146.989	99.123192	ppb	2.369	-281.356
78	Se		49195.182	98.337917	ppb	0.907	7309.951
82	Se		21803.389	98.542124	ppb	4.335	0.945
88	Sr		1953429.880	100.629983	ppb	2.122	202.002
66	Zn		153754.051	103.362119	ppb	0.915	1314.762
68	Zn		110705.720	102.684508	ppb	3.010	1754.169
95	Mo		325113.210	97.681197	ppb	2.648	350.007
115	In-1	>	1035861.920		ppb	0.933	1057220.148
107	Ag		911025.447	101.058753	ppb	2.520	164.001
111	Cd		202352.355	99.528645	ppb	1.930	30.901
118	Sn		524568.980	101.741869	ppb	2.136	2895.813
121	Sb		616584.742	100.696359	ppb	1.099	1047.395
135	Ba		182557.539	99.728621	ppb	0.894	186.002
165	Ho		1266046.214		ppb	2.954	1276471.289
159	Tb		1365861.594		ppb	1.453	1363627.612
203	Tl		654406.408	98.024723	ppb	2.626	90.000
207	Pb		1831250.625	98.614265	ppb	3.010	534.006
209	Bi	>	680602.698		ppb	1.526	711392.616

QC Out of Limits

Analyte	Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 1
Sample Date/Time: Tuesday, March 27, 2018 23:27:17
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCB.316
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	38718.615		ppb	0.897	40188.711
9	Be	|	46.333	**0.006466**	ppb	8.723	44.667
45	Sc	|>	4680286.506		ppb	2.429	4734242.801
10	B	⌊	169.335	**0.299344**	ppb	11.831	141.334
23	Na	⌈	183.811	**0.286843**	ppb	9.108	176.192
25	Mg	|	722.886	**0.784571**	ppb	8.254	312.386
27	Al	|	2576.367	**0.071271**	ppb	8.548	2188.264
39	K	|	8297.118	**2.481051**	ppb	1.436	8094.936
43	Ca	|	240.003	**0.706824**	ppb	8.988	233.336
44	Ca	|	23070.198	**-1.723632**	ppb	2.196	23646.906
45	Sc-1	|>	4680286.506		ppb	2.429	4734242.801
47	Ti	|	142.001	**-0.030995**	ppb	9.758	164.668
49	Ti	|	151.335	**-0.014124**	ppb	17.248	160.668
51	V	|	2352.413	**-0.014899**	ppb	3.595	2518.782
52	Cr	|	8183.017	**0.007755**	ppb	2.952	8213.711
55	Mn	|	954.050	**0.009457**	ppb	2.836	844.039
54	Fe	|	28131.881	**1.190221**	ppb	2.041	27690.319
57	Fe	|	11136.819	**1.864564**	ppb	1.819	10771.047
59	Co	|	296.672	**0.010947**	ppb	10.364	180.002
60	Ni	⌊	150.668	**0.011389**	ppb	11.290	125.334
63	Cu	⌈	412.646	**0.023171**	ppb	5.180	302.985
65	Cu	|	191.884	**0.014819**	ppb	15.800	163.091
71	Ga	|>	1317905.912		ppb	2.440	1366388.245
75	As	|	6960.271	**0.099646**	ppb	1.439	7058.145
75	As-1	|	-158.238	**0.065382**	ppb	1.531	-281.356
78	Se	|	7149.904	**0.233937**	ppb	1.355	7309.951
82	Se	|	22.966	**0.098650**	ppb	8.811	0.945
88	Sr	|	410.676	**0.010998**	ppb	7.550	202.002
66	Zn	|	1562.134	**0.197041**	ppb	2.330	1314.762
68	Zn	⌊	1814.848	**0.114328**	ppb	3.293	1754.169
95	Mo	⌈	528.015	**0.053985**	ppb	11.828	350.007
115	In-1	|>	1047204.178		ppb	0.810	1057220.148
107	Ag	|	204.002	**0.004559**	ppb	2.594	164.001
111	Cd	|	69.133	**0.018702**	ppb	28.272	30.901
118	Sn	|	4381.760	**0.292897**	ppb	23.232	2895.813
121	Sb	|	1838.856	**0.129963**	ppb	17.560	1047.395
135	Ba	|	96.667	**-0.047348**	ppb	6.321	186.002
165	Ho	|	1243625.284		ppb	2.358	1276471.289
159	Tb	⌊	1330490.579		ppb	0.521	1363627.612
203	Tl	⌈	156.001	**0.010186**	ppb	6.662	90.000
207	Pb	|	606.674	**0.004772**	ppb	3.706	534.006
209	Bi	⌊>	688645.830		ppb	1.642	711392.616

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: Blank
Autosampler Position: 210
Sample Date/Time: Tuesday, March 27, 2018 23:29:47
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\Blank.317
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	**Li**	⌈	39186.692		ppb	3.830	
9	**Be**	|	49.667		ppb	9.079	
45	**Sc**	|>	4659300.554		ppb	4.222	
10	**B**	⌊	138.001		ppb	9.051	
23	**Na**	⌈	180.002		ppb	15.142	
25	**Mg**	|	723.839		ppb	17.796	
27	**Al**	|	3163.885		ppb	5.849	
39	**K**	|	8169.669		ppb	0.353	
43	**Ca**	|	248.575		ppb	11.085	
44	**Ca**	|	23338.493		ppb	1.086	
45	**Sc-1**	|>	4659300.554		ppb	4.222	
47	**Ti**	|	154.668		ppb	1.975	
49	**Ti**	|	158.001		ppb	3.349	
51	**V**	|	2704.932		ppb	9.601	
52	**Cr**	|	8152.324		ppb	3.928	
55	**Mn**	|	948.049		ppb	1.477	
54	**Fe**	|	27831.142		ppb	1.542	
57	**Fe**	|	10971.286		ppb	2.808	
59	**Co**	|	305.339		ppb	13.269	
60	**Ni**	⌊	171.335		ppb	3.370	
63	**Cu**	⌈	371.797		ppb	6.546	
65	**Cu**	|	173.813		ppb	15.630	
71	**Ga**	|>	1341824.633		ppb	3.205	
75	**As**	|	7098.606		ppb	1.874	
75	**As-1**	|	-162.073		ppb	25.210	
78	**Se**	|	7270.325		ppb	2.132	
82	**Se**	|	15.050		ppb	174.617	
88	**Sr**	|	460.678		ppb	2.653	
66	**Zn**	|	1589.473		ppb	5.978	
68	**Zn**	⌊	1882.195		ppb	4.093	
95	**Mo**	⌈	340.007		ppb	18.349	
115	**In-1**	|>	1040983.126		ppb	2.456	
107	**Ag**	|	184.002		ppb	3.919	
111	**Cd**	|	45.968		ppb	23.854	
118	**Sn**	|	2927.154		ppb	22.763	
121	**Sb**	|	1233.418		ppb	12.138	
135	**Ba**	|	169.335		ppb	5.826	
165	**Ho**	|	1261276.724		ppb	1.007	
159	**Tb**	⌊	1341620.348		ppb	1.343	
203	**Tl**	⌈	154.001		ppb	12.389	
207	**Pb**	|	620.008		ppb	14.336	
209	**Bi**	⌊>	698471.606		ppb	2.642	

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: STD-1 - MS021518A

Autosampler Position: 3

Sample Date/Time: Tuesday, March 27, 2018 23:32:17

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth

Dataset File: W:\dataset\2018\180327B1\STD-1 - MS021518A.318

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37770.056		ppb	4.171	39186.692
9	Be		64966.999	200.000000	ppb	1.146	49.667
45	Sc	>	4614497.617		ppb	3.742	4659300.554
10	B		50990.101	500.000000	ppb	4.221	138.001
23	Na		350147.625	10200.000000	ppb	1.797	180.002
25	Mg		5314491.875	10200.000000	ppb	4.860	723.839
27	Al		1140980.746	200.000000	ppb	3.314	3163.885
39	K		1237968.638	10200.000000	ppb	1.386	8169.669
43	Ca		143572.337	10200.000000	ppb	3.367	248.575
44	Ca		1754988.212	10200.000000	ppb	3.172	23338.493
45	Sc-1	>	4614497.617		ppb	3.742	4659300.554
47	Ti		130116.760	200.000000	ppb	1.843	154.668
49	Ti		109629.219	200.000000	ppb	1.919	158.001
51	V		1838657.472	200.000000	ppb	2.291	2704.932
52	Cr		1619769.903	200.000000	ppb	1.669	8152.324
55	Mn		2507269.242	200.000000	ppb	2.896	948.049
54	Fe		6525603.566	10200.000000	ppb	2.032	27831.142
57	Fe		2757058.957	10200.000000	ppb	5.510	10971.286
59	Co		2169646.041	200.000000	ppb	4.092	305.339
60	Ni		471400.523	200.000000	ppb	4.610	171.335
63	Cu		1037545.666	200.000000	ppb	4.558	371.797
65	Cu		471632.138	200.000000	ppb	4.443	173.813
71	Ga	>	1275915.327		ppb	2.228	1341824.633
75	As		305792.607	200.000000	ppb	1.782	7098.606
75	As-1		333746.994	200.000000	ppb	1.404	-162.073
78	Se		89641.478	200.000000	ppb	0.217	7270.325
82	Se		43106.196	200.000000	ppb	1.971	15.050
88	Sr		3776536.684	200.000000	ppb	2.876	460.678
66	Zn		300577.087	200.000000	ppb	2.183	1589.473
68	Zn		214566.212	200.000000	ppb	2.418	1882.195
95	Mo		644005.706	200.000000	ppb	2.678	340.007
115	In-1	>	1033443.010		ppb	0.499	1040983.126
107	Ag		1757683.744	200.000000	ppb	1.711	184.002
111	Cd		400886.799	200.000000	ppb	1.330	45.968
118	Sn		1040591.987	200.000000	ppb	0.275	2927.154
121	Sb		1199686.980	200.000000	ppb	0.574	1233.418
135	Ba		361947.515	200.000000	ppb	1.347	169.335
165	Ho		1273560.144		ppb	2.261	1261276.724
159	Tb		1365705.280		ppb	1.234	1341620.348
203	Tl		1331984.846	200.000000	ppb	3.124	154.001
207	Pb		3662855.604	200.000000	ppb	2.454	620.008
209	Bi	>	673571.490		ppb	2.030	698471.606

QC Out of Limits

ıalyte MassOut of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICV-1 - MS021218B

Autosampler Position: 206

Sample Date/Time: Tuesday, March 27, 2018 23:37:14

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth

Dataset File: W:\dataset\2018\180327B1\ICV-1 - MS021218B.320

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38595.172		ppb	3.964	39186.692
9	Be		33921.183	104.542915	ppb	1.914	49.667
45	Sc	>	4608379.236		ppb	3.945	4659300.554
10	B		212.003	0.737794	ppb	14.646	138.001
23	Na		194.288	0.488676	ppb	13.071	180.002
25	Mg		56020.675	106.397931	ppb	1.516	723.839
27	Al		3458.658	0.058478	ppb	3.331	3163.885
39	K		8291.113	1.820402	ppb	0.446	8169.669
43	Ca		2864.262	186.580167	ppb	6.080	248.575
44	Ca		56777.720	198.921227	ppb	1.140	23338.493
45	Sc-1	>	4608379.236		ppb	3.945	4659300.554
47	Ti		64388.896	98.914861	ppb	4.764	154.668
49	Ti		55016.002	100.360350	ppb	1.726	158.001
51	V		938512.551	102.125807	ppb	2.473	2704.932
52	Cr		836653.547	102.972865	ppb	2.293	8152.324
55	Mn		1321035.133	105.438173	ppb	2.542	948.049
54	Fe		3275493.341	5103.635059	ppb	1.412	27831.142
57	Fe		1394688.919	5143.977775	ppb	1.263	10971.286
59	Co		1077456.163	99.405849	ppb	3.057	305.339
60	Ni		245220.790	104.098350	ppb	1.953	171.335
63	Cu		546575.427	102.175265	ppb	2.020	371.797
65	Cu		250298.688	102.922568	ppb	2.606	173.813
71	Ga	>	1315909.002		ppb	2.380	1341824.633
75	As		162720.110	100.997122	ppb	2.290	7098.606
75	As-1		172230.514	100.104543	ppb	2.044	-162.073
78	Se		50653.702	101.992673	ppb	1.930	7270.325
82	Se		22061.310	99.171641	ppb	1.306	15.050
88	Sr		1991272.826	102.227047	ppb	1.792	460.678
66	Zn		162238.697	104.190732	ppb	2.284	1589.473
68	Zn		112267.863	100.642625	ppb	2.235	1882.195
95	Mo		334855.708	102.701621	ppb	2.702	340.007
115	In-1	>	1045777.803		ppb	2.329	1040983.126
107	Ag		237.336	0.005919	ppb	1.754	184.002
111	Cd		209509.662	103.277628	ppb	2.227	45.968
118	Sn		502133.750	95.077644	ppb	2.212	2927.154
121	Sb		584295.193	96.183650	ppb	0.317	1233.418
135	Ba		134.001	-0.019823	ppb	11.657	169.335
165	Ho		1273221.600		ppb	2.982	1261276.724
159	Tb		1363537.234		ppb	1.469	1341620.348
203	Tl		662514.614	96.990243	ppb	1.878	154.001
207	Pb		1960094.166	104.307730	ppb	3.158	620.008
209	Bi	>	691045.660		ppb	3.106	698471.606

QC Out of Limits

alyte Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICB
Autosampler Position: 210
Sample Date/Time: Tuesday, March 27, 2018 23:44:39
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\ICB.323
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	38718.015		ppb	3.669	39186.692
9	Be	|	45.667	-0.009609	ppb	18.365	49.667
45	Sc	|>	4570830.818		ppb	1.173	4659300.554
10	B	⌊	183.335	0.476383	ppb	7.014	138.001
23	Na	⌈	186.669	0.301684	ppb	12.277	180.002
25	Mg	|	456.202	-0.492377	ppb	5.024	723.839
27	Al	|	2874.454	-0.040717	ppb	1.985	3163.885
39	K	|	8283.774	2.269598	ppb	2.246	8169.669
43	Ca	|	226.670	-1.249150	ppb	12.875	248.575
44	Ca	|	22639.590	-1.524447	ppb	1.855	23338.493
45	Sc-1	|>	4570830.818		ppb	1.173	4659300.554
47	Ti	|	155.335	0.005670	ppb	13.647	154.668
49	Ti	|	155.335	0.000534	ppb	4.875	158.001
51	V	|	2453.026	-0.021879	ppb	7.589	2704.932
52	Cr	|	7808.020	-0.023833	ppb	2.887	8152.324
55	Mn	|	818.704	-0.008979	ppb	5.814	948.049
54	Fe	|	27231.734	-0.120534	ppb	5.055	27831.142
57	Fe	|	10658.914	-0.386230	ppb	2.252	10971.286
59	Co	|	274.671	-0.002299	ppb	17.082	305.339
60	Ni	⌊	148.001	-0.008583	ppb	4.054	171.335
63	Cu	⌈	343.786	-0.004040	ppb	2.382	371.797
65	Cu	|	156.476	-0.005770	ppb	14.976	173.813
71	Ga	|>	1320245.370		ppb	2.928	1341824.633
75	As	|	7055.685	0.046939	ppb	2.167	7098.606
75	As-1	|	-209.473	-0.029509	ppb	21.524	-162.073
78	Se	|	7251.984	0.235405	ppb	1.730	7270.325
82	Se	|	6.909	-0.035663	ppb	49.428	15.050
88	Sr	|	329.339	-0.006351	ppb	6.689	460.678
66	Zn	|	1456.117	-0.070202	ppb	6.337	1589.473
68	Zn	⌊	1933.539	0.075566	ppb	3.071	1882.195
95	Mo	⌈	302.005	-0.011644	ppb	17.918	340.007
115	In-1	|>	1039208.298		ppb	3.692	1040983.126
107	Ag	|	275.338	0.010488	ppb	11.653	184.002
111	Cd	|	68.361	0.011174	ppb	5.040	45.968
118	Sn	|	2664.404	-0.050711	ppb	22.808	2927.154
121	Sb	|	1589.476	0.059241	ppb	19.011	1233.418
135	Ba	|	193.335	0.013406	ppb	3.633	169.335
165	Ho	|	1239456.301		ppb	0.680	1261276.724
159	Tb	⌊	1346496.075		ppb	0.920	1341620.348
203	Tl	⌈	116.001	-0.005375	ppb	4.562	154.001
207	Pb	|	534.672	-0.004297	ppb	6.695	620.008
209	Bi	⌊>	694150.427		ppb	2.927	698471.606

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 215
Sample Date/Time: Tuesday, March 27, 2018 23:47:08
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.324
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37834.255		ppb	2.106	39186.692
9	Be		32895.417	**101.019581**	ppb	1.486	49.667
45	Sc	>	4621044.377		ppb	3.657	4659300.554
10	B		25632.775	**250.325420**	ppb	3.051	138.001
23	Na		173948.159	**5057.294697**	ppb	2.537	180.002
25	Mg		2675154.510	**5128.881953**	ppb	2.734	723.839
27	Al		585094.320	**102.138930**	ppb	3.445	3163.885
39	K		627752.671	**5130.762215**	ppb	1.233	8169.669
43	Ca		72398.946	**5125.881760**	ppb	4.431	248.575
44	Ca		1198935.645	**6915.610885**	ppb	2.814	23338.493
45	Sc-1	>	4621044.377		ppb	3.657	4659300.554
47	Ti		64897.668	**99.452644**	ppb	3.449	154.668
49	Ti		54940.948	**99.925899**	ppb	2.970	158.001
51	V		929328.124	**100.815039**	ppb	1.953	2704.932
52	Cr		823881.099	**101.140281**	ppb	0.500	8152.324
55	Mn		1271851.415	**101.296712**	ppb	3.006	948.049
54	Fe		3274593.628	**5090.839222**	ppb	3.005	27831.142
57	Fe		1354274.840	**4984.478699**	ppb	4.485	10971.286
59	Co		1069269.807	**98.397114**	ppb	3.296	305.339
60	Ni		232192.671	**98.282510**	ppb	2.079	171.335
63	Cu		511608.615	**98.587934**	ppb	3.412	371.797
65	Cu		232096.080	**98.393064**	ppb	3.090	173.813
71	Ga	>	1276072.515		ppb	0.840	1341824.633
75	As		160438.715	**102.766468**	ppb	0.783	7098.606
75	As-1		170082.483	**101.937986**	ppb	0.282	-162.073
78	Se		49596.012	**103.157951**	ppb	2.830	7270.325
82	Se		21721.890	**100.696706**	ppb	3.104	15.050
88	Sr		1958196.880	**103.628464**	ppb	3.987	460.678
66	Zn		150764.248	**99.794784**	ppb	2.180	1589.473
68	Zn		108681.210	**100.459346**	ppb	1.523	1882.195
95	Mo		325202.489	**101.295390**	ppb	2.733	340.007
115	In-1	>	1029786.468		ppb	1.027	1040983.126
107	Ag		900418.620	**102.794294**	ppb	2.031	184.002
111	Cd		202964.186	**101.608430**	ppb	0.994	45.968
118	Sn		505697.342	**97.250630**	ppb	0.972	2927.154
121	Sb		605947.643	**101.285672**	ppb	0.621	1233.418
135	Ba		179080.844	**99.264379**	ppb	2.756	169.335
165	Ho		1238035.833		ppb	2.759	1261276.724
159	Tb		1325927.216		ppb	2.002	1341620.348
203	Tl		648461.876	**97.159557**	ppb	2.300	154.001
207	Pb		1816177.160	**98.944028**	ppb	1.949	620.008
209	Bi	>	674997.962		ppb	1.844	698471.606

QC Out of Limits

ıalyte Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 211
Sample Date/Time: Tuesday, March 27, 2018 23:52:03
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\CCB.326
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050
Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38222.520		ppb	0.668	39186.692
9	Be		52.000	0.008271	ppb	16.765	49.667
45	Sc	>	4629723.724		ppb	1.745	4659300.554
10	B		170.668	0.330890	ppb	9.758	138.001
23	Na		246.670	1.964164	ppb	5.830	180.002
25	Mg		1471.564	1.430030	ppb	44.733	723.839
27	Al		3844.186	0.121383	ppb	27.184	3163.885
39	K		8428.579	2.554362	ppb	5.035	8169.669
43	Ca		275.242	1.961174	ppb	20.298	248.575
44	Ca		23232.516	0.262746	ppb	2.331	23338.493
45	Sc-1	>	4629723.724		ppb	1.745	4659300.554
47	Ti		186.002	0.049237	ppb	14.061	154.668
49	Ti		180.002	0.042030	ppb	2.940	158.001
51	V		2793.486	0.011278	ppb	7.965	2704.932
52	Cr		8441.253	0.041951	ppb	3.111	8152.324
55	Mn		1248.754	0.024241	ppb	18.094	948.049
54	Fe		29827.406	3.403886	ppb	3.254	27831.142
57	Fe		11477.249	2.125854	ppb	4.227	10971.286
59	Co		608.688	0.027875	ppb	32.606	305.339
60	Ni		201.336	0.012961	ppb	20.074	171.335
63	Cu		551.359	0.034718	ppb	19.241	371.797
65	Cu		232.975	0.025495	ppb	13.432	173.813
71	Ga	>	1319278.365		ppb	1.124	1341824.633
75	As		7059.612	0.052341	ppb	0.351	7098.606
75	As-1		-221.552	-0.036047	ppb	29.483	-162.073
78	Se		7235.406	0.205439	ppb	0.739	7270.325
82	Se		-5.065	-0.089136	ppb	259.093	15.050
88	Sr		1075.403	0.031923	ppb	37.581	460.678
66	Zn		1550.799	-0.007315	ppb	5.173	1589.473
68	Zn		1878.861	0.025651	ppb	4.919	1882.195
95	Mo		452.012	0.033283	ppb	30.008	340.007
115	In-1	>	1050522.208		ppb	0.634	1040983.126
107	Ag		354.674	0.018940	ppb	24.251	184.002
111	Cd		115.445	0.033989	ppb	49.018	45.968
118	Sn		3628.083	0.127613	ppb	23.079	2927.154
121	Sb		870.043	-0.061516	ppb	21.452	1233.418
135	Ba		192.002	0.011474	ppb	22.559	169.335
165	Ho		1264668.272		ppb	2.744	1261276.724
159	Tb		1361044.226		ppb	2.843	1341620.348
203	Tl		284.671	0.018180	ppb	33.887	154.001
207	Pb		1080.025	0.023231	ppb	27.893	620.008
209	Bi	>	709001.063		ppb	1.530	698471.606

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 215
Sample Date/Time: Wednesday, March 28, 2018 00:21:33
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.338
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37968.487		ppb	2.401	39186.692
9	Be		33783.338	103.430613	ppb	1.930	49.667
45	Sc	>	4633020.386		ppb	0.847	4659300.554
10	B		26245.184	255.671141	ppb	2.890	138.001
23	Na		178287.065	5164.579094	ppb	3.652	180.002
25	Mg		2766117.315	5288.712486	ppb	1.314	723.839
27	Al		586914.623	102.187443	ppb	1.857	3163.885
39	K		641109.353	5223.383638	ppb	3.689	8169.669
43	Ca		73286.746	5175.808313	ppb	2.764	248.575
44	Ca		1205468.522	6934.323988	ppb	0.524	23338.493
45	Sc-1	>	4633020.386		ppb	0.847	4659300.554
47	Ti		64895.554	99.178903	ppb	2.317	154.668
49	Ti		54906.043	99.558899	ppb	2.505	158.001
51	V		933001.477	100.890011	ppb	2.573	2704.932
52	Cr		831914.392	101.751378	ppb	3.680	8152.324
55	Mn		1288232.813	102.165811	ppb	1.928	948.049
54	Fe		3320460.259	5141.179186	ppb	1.110	27831.142
57	Fe		1401454.520	5135.621458	ppb	1.155	10971.286
59	Co		1100575.590	100.852689	ppb	1.668	305.339
60	Ni		238576.361	100.585064	ppb	1.376	171.335
63	Cu		529974.885	98.488991	ppb	1.924	371.797
65	Cu		241234.443	98.631161	ppb	1.529	173.813
71	Ga	>	1323467.937		ppb	2.190	1341824.633
75	As		162154.406	100.029078	ppb	2.072	7098.606
75	As-1		171766.725	99.273572	ppb	1.458	-162.073
78	Se		50186.179	100.252689	ppb	1.171	7270.325
82	Se		21927.004	98.047833	ppb	2.392	15.050
88	Sr		1949057.044	99.462484	ppb	0.515	460.678
66	Zn		154942.399	98.880447	ppb	2.405	1589.473
68	Zn		111225.070	99.117307	ppb	1.735	1882.195
95	Mo		323911.582	100.331932	ppb	1.952	340.007
115	In-1	>	1035606.963		ppb	2.573	1040983.126
107	Ag		903650.879	102.588260	ppb	2.770	184.002
111	Cd		201706.481	100.394339	ppb	3.108	45.968
118	Sn		514062.169	98.304228	ppb	3.150	2927.154
121	Sb		613643.096	102.011340	ppb	1.239	1233.418
135	Ba		180857.645	99.699256	ppb	1.715	169.335
165	Ho		1260307.177		ppb	1.772	1261276.724
159	Tb		1352500.987		ppb	1.425	1341620.348
203	Tl		672293.940	98.376407	ppb	1.923	154.001
207	Pb		1873791.685	99.681591	ppb	2.285	620.008
209	Bi	>	691384.661		ppb	3.100	698471.606

QC Out of Limits

Analyte	Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 211
Sample Date/Time: Wednesday, March 28, 2018 00:26:28
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\CCB.340
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	39057.184		ppb	4.831	39186.692
9	Be	|	43.667	-0.019886	ppb	13.022	49.667
45	Sc	|>	4721071.055		ppb	1.225	4659300.554
10	B	⌊	171.335	0.301250	ppb	12.482	138.001
23	Na	⌈	169.525	-0.369276	ppb	10.966	180.002
25	Mg	|	681.930	-0.096919	ppb	4.401	723.839
27	Al	|	2867.788	-0.058255	ppb	8.412	3163.885
39	K	|	8347.165	0.566555	ppb	1.896	8169.669
43	Ca	|	235.241	-1.157402	ppb	7.117	248.575
44	Ca	|	22263.420	-7.948617	ppb	0.787	23338.493
45	Sc-1	|>	4721071.055		ppb	1.225	4659300.554
47	Ti	|	156.001	-0.001016	ppb	12.230	154.668
49	Ti	|	186.002	0.046190	ppb	2.845	158.001
51	V	|	2464.214	-0.029203	ppb	10.214	2704.932
52	Cr	|	8184.360	-0.008623	ppb	6.751	8152.324
55	Mn	|	892.711	-0.005249	ppb	6.441	948.049
54	Fe	|	28067.828	-0.169662	ppb	8.213	27831.142
57	Fe	|	10778.401	-1.203911	ppb	5.900	10971.286
59	Co	|	312.672	0.000320	ppb	16.450	305.339
60	Ni	⌊	160.668	-0.005425	ppb	14.955	171.335
63	Cu	⌈	371.111	0.000308	ppb	9.573	371.797
65	Cu	|	179.806	0.002749	ppb	11.256	173.813
71	Ga	|>	1334994.331		ppb	2.316	1341824.633
75	As	|	7060.775	-0.000737	ppb	1.953	7098.606
75	As-1	|	-215.828	-0.031050	ppb	25.928	-162.073
78	Se	|	7258.304	0.059038	ppb	1.839	7270.325
82	Se	|	4.961	-0.043790	ppb	570.203	15.050
88	Sr	|	419.343	-0.002007	ppb	14.719	460.678
66	Zn	|	1337.432	-0.156164	ppb	4.620	1589.473
68	Zn	⌊	1831.518	-0.037649	ppb	5.411	1882.195
95	Mo	⌈	477.346	0.044183	ppb	22.666	340.007
115	In-1	|>	1030356.226		ppb	3.655	1040983.126
107	Ag	|	215.336	0.003889	ppb	16.519	184.002
111	Cd	|	45.613	-0.000085	ppb	34.583	45.968
118	Sn	|	3570.058	0.128838	ppb	22.513	2927.154
121	Sb	|	1194.747	-0.004437	ppb	19.760	1233.418
135	Ba	|	122.667	-0.024995	ppb	9.962	169.335
165	Ho	|	1244296.654		ppb	4.775	1261276.724
159	Tb	⌊	1324288.188		ppb	5.033	1341620.348
203	Tl	⌈	144.001	-0.001287	ppb	16.897	154.001
207	Pb	|	587.341	-0.001523	ppb	5.505	620.008
209	Bi	⌊>	694867.867		ppb	2.574	698471.606

QC Out of Limits

alyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 215
Sample Date/Time: Wednesday, March 28, 2018 00:53:30
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.351
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38526.953		ppb	5.337	39186.692
9	Be		33397.631	101.989954	ppb	3.951	49.667
45	Sc	>	4643748.505		ppb	3.054	4659300.554
10	B		25987.869	252.386811	ppb	6.672	138.001
23	Na		178562.791	5156.591737	ppb	6.145	180.002
25	Mg		2690439.534	5131.844830	ppb	3.012	723.839
27	Al		587512.510	102.023770	ppb	4.474	3163.885
39	K		628793.112	5106.468840	ppb	5.536	8169.669
43	Ca		71621.103	5047.153160	ppb	2.111	248.575
44	Ca		1200727.765	6891.643200	ppb	2.522	23338.493
45	Sc-1	>	4643748.505		ppb	3.054	4659300.554
47	Ti		66010.132	100.737980	ppb	0.857	154.668
49	Ti		56566.357	102.479185	ppb	4.639	158.001
51	V		947538.165	102.364930	ppb	3.699	2704.932
52	Cr		848133.806	103.675325	ppb	3.984	8152.324
55	Mn		1323658.006	104.914404	ppb	5.437	948.049
54	Fe		3404142.050	5269.720012	ppb	6.615	27831.142
57	Fe		1417129.024	5189.028407	ppb	4.234	10971.286
59	Co		1120852.041	102.596541	ppb	3.056	305.339
60	Ni		243843.118	102.696113	ppb	3.185	171.335
63	Cu		532899.899	100.747838	ppb	1.248	371.797
65	Cu		244520.382	101.596181	ppb	2.067	173.813
71	Ga	>	1303276.130		ppb	4.751	1341824.633
75	As		160169.354	100.347334	ppb	4.750	7098.606
75	As-1		170401.605	99.989416	ppb	4.954	-162.073
78	Se		49384.879	100.157431	ppb	4.557	7270.325
82	Se		21859.561	99.200419	ppb	4.883	15.050
88	Sr		1978332.267	102.557110	ppb	2.744	460.678
66	Zn		155458.347	100.822866	ppb	3.538	1589.473
68	Zn		112137.956	101.551163	ppb	3.562	1882.195
95	Mo		329993.290	100.657889	ppb	2.374	340.007
115	In-1	>	1051829.082		ppb	1.208	1040983.126
107	Ag		929135.242	103.864195	ppb	0.468	184.002
111	Cd		208848.617	102.357981	ppb	1.373	45.968
118	Sn		524359.809	98.723722	ppb	2.535	2927.154
121	Sb		619255.399	101.318829	ppb	2.827	1233.418
135	Ba		183572.494	99.606824	ppb	2.764	169.335
165	Ho		1283718.082		ppb	3.798	1261276.724
159	Tb		1369455.789		ppb	3.449	1341620.348
203	Tl		672019.659	101.212608	ppb	3.043	154.001
207	Pb		1851910.894	101.369803	ppb	0.573	620.008
209	Bi	>	671923.912		ppb	1.782	698471.606

QC Out of Limits

alyte	Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCB

Autosampler Position: 211

Sample Date/Time: Wednesday, March 28, 2018 00:58:24

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth

Dataset File: W:\dataset\2018\180327B1\CCB.353

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		40285.085		ppb	1.985	39186.692
9	Be		47.000	-0.008470	ppb	27.164	49.667
45	Sc	>	4709523.426		ppb	4.582	4659300.554
10	B		140.668	0.013235	ppb	18.934	138.001
23	Na		151.430	-0.876858	ppb	13.208	180.002
25	Mg		436.201	-0.554617	ppb	13.808	723.839
27	Al		2720.407	-0.081503	ppb	3.420	3163.885
39	K		8370.519	1.029069	ppb	1.387	8169.669
43	Ca		200.955	-3.533015	ppb	12.258	248.575
44	Ca		22621.448	-5.355519	ppb	1.602	23338.493
45	Sc-1	>	4709523.426		ppb	4.582	4659300.554
47	Ti		150.001	-0.009543	ppb	10.914	154.668
49	Ti		153.335	-0.011715	ppb	17.995	158.001
51	V		2529.570	-0.021640	ppb	5.066	2704.932
52	Cr		8199.030	-0.003520	ppb	2.039	8152.324
55	Mn		780.700	-0.013710	ppb	6.381	948.049
54	Fe		28995.529	1.352140	ppb	3.982	27831.142
57	Fe		10548.123	-1.894406	ppb	4.052	10971.286
59	Co		219.336	-0.008102	ppb	13.718	305.339
60	Ni		140.668	-0.013494	ppb	12.744	171.335
63	Cu		296.527	-0.015164	ppb	9.162	371.797
65	Cu		156.505	-0.008352	ppb	6.351	173.813
71	Ga	>	1374456.275		ppb	5.093	1341824.633
75	As		7251.771	-0.002079	ppb	1.361	7098.606
75	As-1		-195.081	-0.019204	ppb	82.841	-162.073
78	Se		7460.771	0.067544	ppb	1.347	7270.325
82	Se		16.982	-0.001140	ppb	315.779	15.050
88	Sr		218.003	-0.012504	ppb	13.762	460.678
66	Zn		1390.773	-0.146098	ppb	4.392	1589.473
68	Zn		1798.845	-0.112823	ppb	5.403	1882.195
95	Mo		305.339	-0.012726	ppb	15.725	340.007
115	In-1	>	1062476.260		ppb	1.930	1040983.126
107	Ag		147.335	-0.004464	ppb	7.719	184.002
111	Cd		36.246	-0.005249	ppb	33.687	45.968
118	Sn		2447.006	-0.101740	ppb	21.891	2927.154
121	Sb		269.337	-0.160656	ppb	13.820	1233.418
135	Ba		98.667	-0.039885	ppb	10.402	169.335
165	Ho		1289740.540		ppb	3.620	1261276.724
159	Tb		1378133.351		ppb	3.230	1341620.348
203	Tl		84.667	-0.010190	ppb	21.434	154.001
207	Pb		470.005	-0.008272	ppb	1.126	620.008
209	Bi	>	709812.044		ppb	3.281	698471.606

QC Out of Limits

ıalyte Mass Out of Limits Message

Return to Contents

EPA 200.8 ICP/MS Metals

Filtered

SAMPLE DATA

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:04
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-1.icp

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0009S006**

LCS/MB BATCH:	180326LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000418	1.00	ND	0.00100	
Copper	0.00138	1.00	0.00138	0.00100	
Lead	0.000297	1.00	0.000297	0.00100	J

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-f-1
Autosampler Position: 310
Sample Date/Time: Wednesday, March 28, 2018 00:04:23
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-f-1.331
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37978.853		ppb	1.942	39186.692
9	Be		52.000	0.009243	ppb	1.923	49.667
45	Sc	>	4599467.074		ppb	2.011	4659300.554
10	B		1212.748	10.613799	ppb	4.503	138.001
23	Na		38676.420	1124.493148	ppb	2.590	180.002
25	Mg		184204.732	353.419884	ppb	2.925	723.839
27	Al		481716.348	84.370048	ppb	4.460	3163.885
39	K		79921.800	597.423520	ppb	1.057	8169.669
43	Ca		18001.629	1267.271098	ppb	3.373	248.575
44	Ca		311266.754	1702.598828	ppb	2.931	23338.493
45	Sc-1	>	4599467.074		ppb	2.011	4659300.554
47	Ti		1914.869	2.718159	ppb	5.182	154.668
49	Ti		1470.786	2.407711	ppb	4.449	158.001
51	V		11039.742	0.913966	ppb	4.708	2704.932
52	Cr		10601.516	0.317838	ppb	3.286	8152.324
55	Mn		14315.930	1.070122	ppb	0.699	948.049
54	Fe		69672.353	66.402830	ppb	0.719	27831.142
57	Fe		29879.032	70.918457	ppb	1.831	10971.286
59	Co		774.033	0.043648	ppb	4.659	305.339
60	Ni		3636.728	1.474697	ppb	3.288	171.335
63	Cu		7717.927	1.354203	ppb	1.623	371.797
65	Cu		3586.124	1.383983	ppb	1.058	173.813
71	Ga	>	1335637.318		ppb	2.205	1341824.633
75	As		7418.442	0.225855	ppb	1.904	7098.606
75	As-1		80.153	0.137638	ppb	115.490	-162.073
78	Se		7363.408	0.296239	ppb	1.078	7270.325
82	Se		20.966	0.026301	ppb	57.725	15.050
88	Sr		101495.570	5.111189	ppb	1.948	460.678
66	Zn		14492.878	8.249326	ppb	1.154	1589.473
68	Zn		11113.458	8.297125	ppb	2.405	1882.195
95	Mo		698.694	0.110996	ppb	10.021	340.007
115	In-1	>	1039590.906		ppb	0.645	1040983.126
107	Ag		168.668	-0.001706	ppb	6.085	184.002
111	Cd		130.273	0.041809	ppb	13.562	45.968
118	Sn		1975.555	-0.181321	ppb	22.385	2927.154
121	Sb		942.716	-0.047922	ppb	6.623	1233.418
135	Ba		6212.789	3.321604	ppb	0.662	169.335
165	Ho		1266895.056		ppb	3.152	1261276.724
159	Tb		1356193.171		ppb	2.200	1341620.348
203	Tl		139.334	-0.002279	ppb	9.228	154.001
207	Pb		6307.506	0.297002	ppb	1.896	620.008
209	Bi	>	703820.118		ppb	1.541	698471.606

QC Out of Limits

Analyte Mass	Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:01
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-2.icp

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0011S008**

LCS/MB BATCH:	180326LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000277	1.00	ND	0.00100	
Copper	0.00147	1.00	0.00147	0.00100	
Lead	0.000356	1.00	0.000356	0.00100	J

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-f-2
Autosampler Position: 309
Sample Date/Time: Wednesday, March 28, 2018 00:01:56
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-f-2 .330
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37746.589		ppb	3.229	39186.692
9	Be		47.000	-0.009057	ppb	14.894	49.667
45	Sc	>	4692360.297		ppb	1.370	4659300.554
10	B		2362.975	21.518254	ppb	7.455	138.001
23	Na		25437.450	723.104026	ppb	1.603	180.002
25	Mg		375401.989	707.606101	ppb	1.541	723.839
27	Al		477506.305	81.992373	ppb	1.257	3163.885
39	K		417442.791	3334.427900	ppb	1.984	8169.669
43	Ca		27306.683	1893.510510	ppb	2.683	248.575
44	Ca		473791.913	2607.597171	ppb	1.618	23338.493
45	Sc-1	>	4692360.297		ppb	1.370	4659300.554
47	Ti		2288.289	3.223596	ppb	8.345	154.668
49	Ti		1698.825	2.764314	ppb	3.249	158.001
51	V		13885.874	1.195124	ppb	2.500	2704.932
52	Cr		9955.450	0.213112	ppb	1.977	8152.324
55	Mn		15688.193	1.154641	ppb	1.136	948.049
54	Fe		73591.933	70.257720	ppb	0.412	27831.142
57	Fe		32420.374	77.949701	ppb	0.520	10971.286
59	Co		1018.057	0.064321	ppb	0.856	305.339
60	Ni		1665.486	0.622217	ppb	4.999	171.335
63	Cu		8352.490	1.515155	ppb	1.057	371.797
65	Cu		3694.771	1.469509	ppb	3.663	173.813
71	Ga	>	1299751.315		ppb	4.787	1341824.633
75	As		7731.525	0.567028	ppb	1.351	7098.606
75	As-1		541.756	0.411874	ppb	15.950	-162.073
78	Se		7204.209	0.401040	ppb	1.640	7270.325
82	Se		16.919	0.012073	ppb	113.679	15.050
88	Sr		169193.512	8.784197	ppb	1.534	460.678
66	Zn		11570.707	6.583567	ppb	5.462	1589.473
68	Zn		8956.415	6.584033	ppb	4.048	1882.195
95	Mo		1518.127	0.360849	ppb	4.152	340.007
115	In-1	>	1046933.514		ppb	0.986	1040983.126
107	Ag		167.335	-0.001982	ppb	6.133	184.002
111	Cd		102.450	0.027655	ppb	17.570	45.968
118	Sn		2714.421	-0.044218	ppb	23.854	2927.154
121	Sb		1102.067	-0.022876	ppb	7.855	1233.418
135	Ba		10759.032	5.778350	ppb	2.556	169.335
165	Ho		1263451.175		ppb	1.354	1261276.724
159	Tb		1361345.983		ppb	1.217	1341620.348
203	Tl		168.668	0.002695	ppb	14.826	154.001
207	Pb		7204.426	0.355720	ppb	3.073	620.008
209	Bi	>	682290.253		ppb	1.754	698471.606

QC Out of Limits

ıalyte Mass Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:06
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-3.icp

 # 3 **CLIENT SAMPLE NUMBER: CABMP0001S001**

LCS/MB BATCH:	180326LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.000198	1.00	0.000198	0.00100	J
Copper	0.00518	1.00	0.00518	0.00100	
Lead	0.00148	1.00	0.00148	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1798-f-3

Autosampler Position: 311

Sample Date/Time: Wednesday, March 28, 2018 00:06:50

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1798-f-3.332

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38125.475		ppb	2.400	39186.692
9	Be		51.333	0.005065	ppb	7.375	49.667
45	Sc	>	4661768.394		ppb	1.991	4659300.554
10	B		1566.802	13.899620	ppb	3.612	138.001
23	Na		40680.370	1166.815682	ppb	2.239	180.002
25	Mg		553089.699	1049.530779	ppb	3.917	723.839
27	Al		469605.725	81.121123	ppb	4.621	3163.885
39	K		826831.824	6711.746729	ppb	2.692	8169.669
43	Ca		53269.921	3734.744708	ppb	1.360	248.575
44	Ca		909186.307	5163.197974	ppb	2.542	23338.493
45	Sc-1	>	4661768.394		ppb	1.991	4659300.554
47	Ti		3530.687	5.145892	ppb	6.282	154.668
49	Ti		2377.647	4.013435	ppb	10.749	158.001
51	V		14307.249	1.251297	ppb	2.891	2704.932
52	Cr		28116.766	2.452384	ppb	2.591	8152.324
55	Mn		284575.226	22.390320	ppb	3.969	948.049
54	Fe		71418.257	67.687798	ppb	3.385	27831.142
57	Fe		33840.231	83.980860	ppb	2.712	10971.286
59	Co		2969.819	0.242873	ppb	2.763	305.339
60	Ni		2928.472	1.156548	ppb	5.100	171.335
63	Cu		28042.888	5.160804	ppb	2.266	371.797
65	Cu		12806.860	5.182611	ppb	3.030	173.813
71	Ga	>	1320262.757		ppb	1.493	1341824.633
75	As		8081.759	0.709470	ppb	0.888	7098.606
75	As-1		785.435	0.546636	ppb	9.605	-162.073
78	Se		7329.017	0.411509	ppb	0.554	7270.325
82	Se		23.654	0.039223	ppb	143.013	15.050
88	Sr		339017.760	17.320321	ppb	0.618	460.678
66	Zn		103468.219	65.870345	ppb	1.372	1589.473
68	Zn		73042.937	64.681289	ppb	0.475	1882.195
95	Mo		2745.082	0.744288	ppb	4.066	340.007
115	In-1	>	1038703.144		ppb	2.230	1040983.126
107	Ag		180.668	-0.000342	ppb	10.865	184.002
111	Cd		443.433	0.197515	ppb	4.083	45.968
118	Sn		1520.797	-0.268510	ppb	19.613	2927.154
121	Sb		2251.612	0.169547	ppb	3.601	1233.418
135	Ba		44709.027	24.500279	ppb	1.828	169.335
165	Ho		1253425.311		ppb	2.140	1261276.724
159	Tb		1350890.998		ppb	1.961	1341620.348
203	Tl		93.334	-0.008798	ppb	35.942	154.001
207	Pb		28835.078	1.483897	ppb	1.523	620.008
209	Bi	>	699425.293		ppb	0.739	698471.606

QC Out of Limits

Analyte Mass	Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:09
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-4.icp

 # 4 **CLIENT SAMPLE NUMBER: CABMP0002S001**

LCS/MB BATCH:	180326LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.000151	1.00	0.000151	0.00100	J
Copper	0.00152	1.00	0.00152	0.00100	
Lead	0.00161	1.00	0.00161	0.00100	

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1798-f-4

Autosampler Position: 312

Sample Date/Time: Wednesday, March 28, 2018 00:09:17

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1798-f-4.333

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38571.350		ppb	2.350	39186.692
9	Be		50.000	0.003415	ppb	20.785	49.667
45	Sc	>	4602828.924		ppb	3.832	4659300.554
10	B		850.707	7.046178	ppb	3.615	138.001
23	Na		17535.960	507.499058	ppb	3.680	180.002
25	Mg		419134.419	806.026761	ppb	0.963	723.839
27	Al		871837.265	153.177867	ppb	4.358	3163.885
39	K		217982.190	1746.457953	ppb	3.234	8169.669
43	Ca		39386.106	2794.283836	ppb	1.824	248.575
44	Ca		663136.735	3781.136111	ppb	1.546	23338.493
45	Sc-1	>	4602828.924		ppb	3.832	4659300.554
47	Ti		4445.087	6.626667	ppb	1.667	154.668
49	Ti		3674.077	6.438672	ppb	5.306	158.001
51	V		11525.511	0.966144	ppb	5.038	2704.932
52	Cr		13358.481	0.659864	ppb	3.316	8152.324
55	Mn		453588.450	36.184652	ppb	1.707	948.049
54	Fe		199815.501	270.933697	ppb	2.640	27831.142
57	Fe		86445.090	281.332439	ppb	1.119	10971.286
59	Co		4533.797	0.390722	ppb	2.093	305.339
60	Ni		1887.529	0.730554	ppb	3.636	171.335
63	Cu		8143.499	1.472942	ppb	1.400	371.797
65	Cu		3824.905	1.521805	ppb	3.353	173.813
71	Ga	>	1300656.415		ppb	2.160	1341824.633
75	As		7524.662	0.424451	ppb	0.842	7098.606
75	As-1		298.795	0.267606	ppb	40.733	-162.073
78	Se		7220.516	0.419617	ppb	1.991	7270.325
82	Se		9.633	-0.022174	ppb	167.522	15.050
88	Sr		257139.823	13.332784	ppb	1.545	460.678
66	Zn		119875.751	77.617667	ppb	3.314	1589.473
68	Zn		82574.807	74.457072	ppb	2.435	1882.195
95	Mo		1398.774	0.320966	ppb	1.724	340.007
115	In-1	>	1054956.234		ppb	2.230	1040983.126
107	Ag		168.002	-0.002033	ppb	12.877	184.002
111	Cd		355.584	0.150988	ppb	4.760	45.968
118	Sn		1274.757	-0.318919	ppb	15.446	2927.154
121	Sb		1352.101	0.016845	ppb	5.792	1233.418
135	Ba		15509.221	8.307079	ppb	1.890	169.335
165	Ho		1253903.281		ppb	1.495	1261276.724
159	Tb		1344834.044		ppb	1.198	1341620.348
203	Tl		115.334	-0.005361	ppb	15.151	154.001
207	Pb		30669.267	1.606503	ppb	4.061	620.008
209	Bi	>	688240.181		ppb	3.787	698471.606

QC Out of Limits

Analyte Mass	Out of Limits Message

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:11
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-5.icp

 # 5 **CLIENT SAMPLE NUMBER: CABMP0003S001**

LCS/MB BATCH:	180326LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000683	1.00	ND	0.00100	
Copper	0.00314	1.00	0.00314	0.00100	
Lead	0.00113	1.00	0.00113	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-f-5
Autosampler Position: 313
Sample Date/Time: Wednesday, March 28, 2018 00:11:44
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-f-5.334
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38997.890		ppb	4.035	39186.692
9	Be		47.667	-0.006200	ppb	16.295	49.667
45	Sc	>	4650872.647		ppb	2.981	4659300.554
10	B		660.691	5.099728	ppb	4.693	138.001
23	Na		23331.838	669.517609	ppb	3.957	180.002
25	Mg		170093.399	322.685300	ppb	2.623	723.839
27	Al		800489.337	139.029562	ppb	3.097	3163.885
39	K		92066.883	690.595463	ppb	3.465	8169.669
43	Ca		24040.320	1680.133366	ppb	1.309	248.575
44	Ca		427442.715	2361.639270	ppb	2.427	23338.493
45	Sc-1	>	4650872.647		ppb	2.981	4659300.554
47	Ti		4362.380	6.427192	ppb	1.222	154.668
49	Ti		3898.169	6.780750	ppb	0.361	158.001
51	V		24776.928	2.385051	ppb	4.167	2704.932
52	Cr		37970.486	3.672372	ppb	1.999	8152.324
55	Mn		62284.256	4.854732	ppb	4.525	948.049
54	Fe		94492.316	103.815759	ppb	3.550	27831.142
57	Fe		42035.042	114.540251	ppb	3.614	10971.286
59	Co		1090.732	0.071941	ppb	7.094	305.339
60	Ni		2302.959	0.897645	ppb	5.877	171.335
63	Cu		16978.289	3.062997	ppb	4.578	371.797
65	Cu		7905.341	3.138269	ppb	4.367	173.813
71	Ga	>	1334460.699		ppb	4.169	1341824.633
75	As		7288.412	0.149610	ppb	1.768	7098.606
75	As-1		130.290	0.166909	ppb	72.773	-162.073
78	Se		7154.990	-0.164461	ppb	2.072	7270.325
82	Se		10.320	-0.022097	ppb	186.963	15.050
88	Sr		153357.648	7.748754	ppb	1.821	460.678
66	Zn		57178.751	35.557223	ppb	3.709	1589.473
68	Zn		40469.276	34.699572	ppb	3.311	1882.195
95	Mo		1398.774	0.327538	ppb	4.979	340.007
115	In-1	>	1038364.526		ppb	1.759	1040983.126
107	Ag		154.001	-0.003347	ppb	11.096	184.002
111	Cd		183.209	0.068324	ppb	24.843	45.968
118	Sn		1152.742	-0.339019	ppb	19.355	2927.154
121	Sb		2036.895	0.134044	ppb	0.345	1233.418
135	Ba		7562.478	4.069185	ppb	1.327	169.335
165	Ho		1262354.507		ppb	2.890	1261276.724
159	Tb		1352222.873		ppb	2.460	1341620.348
203	Tl		91.334	-0.009192	ppb	8.850	154.001
207	Pb		22341.884	1.133651	ppb	2.773	620.008
209	Bi	>	704615.885		ppb	2.225	698471.606

QC Out of Limits

Analyte Mass	Out of Limits Message

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1798**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-28 00:14
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-6.icp

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0003S022**

LCS/MB BATCH:	180326LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180326SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000402	1.00	ND	0.00100	
Copper	0.00371	1.00	0.00371	0.00100	
Lead	0.000316	1.00	0.000316	0.00100	J

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1798-f-6
Autosampler Position: 314
Sample Date/Time: Wednesday, March 28, 2018 00:14:11
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std_2.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1798-f-6.335
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		39748.045		ppb	1.015	39186.692
9	Be		44.333	-0.016832	ppb	9.116	49.667
45	Sc	>	4682535.500		ppb	2.775	4659300.554
10	B		527.349	3.762488	ppb	8.390	138.001
23	Na		21594.201	614.695213	ppb	2.715	180.002
25	Mg		157444.460	296.574642	ppb	2.132	723.839
27	Al		626878.530	107.992551	ppb	4.280	3163.885
39	K		62888.834	446.634213	ppb	2.015	8169.669
43	Ca		26577.891	1845.804863	ppb	4.350	248.575
44	Ca		457966.808	2522.433506	ppb	0.909	23338.493
45	Sc-1	>	4682535.500		ppb	2.775	4659300.554
47	Ti		3092.528	4.447092	ppb	8.534	154.668
49	Ti		2424.324	4.081013	ppb	3.701	158.001
51	V		36008.150	3.572813	ppb	2.427	2704.932
52	Cr		10986.637	0.342067	ppb	2.273	8152.324
55	Mn		106492.441	8.296550	ppb	2.876	948.049
54	Fe		78886.929	78.788365	ppb	3.201	27831.142
57	Fe		35111.030	88.123502	ppb	2.308	10971.286
59	Co		1321.430	0.092196	ppb	5.763	305.339
60	Ni		4184.296	1.676306	ppb	2.057	171.335
63	Cu		20239.740	3.746206	ppb	2.233	371.797
65	Cu		9124.830	3.712230	ppb	1.559	173.813
71	Ga	>	1306174.029		ppb	1.225	1341824.633
75	As		7325.889	0.272213	ppb	0.659	7098.606
75	As-1		244.442	0.235221	ppb	14.079	-162.073
78	Se		7082.053	0.012801	ppb	1.295	7270.325
82	Se		11.628	-0.014356	ppb	276.354	15.050
88	Sr		120983.534	6.233069	ppb	3.040	460.678
66	Zn		53414.507	33.880824	ppb	2.099	1589.473
68	Zn		38308.572	33.492696	ppb	2.248	1882.195
95	Mo		1339.432	0.301457	ppb	6.802	340.007
115	In-1	>	1058560.509		ppb	1.185	1040983.126
107	Ag		122.001	-0.007225	ppb	6.557	184.002
111	Cd		129.289	0.040198	ppb	5.261	45.968
118	Sn		1106.735	-0.351557	ppb	15.354	2927.154
121	Sb		2469.002	0.198003	ppb	2.175	1233.418
135	Ba		7079.422	3.728490	ppb	0.977	169.335
165	Ho		1265335.078		ppb	2.995	1261276.724
159	Tb		1347686.805		ppb	1.536	1341620.348
203	Tl		80.000	-0.010641	ppb	20.463	154.001
207	Pb		6566.248	0.316286	ppb	3.766	620.008
209	Bi	>	692115.597		ppb	2.448	698471.606

QC Out of Limits

Analyte Mass	Out of Limits Message

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EPA 200.8 ICP/MS Metals

Filtered

QUALITY CONTROL

Method Blank
LCS/LCSD
MS/MSD
PDS/PDSD

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METHOD BLANK ASSOCIATION SUMMARY
FOR METHOD: EPA 200.8

MB SAMPLE ID:	**099-12-900-200**	ANALYZED BY:	598
MB BATCH ID:	180326LA2F	D/T ANALYZED:	2018-03-27 23:10
INSTRUMENT:	ICP/MS 03	REVIEWED BY:	
EXTRACTION:	Filtered	D/T REVIEWED:	
D/T EXTRACTED:	2018-03-26 00:00	MATRIX:	Water

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180326-BA-2__309.icp

CLIENT WORK ORDER: 18-03-1798

S#	RUN TYPE	CLIENT SAMPLE ID	D/T ANALYZED	DATA FILE
1		A2BMP0009S006	2018-03-28 00:04	W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-1.icp
2		A2BMP0011S008	2018-03-28 00:01	W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-2.icp
3		CABMP0001S001	2018-03-28 00:06	W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-3.icp
4		CABMP0002S001	2018-03-28 00:09	W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-4.icp
5		CABMP0003S001	2018-03-28 00:11	W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-5.icp
6		EVBMP0003S022	2018-03-28 00:14	W:\ICPMS-DATA\2018\180327B1\18-03-1798-F-6.icp

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**099-12-900**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 23:10
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-26 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180326-BA-2__309.icp

 # MB **CLIENT SAMPLE NUMBER: Method Blank**

LCS/MB BATCH:	180326LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Antimony	0.000	1.00	ND	0.00100	
Arsenic	0.0000422	1.00	ND	0.00100	
Barium	0.000	1.00	ND	0.00100	
Beryllium	0.000000339	1.00	ND	0.00100	
Cadmium	0.00000190	1.00	ND	0.00100	
Chromium	0.0000204	1.00	ND	0.00100	
Cobalt	0.000000748	1.00	ND	0.00100	
Copper	0.00000104	1.00	ND	0.00100	
Lead	0.000	1.00	ND	0.00100	
Molybdenum	0.000	1.00	ND	0.00100	
Nickel	0.000	1.00	ND	0.00100	
Selenium	0.0000585	1.00	ND	0.00100	
Silver	0.000	1.00	ND	0.00100	
Thallium	0.000	1.00	ND	0.00100	
Vanadium	0.000	1.00	ND	0.00100	
Zinc	0.000260	1.00	ND	0.00500	
Aluminum	0.000136	1.00	ND	0.0500	
Calcium	0.000	1.00	ND	0.100	
Iron	0.000	1.00	ND	0.0500	
Magnesium	0.000265	1.00	ND	0.100	
Manganese	0.000	1.00	ND	0.00100	
Potassium	0.00320	1.00	ND	0.0500	
Sodium	0.000234	1.00	ND	0.100	
Strontium	0.00000676	1.00	ND	0.00100	
Tin	0.000	1.00	ND	0.00100	
Titanium	0.000	1.00	ND	0.00100	
Boron	0.000	1.00	ND	0.0500	

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LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

LCS SAMPLE ID: **099-12-900-200**
LCS/MB BATCH ID: 180326LA2F
INSTRUMENT: ICP/MS 03

EXTRACTION: Filtered
D/T EXTRACTED: 2018-03-26 00:00

ANALYZED BY: 598
D/T ANALYZED: 2018-03-27 23:14
REVIEWED BY:
D/T REVIEWED:

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180326-LA-2__311.icp

COMPOUND	CONC	CONC REC	%REC	%REC CL	ME CL	STATUS	QUALIFIERS
Antimony	0.1000	0.09986	100	80-120	73-127	PASS	
Arsenic	0.1000	0.09993	100	80-120	73-127	PASS	
Barium	0.1000	0.1021	102	80-120	73-127	PASS	
Beryllium	0.1000	0.1046	105	80-120	73-127	PASS	
Cadmium	0.1000	0.1042	104	80-120	73-127	PASS	
Chromium	0.1000	0.1031	103	80-120	73-127	PASS	
Cobalt	0.1000	0.09921	99	80-120	73-127	PASS	
Copper	0.1000	0.1017	102	80-120	73-127	PASS	
Lead	0.1000	0.1038	104	80-120	73-127	PASS	
Molybdenum	0.1000	0.1017	102	80-120	73-127	PASS	
Nickel	0.1000	0.1020	102	80-120	73-127	PASS	
Selenium	0.1000	0.09943	99	80-120	73-127	PASS	
Silver	0.05000	0.05288	106	80-120	73-127	PASS	
Thallium	0.1000	0.09692	97	80-120	73-127	PASS	
Vanadium	0.1000	0.1024	102	80-120	73-127	PASS	
Zinc	0.1000	0.1042	104	80-120	73-127	PASS	
Aluminum	0.1000	0.1021	102	80-120	73-127	PASS	
Calcium	5.100	5.300	104	80-120	73-127	PASS	
Iron	5.100	5.193	102	80-120	73-127	PASS	
Magnesium	5.100	4.982	98	80-120	73-127	PASS	
Manganese	0.1000	0.1035	103	80-120	73-127	PASS	
Potassium	1.000	1.039	104	80-120	73-127	PASS	
Sodium	1.000	1.062	106	80-120	73-127	PASS	
Strontium	0.1000	0.1009	101	80-120	73-127	PASS	
Tin	0.1000	0.1002	100	80-120	73-127	PASS	
Titanium	0.1000	0.09979	100	80-120	73-127	PASS	
Boron	0.1000	0.1023	102	80-120	73-127	PASS	

Compounds listed in bold are required to be reported.

LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

LCS SAMPLE ID:	**099-12-900-200**	EXTRACTION:	Filtered	ANALYZED BY:	598
LCS/MB BATCH ID:	180326LA2F	D/T EXTRACTED:	2018-03-26 00:00	D/T ANALYZED:	2018-03-27 23:14
INSTRUMENT:	ICP/MS 03			REVIEWED BY:	
				D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180326-LA-2__311.icp

COMPOUND	CONC	CONC REC	%REC	%REC CL	ME CL	STATUS	QUALIFIERS

Total number of LCS compounds: 27
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Compounds listed in bold are required to be reported.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

SPIKED SAMPLE ID: 18-03-1798-2
MS/MSD BATCH: 180326SA2
INSTRUMENTS:
SAMPLE: ICP/MS 03
MS: ICP/MS 03
MSD: ICP/MS 03

EXTRACTION: Filtered
D/T EXTRACTED:
SAMPLE: 2018-03-26 00:00
MS: 2018-03-26 00:00
MSD: 2018-03-26 00:00

ANALYZED BY: 598
D/T ANALYZED:
SAMPLE: 2018-03-28 00:01
MS: 2018-03-27 23:17
MSD: 2018-03-27 23:19
REVIEWED BY:
D/T REVIEWED:

COMMENT:

COMPOUND NAME	SAMPLE	INITIAL	FINAL	MS CONC	% MS.REC	MSD CONC	% MSD.REC	% REC CL	RPD	RPD CL	STATUS	QUALIFIERS
Antimony	ND	0.1000	0.1000	0.09052	91	0.09350	93	80-120	3	0-20	PASS	
Arsenic	ND	0.1000	0.1000	0.1008	101	0.1034	103	80-120	3	0-20	PASS	
Barium	0.00577	0.1000	0.1000	0.1058	100	0.1062	100	80-120	0	0-10	PASS	
Beryllium	ND	0.1000	0.1000	0.1060	106	0.1057	106	80-120	0	0-20	PASS	
Cadmium	ND	0.1000	0.1000	0.1038	104	0.1038	104	80-120	0	0-20	PASS	
Chromium	ND	0.1000	0.1000	0.1037	104	0.1049	105	80-120	1	0-20	PASS	
Cobalt	ND	0.1000	0.1000	0.1007	101	0.09973	100	80-120	1	0-20	PASS	
Copper	0.00147	0.1000	0.1000	0.1045	103	0.1046	103	80-120	0	0-20	PASS	
Lead	ND	0.1000	0.1000	0.1029	103	0.1051	105	80-120	2	0-20	PASS	
Molybdenum	ND	0.1000	0.1000	0.09731	97	0.09817	98	80-120	1	0-20	PASS	
Nickel	ND	0.1000	0.1000	0.1039	104	0.1028	103	80-120	1	0-20	PASS	
Selenium	ND	0.1000	0.1000	0.1018	102	0.1059	106	80-120	4	0-20	PASS	
Silver	ND	0.05000	0.05000	0.04927	99	0.05032	101	80-120	2	0-20	PASS	
Thallium	ND	0.1000	0.1000	0.09635	96	0.09868	99	80-120	2	0-20	PASS	
Vanadium	0.00119	0.1000	0.1000	0.1044	103	0.1044	103	80-120	0	0-20	PASS	
Zinc	0.00658	0.1000	0.1000	0.1163	110	0.1160	109	80-120	0	0-20	PASS	
Aluminum	0.08199	0.1000	0.1000	0.1806	99	0.1831	101	80-120	1	0-20	PASS	
Calcium	1.894	5.100	5.100	7.362	107	7.382	108	80-120	0	0-20	PASS	
Iron	0.07026	5.100	5.100	5.298	103	5.384	104	80-120	2	0-20	PASS	
Magnesium	0.7076	5.100	5.100	5.862	101	5.944	103	80-120	1	0-20	PASS	
Manganese	0.00115	0.1000	0.1000	0.1051	104	0.1043	103	80-120	1	0-20	PASS	
Potassium	3.334	1.000	1.000	4.494	116	4.486	115	80-120	0	0-20	PASS	
Sodium	0.7231	1.000	1.000	1.839	112	1.811	109	80-120	2	0-20	PASS	
Strontium	0.00878	0.1000	0.1000	0.1064	98	0.1099	101	80-120	3	0-20	PASS	
Tin	ND	0.1000	0.1000	0.09461	95	0.09601	96	80-120	1	0-20	PASS	
Titanium	0.00276	0.1000	0.1000	0.1025	100	0.1028	100	80-120	0	0-20	PASS	
Boron	**ND**	**0.1000**	**0.1000**	**0.1251**	**125**	**0.1234**	**123**	**80-120**	**1**	**0-20**	**FAIL**	**3F**

MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

Data Files:

TYPE	DATA FILE	DATA FILE PATH
MS	18-03-1798-F-2 MS.icp	W:\ICPMS-DATA\2018\180327B1\
MSD	18-03-1798-F-2 MSD.icp	W:\ICPMS-DATA\2018\180327B1\

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 180326-ba-2
Autosampler Position: 302
Sample Date/Time: Tuesday, March 27, 2018 23:10:02
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\180326-ba-2.309
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		41553.129		ppb	2.701	40188.711
9	Be		44.333	0.000339	ppb	15.354	44.667
45	Sc	>	4682607.207		ppb	3.362	4734242.801
10	B		108.001	-0.320000	ppb	14.699	141.334
23	Na		181.907	0.234167	ppb	3.953	176.192
25	Mg		448.583	0.265172	ppb	5.214	312.386
27	Al		2948.478	0.136274	ppb	2.513	2188.264
39	K		8384.532	3.198741	ppb	1.089	8094.936
43	Ca		227.622	-0.189994	ppb	12.822	233.336
44	Ca		22568.933	-4.540363	ppb	0.466	23646.906
45	Sc-1	>	4682607.207		ppb	3.362	4734242.801
47	Ti		147.335	-0.022088	ppb	23.914	164.668
49	Ti		150.668	-0.014023	ppb	13.297	160.668
51	V		2289.565	-0.021481	ppb	1.502	2518.782
52	Cr		8287.777	0.020403	ppb	2.292	8213.711
55	Mn		776.033	-0.004629	ppb	4.472	844.039
54	Fe		27303.753	-0.062529	ppb	3.792	27690.319
57	Fe		10413.966	-0.841078	ppb	3.354	10771.047
59	Co		186.002	0.000748	ppb	3.877	180.002
60	Ni		120.001	-0.001778	ppb	15.899	125.334
63	Cu		280.565	-0.003144	ppb	11.938	302.985
65	Cu		162.520	0.001039	ppb	1.789	163.091
71	Ga	>	1340703.396		ppb	1.089	1366388.245
75	As		7033.011	0.068632	ppb	1.963	7058.145
75	As-1		-201.803	0.042217	ppb	43.992	-281.356
78	Se		7242.260	0.159238	ppb	0.876	7309.951
82	Se		14.315	0.058461	ppb	85.511	0.945
88	Sr		333.340	0.006760	ppb	12.901	202.002
66	Zn		1685.490	0.260096	ppb	5.816	1314.762
68	Zn		2063.568	0.312761	ppb	4.396	1754.169
95	Mo		153.335	-0.057660	ppb	30.599	350.007
115	In-1	>	1050603.654		ppb	1.663	1057220.148
107	Ag		98.001	-0.007122	ppb	14.286	164.001
111	Cd		34.729	0.001899	ppb	29.460	30.901
118	Sn		754.698	-0.408279	ppb	15.340	2895.813
121	Sb		186.669	-0.137742	ppb	15.613	1047.395
135	Ba		91.334	-0.050450	ppb	11.022	186.002
165	Ho		1237419.228		ppb	1.897	1276471.289
159	Tb		1332831.464		ppb	1.689	1363627.612
203	Tl		62.000	-0.003845	ppb	20.145	90.000
207	Pb		410.670	-0.006010	ppb	2.302	534.006
209	Bi	>	699976.351		ppb	1.910	711392.616

QC Out of Limits

ıalyte MassOut of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 180326-la-2

Autosampler Position: 304

Sample Date/Time: Tuesday, March 27, 2018 23:14:57

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\180326-la-2.311

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		41460.123		ppb	4.543	40188.711
9	Be		35480.809	104.622605	ppb	2.908	44.667
45	Sc	>	4813283.526		ppb	0.893	4734242.801
10	B		10678.939	102.255132	ppb	2.839	141.334
23	Na		36947.429	1062.377643	ppb	4.885	176.192
25	Mg		2712104.462	4982.127137	ppb	1.959	312.386
27	Al		607658.458	102.119931	ppb	1.002	2188.264
39	K		137213.360	1038.728476	ppb	3.725	8094.936
43	Ca		75551.743	5299.597707	ppb	1.577	233.336
44	Ca		1260375.005	6795.913940	ppb	3.204	23646.906
45	Sc-1	>	4813283.526		ppb	0.893	4734242.801
47	Ti		67598.400	98.946989	ppb	0.579	164.668
49	Ti		57305.461	99.788805	ppb	2.582	160.668
51	V		979083.642	102.444526	ppb	2.920	2518.782
52	Cr		869771.998	103.091889	ppb	2.338	8213.711
55	Mn		1356032.140	103.482910	ppb	2.022	844.039
54	Fe		3447097.171	5193.076308	ppb	3.272	27690.319
57	Fe		1427668.289	5178.095999	ppb	2.127	10771.047
59	Co		1103808.064	99.208519	ppb	2.186	180.002
60	Ni		245884.264	101.983458	ppb	2.550	125.334
63	Cu		534879.232	100.247410	ppb	1.470	302.985
65	Cu		246416.562	101.680279	ppb	1.818	163.091
71	Ga	>	1354517.015		ppb	2.162	1366388.245
75	As		166647.760	100.011862	ppb	0.598	7058.145
75	As-1		177363.072	99.933480	ppb	0.466	-281.356
78	Se		51692.523	99.499552	ppb	1.815	7309.951
82	Se		22882.725	99.425187	ppb	1.831	0.945
88	Sr		2036948.582	100.897844	ppb	1.529	202.002
66	Zn		161138.468	104.155000	ppb	1.606	1314.762
68	Zn		117456.765	104.771352	ppb	1.924	1754.169
95	Mo		339326.046	101.712128	ppb	2.853	350.007
115	In-1	>	1038649.010		ppb	1.320	1057220.148
107	Ag		478022.713	52.878011	ppb	2.503	164.001
111	Cd		212408.656	104.208974	ppb	1.574	30.901
118	Sn		517753.371	100.150302	ppb	1.422	2895.813
121	Sb		613119.187	99.860396	ppb	1.546	1047.395
135	Ba		187372.629	102.094281	ppb	0.444	186.002
165	Ho		1266011.954		ppb	0.829	1276471.289
159	Tb		1353810.685		ppb	1.371	1363627.612
203	Tl		657571.170	96.921171	ppb	1.514	90.000
207	Pb		1957922.271	103.754643	ppb	0.806	534.006
209	Bi	>	691767.641		ppb	1.421	711392.616

QC Out of Limits

alyte MassOut of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1798-f-2 ms

Autosampler Position: 305

Sample Date/Time: Tuesday, March 27, 2018 23:17:24

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1798-f-2 ms.312

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		39229.924		ppb	4.781	40188.711
9	Be		34227.322	106.025905	ppb	1.560	44.667
45	Sc	>	4582980.041		ppb	1.477	4734242.801
10	B		12411.134	125.138165	ppb	1.239	141.334
23	Na		60759.636	1839.086490	ppb	3.037	176.192
25	Mg		3037259.321	5861.635172	ppb	1.148	312.386
27	Al		1021924.284	180.633125	ppb	2.315	2188.264
39	K		538985.878	4493.794229	ppb	0.274	8094.936
43	Ca		99840.615	7361.853368	ppb	1.847	233.336
44	Ca		1644669.913	9364.431616	ppb	0.404	23646.906
45	Sc-1	>	4582980.041		ppb	1.477	4734242.801
47	Ti		66406.512	102.068227	ppb	3.425	164.668
49	Ti		56048.973	102.507508	ppb	2.212	160.668
51	V		949682.154	104.369598	ppb	1.670	2518.782
52	Cr		833253.339	103.748320	ppb	2.648	8213.711
55	Mn		1310857.711	105.062970	ppb	0.410	844.039
54	Fe		3347781.388	5297.966096	ppb	1.525	27690.319
57	Fe		1425918.522	5433.207067	ppb	1.151	10771.047
59	Co		1066265.390	100.658721	ppb	1.627	180.002
60	Ni		238529.029	103.923153	ppb	3.360	125.334
63	Cu		530904.627	102.928777	ppb	2.427	302.985
65	Cu		244933.962	104.532302	ppb	3.784	163.091
71	Ga	>	1309143.254		ppb	2.066	1366388.245
75	As		162273.898	100.767029	ppb	2.898	7058.145
75	As-1		172976.811	100.812580	ppb	3.256	-281.356
78	Se		51074.584	102.084107	ppb	2.438	7309.951
82	Se		22651.505	101.833123	ppb	4.639	0.945
88	Sr		2076721.944	106.435651	ppb	2.251	202.002
66	Zn		173845.363	116.330553	ppb	2.865	1314.762
68	Zn		125267.618	115.756886	ppb	2.872	1754.169
95	Mo		321744.068	97.313944	ppb	3.122	350.007
115	In-1	>	1028864.897		ppb	2.018	1057220.148
107	Ag		441095.337	49.268797	ppb	1.259	164.001
111	Cd		209596.956	103.802812	ppb	1.382	30.901
118	Sn		484591.454	94.611800	ppb	1.209	2895.813
121	Sb		550459.700	90.515414	ppb	0.310	1047.395
135	Ba		192177.028	105.751610	ppb	1.624	186.002
165	Ho		1244076.354		ppb	2.124	1276471.289
159	Tb		1340796.444		ppb	1.890	1363627.612
203	Tl		637887.345	96.346135	ppb	2.686	90.000
207	Pb		1895601.182	102.941401	ppb	2.389	534.006
209	Bi	>	674920.514		ppb	1.272	711392.616

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1798-f-2 msd

Autosampler Position: 306

Sample Date/Time: Tuesday, March 27, 2018 23:19:52

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1798-f-2 msd.313

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		39014.583		ppb	2.830	40188.711
9	Be		34685.782	**105.723976**	ppb	4.023	44.667
45	Sc	>	4657222.912		ppb	1.025	4734242.801
10	B		12440.514	**123.423283**	ppb	3.716	141.334
23	Na		60820.033	**1811.282889**	ppb	2.976	176.192
25	Mg		3130432.673	**5944.124400**	ppb	1.799	312.386
27	Al		1052698.352	**183.129769**	ppb	2.195	2188.264
39	K		546864.042	**4486.394110**	ppb	1.824	8094.936
43	Ca		101731.781	**7382.382616**	ppb	0.725	233.336
44	Ca		1687258.617	**9453.842898**	ppb	2.661	23646.906
45	Sc-1	>	4657222.912		ppb	1.025	4734242.801
47	Ti		68817.500	**104.119683**	ppb	0.767	164.668
49	Ti		57102.804	**102.776002**	ppb	1.461	160.668
51	V		965035.480	**104.364492**	ppb	1.021	2518.782
52	Cr		855912.912	**104.856425**	ppb	1.617	8213.711
55	Mn		1322295.838	**104.287145**	ppb	1.375	844.039
54	Fe		3457894.042	**5384.493142**	ppb	1.775	27690.319
57	Fe		1453459.113	**5450.251477**	ppb	2.773	10771.047
59	Co		1073683.815	**99.733085**	ppb	1.788	180.002
60	Ni		239902.738	**102.833593**	ppb	1.614	125.334
63	Cu		537071.497	**104.239110**	ppb	2.899	302.985
65	Cu		244874.408	**104.629181**	ppb	3.090	163.091
71	Ga	>	1307630.816		ppb	1.323	1366388.245
75	As		165123.337	**102.756435**	ppb	0.430	7058.145
75	As-1		177183.155	**103.393972**	ppb	0.431	-281.356
78	Se		52096.417	**104.582096**	ppb	2.118	7309.951
82	Se		23522.350	**105.855961**	ppb	1.693	0.945
88	Sr		2141407.874	**109.866379**	ppb	2.374	202.002
66	Zn		173128.346	**115.982438**	ppb	2.542	1314.762
68	Zn		124360.208	**115.058816**	ppb	0.970	1754.169
95	Mo		326514.948	**98.174831**	ppb	3.312	350.007
115	In-1	>	1034951.917		ppb	1.605	1057220.148
107	Ag		453343.343	**50.319689**	ppb	2.199	164.001
111	Cd		210972.914	**103.849629**	ppb	2.595	30.901
118	Sn		494702.966	**96.012243**	ppb	1.539	2895.813
121	Sb		571997.926	**93.496562**	ppb	0.646	1047.395
135	Ba		194197.739	**106.189942**	ppb	2.429	186.002
165	Ho		1254252.998		ppb	2.122	1276471.289
159	Tb		1336122.251		ppb	1.110	1363627.612
203	Tl		650560.710	**98.681870**	ppb	1.669	90.000
207	Pb		1926609.720	**105.077582**	ppb	1.861	534.006
209	Bi	>	672045.358		ppb	0.816	711392.616

QC Out of Limits

ıalyte Mass Out of Limits Message

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EPA 200.8 ICP/MS Metals

Filtered

RUN LOGS

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PDS / PDSD M071117C

Water 0.1 ml → 10 ml
Soil 0.025 ml → 10 ml
Filter 0.025 ml → 10 ml

Dataset Report

User Name: UFLE
Instrument Name: ICP/MS 3
Dataset File Path: W:\dataset\2018\180327B1\
Report Date/Time: Wednesday, March 28, 2018 07:31:21

Tuning	MS092817A
Int STD	MS032018B
R.B.	MR031318A
Carrier	MR031318C
Wash Sol.	MR031318D

The Dataset

Analyst	Time and Date	Description	Sample File Name	
SmartTune	09:40:20 Tue 27-Mar-18	solution	W:\dataset\2018\180327B1\Mass Calibration and Resolution.001	
SmartTune	09:42:09 Tue 27-Mar-18		W:\dataset\2018\180327B1\AutoLens.002	
SmartTune	09:57:05 Tue 27-Mar-18	:	W:\dataset\2018\180327B1\Daily Performance Check.003	
598	10:07:46 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.004	
598	10:11:04 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.005	
598	10:13:33 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.006	
598	10:16:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.007	
598	10:18:30 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.008	
598	10:20:58 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.009	
598	10:23:27 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.010	
598	10:25:56 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.011	
598	10:28:25 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.012	
	10:30:54 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.013	
	10:33:22 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.014	
	10:35:52 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.015	
	10:38:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.016	
	10:40:50 Tue 27-Mar-18	.	W:\dataset\2018\180327B1\Rinse Blank.017	
	10:43:20 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.018	
	10:45:50 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.019	
	10:48:19 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.020	pass
	10:50:47 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.021	
	10:53:16 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICS-A - MS092817B.022	
	10:55:45 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICS-AB - MS092817C.023	
	10:58:12 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.024	
	11:00:41 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.025	
	11:03:10 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.026	
598	11:05:39 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1217x10-3.027	
598	11:08:08 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 ms.028	
	11:10:39 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.029	pass
	11:13:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.030	
	11:15:37 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.031	
598	11:18:08 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 msd.032	
598	11:20:36 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 .033	
598	11:23:04 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-1.034	
598	11:25:32 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 ms.035	
598	11:28:00 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 msd.036	
598	11:30:28 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 .037	
598	11:32:56 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-2.038	
	11:35:26 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.039	pass
	11:37:55 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.040	
	11:40:24 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.041	
598	11:49:17 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.042	
598	11:51:45 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1704-f-1 ms.043	
598	11:54:13 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1704-f-1 msd.044	

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598	19:02:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\LCS 6 hours.213	
	19:04:52 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.214	pass
	19:07:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.215	
	19:09:49 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.216	
598	19:22:35 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.217	
	19:25:03 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.218	
	19:27:30 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.219	
	19:30:00 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.220	
	19:32:30 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.221	
	19:34:59 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.222	
	19:37:29 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.223	
	19:40:00 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.224	
	19:42:28 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.225	pass
	19:44:57 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.226	
	19:47:26 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.227	
	19:49:55 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.228	
598	19:52:25 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2042-1.229	
598	19:54:55 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-ba-2.230	
598	19:57:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-la-2.231	
598	19:59:51 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-1.232	
598	20:02:19 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-2.233	
598	20:04:47 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-3.234	
598	20:07:14 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 ms.235	
598	20:09:43 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 msd.236	
598	20:12:10 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 .237	
	20:14:40 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.238	pass
	20:17:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.239	
	20:19:37 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.240	
598	20:22:07 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-2.241	
598	20:24:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-3.242	
598	20:27:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-4.243	
598	20:29:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-5.244	
598	20:31:57 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-6.245	
598	20:34:24 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-7.246	
598	20:36:53 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-ba-3.247	
598	20:39:21 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-la-3.248	
598	20:41:48 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 ms.249	
598	20:44:16 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 msd.250	
	20:46:45 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.251	pass
	20:49:14 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.252	
	20:51:42 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.253	
598	20:54:11 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 .254	
598	20:56:39 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-1.255	
598	20:59:06 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-3.256	
598	21:01:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-4.257	
598	21:04:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-5.258	
598	21:06:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-6.259	
598	21:08:58 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.260	
598	21:11:27 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-ba-7.261	
598	21:13:55 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-la-7.262	
598	21:16:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-1 ms.263	
	21:18:53 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.264	pass
	21:21:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.265	
	21:23:49 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.266	
	21:26:16 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.267	
	21:28:44 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.268	

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	21:31:13 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.269	
	21:33:43 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.270	
	21:36:11 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.271	
	21:38:40 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.272	
	21:41:10 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.273	
	21:43:39 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.274	pass
	21:46:07 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.275	
	21:48:36 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.276	
	21:51:04 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.277	
598	21:53:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-1 msd.278	
598	21:56:01 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-1 .279	
598	21:58:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-2.280	
598	22:00:56 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-3.281	
598	22:03:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-4.282	
598	22:05:52 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-1.283	
598	22:08:19 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-2.284	
598	22:10:46 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-3.285	
598	22:13:14 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-4.286	
598	22:15:41 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-f-1.287	
	22:18:11 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.288	pass
	22:20:40 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.289	
	22:23:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.290	
598	22:25:38 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-f-2.291	
598	22:28:05 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-f-3.292	
598	22:30:33 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-1.293	
598	22:33:00 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-2.294	
598	22:35:27 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1793-3.295	
598	22:37:55 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1887-1.296	
598	22:40:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1887-2.297	
598	22:42:51 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1795-1.298	
598	22:45:18 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-f-1.299	
598	22:47:45 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-f-2.300	
	22:50:15 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.301	pass
	22:52:43 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.302	
	22:55:11 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.303	
598	22:57:41 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-f-3.304	
598	23:00:09 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-1.305	
598	23:02:37 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-2.306	
598	23:05:04 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1794-3.307	
598	23:07:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-ba-1.308	
598	23:10:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-ba-2.309	
598	23:12:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-la-1.310	
598	23:14:57 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-la-2.311	
598	23:17:24 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-2 ms.312	
598	23:19:52 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-2 msd.313	
	23:22:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.314	pass
	23:24:49 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.315	
	23:27:17 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.316	
	23:29:47 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.317	
	23:32:17 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.318	
	23:34:46 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.319	
	23:37:14 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.320	
	23:39:42 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.321	
	23:42:11 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.322	
	23:44:39 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.323	
	23:47:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.324	

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	23:49:35 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.325	
	23:52:03 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.326	
	23:54:33 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.327	
598	23:57:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.328	
598	23:59:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check .329	
598	00:01:56 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-2 .330	
598	00:04:23 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-1.331	
598	00:06:50 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-3.332	
598	00:09:17 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-4.333	
598	00:11:44 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-5.334	
598	00:14:11 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-f-6.335	
598	00:16:38 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-1 ms.336	
598	00:19:05 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-1 msd.337	
	00:21:33 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.338	pass
	00:24:00 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.339	
	00:26:28 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.340	
598	00:28:56 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.341	
598	00:31:23 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.342	
598	00:33:51 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-1 .343	
598	00:36:18 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-2.344	
598	00:38:45 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-3.345	
598	00:41:12 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-4.346	
598	00:43:39 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-5.347	
598	00:46:06 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-6.348	
598	00:48:33 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1798-7.349	
598	00:51:02 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\180326-ba-5.350	
	00:53:30 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.351	pass
	00:55:57 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.352	
	00:58:24 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.353	
598	01:00:53 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\180326-la-5.354	
598	01:03:20 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1927-1 ms.355	
598	01:05:47 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1927-1 msd.356	
598	01:08:14 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1927-1 .357	
598	01:10:44 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890x10-1 ms.358	
598	01:13:10 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890x10-1 msd.359	
598	01:15:37 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890x10-1.360	
598	01:18:04 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890x10-2.361	
598	01:20:32 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890-1 ms.362	
598	01:22:59 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890-1 msd.363	
	01:25:26 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.364	pass
	01:27:54 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.365	
	01:30:23 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.366	
	01:32:51 Wed 28-Mar-18		W:\dataset\2018\180327B1\Blank.367	
	01:35:21 Wed 28-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.368	
	01:37:50 Wed 28-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.369	
	01:40:19 Wed 28-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.370	
	01:42:47 Wed 28-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.371	
	01:45:16 Wed 28-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.372	
	01:47:45 Wed 28-Mar-18		W:\dataset\2018\180327B1\ICB.373	
	01:50:14 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.374	pass
	01:52:42 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.375	
	01:55:11 Wed 28-Mar-18		W:\dataset\2018\180327B1\CCB.376	
	01:57:40 Wed 28-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.377	
598	02:00:08 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890-1.378	
598	02:02:35 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1890-2.379	
598	02:05:03 Wed 28-Mar-18	water	W:\dataset\2018\180327B1\18-03-1845x10-f-4 ms.380	

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EPA 200.8 ICP/MS Metals

Filtered

PREPARATION LOGS

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Metals Sample Preparation Logbook (Aqueous)

METHOD	MATRIX	EQUIPMENT ID #	REAGENT ID #	STANDARD ID #
☐ EPA 3005A ☐ EPA 200.7	Aqueous	Thermometer NA (CF °C)	HNO_3 HR161177A 1.0 mL	Spike 1 M042017B
☐ EPA 3010A ☒ EPA 200.8		Block Digester NA	HCl ____ mL	Spike 2 MU42017A
☒ EPA 3020A ☐ 5% HNO_3		Pipetter / Dispenser P116/1062/D030	(Specify)	Spike 3 MS101017A

BATCH NUMBER	SUPPLY LOT #	ACID PRESERVATION AND FILTRATION	TURBIDITY ANALYSIS
MS/MSD 180326SA2	Digestion Tube 160613	☐ None ☒ Lab Filtered ☐ Lab Preserved	☐ Yes ☐ No ☒ N/A
(Specify) 226 3/26/18	Filter 1276A90840	Book # 22 Page # 16	Book # ____ Page # ____

DIGESTION															
	START			END						SAMPLE		SPIKE STANDARD			
DATE	TIME	TEMP W/O CF (°C)	PREP TECH ID #	TIME	TEMP W/O CF (°C)	PREP TECH ID #	INITIAL pH	ECI ID #	ANALYTE(S)	INITIAL (mL)	FINAL (mL)	1 (µL)	2 (µL)	3 (µL)
03/26/18	NA	NA	1058	NA	NA	1058	>2	MS 18-03-1798-2C	MetalS	50	50	50	50	250
							>2	MSD 1				1	1	1
								LCS 180326LA2						
								LCSD / MB 180326BA2						
							>2	18-03-1798-1C						
							>2	2C						
							>2	3C						
							>2	4C						
							>2	5C						
							>2	6C						

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Acid Preservation and Filtration Logbook

CEL ID #	SAMPLING DATE	INITIAL pH < 2	FILTER AND DIGEST *	FILTER AND PRESERVE **	PRESERVE ONLY	SAMPLE FILTRATION (IF ANY) DATE	LOT # a) FILTER b) DIGESTION TUBE	ACID PRESERVATION (1) 1:1 HNO_3; (2) 5-mL/L BrCl; (3) 12-N HCl D = DATE T = TIME	N = NAME L = LOT #	AMOUNT	DIGESTATE FILTRATION (IF ANY) DATE	FILTER LOT #	ANALYST	COMMENTS
18-03-1704- 1G	03/19/18	Y (N)		X		03/21/18	a) F7GA90890 b) 160613	D) 03/21/18 T) 18:00	N) (1) 2 3 L) MR110177A	1ML			1058	
~~86~~ 2G		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
3G		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
5G		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
6G		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
7G		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-1763-1F	03/20/17	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-1797-1I	03/21/11	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
2I		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-1784-4A	03/19/18	Y (N)			X		a) b)	D) 03/22/18 T) 16:05	N) (1) 2 3 L) [illegible]	1ML			1058	
14A		Y (N)			X		a) b)	D) T)	N) 1 2 3 L)					
18-03-1798-1C	03/21/18	Y (N)		X		03/22/18	a) R7GA90840 b) 160613	D) 03/22/18 T) 13:00	N) (1) 2 3 L) MR110177A	1ML			1058	
2C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
3C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
4C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
5C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
6C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-1845-1-10A	03/21/18	Y (N)		X		03/22/18	a) b)	D) T)	N) 1 2 3 L)					
18-03-1942-1-4C	03/22/18	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-1793-1-3A	03/21/18	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					

* FILTER AND DIGEST: If the sample was filtered in the lab and digested immediately, mark **x** in the cell.

** FILTER AND PRESERVE: If the sample was filtered in the lab and preserved prior to digestion, mark **x** in the cell.

EPA 200.8 ICP/MS Metals

Filtered

STANDARD PREPARATION LOGBOOKS

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
03/10/17	M031017B	ORI.P6	Calib STD	M040816A	0.1 mL	1000 ppm	20 mL	5 ppm	Calib blk	R1122160I	03/11/17	598	
	C				0.02 mL			1 ppm					
	D				5 mL			0.2 ppm					
	E		ICV		0.1 mL			5 ppm					
03/20/17	M032017A	6020/200.8	Cal Std #2	M006-041-13	0.5 mL	100 ppm	25 mL	2 ppm	2.5 mL HNO3	M006-041-14	2/24/18	598	
			Cal Std #3	M006-041-14	2.5 mL	1000 ppm		10 ppm					
			BORON	M032017B	1.25 mL	100 ppm		500 ppb					
	M032017B		BORON ICV+Fe - SP1	M006-042-04	10 mL	1000 ppm	100 mL	100 ppm	DI-WATER	D 032017A	3/20/18		
			598 3/20/17 -SP2										
			-Fe										
03/23/17	M032317A	1631	100 ppb STD	M021517A	1 mL	10 ppm	100 mL	100 ppb	2 m HCl	M006-037-02	04/23/17	1010	
	M032317B		100 ppb ICV	M021517B	1 mL	10 ppm	100 mL	100 ppb					
	M032317C		100 ppt STD	M032317A	1 mL	100 ppb	1000 mL	100 ppt					
	M032317D		100 ppt ICV	M032317B	1 mL	100 ppb	100 mL	100 ppt					
	M032317E	1631	5 ppb	M032317A	0.5	100 ppb	10 mL	5 ppb					

Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
4/18/17	M041817B	6010/200.7	ICV - Li	M006-38-20	0.01mL	10,000 PPM	100mL	1PPM	6% HNO_3 5% HCl	M006-38-25 M006-38-24	4/18/18	945	
			- Bi	M006-38-21	0.1mL	1,000PPM							
			- S	M006-038-19	0.01mL	10,000 PPM							
4/20/17	M042017A	Metals	Ag Std. Spike 2	M006-40-19	5.0mL	1000ppm	1.0L	5ppm	100mL HNO_3 DI H_2O	M006-41-22	4/20/18	1030	
			Al Std.	M006-40-14	10.0mL	10000ppm	1.0L	100ppm					
			Ba Std.	M006 40-02									
			Boron Std.	M006-40-15									
			Si Std.	M006-40-07									
			Na Std.	M006-39-20	100mL			1000ppm					
			K Std.	M006-41-03									
	M042017B	Metals	Sb Std. Spike 1	M006-39-23	10.0mL	1000ppm	1L	100ppm	100mL HNO_3 DI H_2O	M006 041-22	04/20/18	1030	
			As	M006-038-09									
			Be	M006-39-25									
			Cd	M006-41-05									
			Ca	M006-40-01									

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
04/20/17	M04L017B	Metals	Cr Std. Spikel	M006-40-21	10mL	10,000ppm	1L	100ppm	100mL HNO_3 DI H_2O	M006-41-22	04/20/18	1030	
			Co	M006-40-22									
			Cu	M006-39-24									
			Fe	M006-39-11									
			Pb	M006-39-17									
			Mg	M006-39-12									
			Mn	M006-39-19									
			Mo	M006-41-06									
			Ni	M006-40-23									
			P	M006-41-02									
			Se	M006-39-16									
			Sr	M006-39-14									
			Tl	M006-39-13									
			Sn	M006-39-21									
			Ti	M006-39-15									

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
04/20/17	M042017B	Metals	V Std. Spike 1	M006-40-25	10.0mL	10,000 ppm	1L	100ppm	100mL HNO_3 DI H_2O	M006-41-22	04/20/18	JDP	
			Zn Std. Spike 1	M006-39-18									
04/25/17	M042517A	16 Hg	~~M021517A~~ 10 ppm Std. Hg	M021517A	1.0mL	10ppm	100mL	100ppb	20mL HCl DI H_2O	M006-37-22	05/25/17	JDP	
	M042517B		~~M021517B~~ 10ppm 04/25/17 10 ppm ICV Hg	M021517B									
	M042517C		100ppb Std Hg	M042517A	0.1mL	100ppb		100 ppt					
	M042517D		100ppb ICV Hg	M042517B									
	M042517E		100ppb Std. Hg	M042517A	2mL	100ppb	40mL	5ppb					
04/26/17	M042617A	6010/200.7	ICP-MCS-1 271 4/28/17	~~M006-41-17~~ M006-41-18	15mL	See SOP App. C	1L	See SOP App. C	60mL HNO_3 50mL HCl DI H_2O	M006-41-22 ~~M006-41-23~~ M006-41-24 271 4/28/17	04/26/18 10/13/17	JDP	Cal. Std 3 ICP
			ICP-MCS-7	~~M006-41-18~~ M006-41-17	15mL								
			ICP-MSS-8	M006-41-16	60mL								
			ICP-MCS-10	M006-38-13	7.5mL								
			ICP-AM-11	M006-41-19	6.0mL								
			Na Std.	M006-41-01	6.0mL	~~100~~ 975 ppm 4/28/17							
			K Std.	M006-38-16	3.0mL								
			P Std.	M006-40-09	1.2mL								

Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
4/27/17	M042717A	6010/200.7	Na [10,000 PPM]	M006-123-23	1 ml	See SOP Apdx C	200ml	See SOP Apdx C	12ml HNO3 10ml HCl	M006-041-22 ~~M010-042-23~~	12/31/17 ~~04/27/18~~ ~~12/13/17~~	935	
			Sn [10,000 PPM]	-16	0.05ml					M006-~~041-24~~ 4/28/17			
			Si [1,000 PPM]	040-03 M006-~~0??-10~~ 935 4/27/17	1.77ml								
4/27/17	M042717B	1640	100ppm Se	M006-42-11	0.2454g	powder	1L	100ppm	H2O	N/A	4/27/18	KO	
4/27/17	M042717C	6020/ww.?	Internal std Conc.										
			Sc	M006-042-04	100mL	1000ppm	500mL	20ppm	5mL HNO3	M006-41-22	3 yr	JGr	05/2021
			Li6	M006-042-03	50mL			100ppm					11/2021
			Ga	M006-042-05	50mL								11/2020
			In	M006-15-24	10mL			20ppm					03/2018
			Ho	M006-042-07	10mL								04/2022
			Tb	M006-042-06	10mL								08/2021
			Bi	M006-042-08	10mL								04/2022
	M041717D		Internal std	M041717C	5mL	20ppm	1(x3	0.1-1ppm	10mL HNO3				
5/3/17	M050317A	Hg	100ppm Hg	M006-36-15	10mL	1000ppm	100mL	100ppm	5mL HNO3	M006-41-22	12/20/17	868	
	M050317B		1ppm STD	M050317A	1mL	100ppm	100mL	1ppm	5mL HNO3	M006-41-22	6/3/17	868	

Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
07/07/17	M070717F	Org. Pb	ICV	M060817H	0.1mL	1000ppm	20mL	5 ppm	Cal BLK	R1122601	07/08/17	1080	7/7/17 1080
07/11/17	M071117A	6020/200.8	ICV #1 - Sp1	M042017B	0.1 mL	100 ppm	100 mL	100 ppb	1mL HNO3	M006-042-21	04/20/18	776	* 776 7/11/17
			Fe	M006-039-11	0.049mL	10,000 ppm		5 ppm					
	M071117B		ICV #2 - Sp2	M042017A	0.1 mL	100 ppm		100 ppb					
	M071117C		10 ppm Spike #1	M042017B	5 mL	100 ppm	50 mL	10 ppm	5mL HNO3 5mL HCl	M006-042-21 M006-042-22			
			#2	M042017A	5 mL								
7/14/17	M071417A	Org. Pb	Cal STD	M060817G	0.2mL	1000ppm	20mL	10ppm	Cal blk	R1122601	7/15/17	1080	
	B				0.1mL			5ppm					
	C				0.04mL			2ppm					
	D				0.02mL			1 ppm					
	E				5mL			0.2ppm					
	F		ICV	M060817H	0.1mL	1000ppm	20mL	5 ppm	Cal blk	R1122601			*
7/18/17	M071817A	6020/200.8	Cal STD - U	M005-22-14	0.02mL	1000ppm	100 mL	200ppb	1mL HNO3	M006-042-21	03/31/18	776	
	M071817B		ICV - U	M006-037-77	1 mL	10 ppm	100 mL	100 ppb			09/30/17		
07/20/17	M072017A	1631	100ppm STD.	M006-093-82	10mL	100ppm	100mL	10ppm	2 mL HCl	M006-037-22	12/20/17	1030	

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Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	092117	E	org. Pb	MP-060/P-015	M060817G	5 mL	R0609170I	20ml	0.2 ppm	9/22/17	1080
MS	|	F	|	|	M060817H	0.1 mL	|	|	5 |	|	|
MS	C92217	A	1631	P007/P-109/P-030	M072017A	1.0mL	M006-37-22	100mL	100ppb	10/22/17	1030
MS	|	B	|	|	M072017 B	1.0mL	|	|	100 ppb	|	|
MS	|	C	|	|	M092217A ~~M082517~~ 9/22/17 1030	100mL	|	|	100ppt	|	|
MS	|	D	|	|	M092217 B	100mL	|	|	100ppt	|	|
MS	|	E	|	|	M092217A	500mL	|	10mL	5ppb	|	|
MS	092817	A	6020/200.8	MP-058/MP-056	M006-044-01	0.5 mL	M006-043-08 5mL	500 mL	10 ppb	08/30/18	776
MS	|	B	|	|	M006-043-24	5 mL	|	|	0.2 - 200 ~~2 - 2000~~ ppm	776 9/29/17	|
MS	|	C	|	|	M006-043-24 M006-043-25	5 mL 0.5 mL	|	|	~~0.2 - 200~~ ppm 5 - 20 ppb	|	|
MS	092817	D	Org Pb	MP-060/P-015	M060817G	0.2mL	R0609170I	20mL	10 ppm	9/29/17	1680
MS	|	E	|	|	|	0.1	|	|	5	|	|
MS	|	F	|	|	|	0.04	|	|	2	|	|
MS	|	G	|	|	|	0.02	|	|	1	|	|
MS	|	H	|	|	|	5	|	|	0.2	|	|
MS	|	I	|	|	M060817H	0.1	|	|	5	|	|
MS	092917	A	6020/200.8	MP-053/MP-058/MP-056 ~~Cal STD - U~~	M005-022-14	0.02 mL	M006-043-08 1mL	100 mL	200 ppb	03/31/18	776
MS	|	B	|	~~Fld - U~~	M006-044-01	1 mL	|	|	100 ppb	08/30/18	|

776 9/29/17

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Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	100517	A	Org. Pb	MP-060/P-015	M060817G	0.8 mL	R06091701	20 mL	10 ppm	10/06/17	ST
MS		B				0.1 mL			5 ppm		
MS		C				0.4 mL			2 ppm		
MS		D				0.02 mL			1 ppm		
MS		E				5 mL			0.2 ppm		
MS		F			M060817H	0.1 mL			5 ppm		
MS	100617	A	Org Pb.	MP-060/P015	M060817G	0.2 mL	R06091701	20 mL	10 ppm	10/7/17	1080
MS		B				0.1 mL			5		
MS		C				0.04 mL			2		
MS		D				0.02 mL			1		
MS		E				5 mL			0.2		
MS		F			M060817H	0.1 mL			5		
MS	101017	A	6020/200.8	MP-053/MP-058/MP-058	M06-040-21	10 mL	M006-044-17 1 mL M006-041-12 1 mL	100 mL	1000 ppm	10/10/18	776
MS					M006-035-08						
MS					M006-044-19						
MS	101117	A	Org. Pb	MP-060/P-015	M060817G	0.2 mL	R06091701	20 mL	10 ppm	10/12/17	1080
MS		B				0.1 mL			5		
MS		C				0.04 mL			2		

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Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	022618	A	6020/200.8	MP-058/P-117	M006-041-13 M006-041-14 M022017B	0.5 mL 2.5 mL 1.5 mL	M006-041-02 2.5 L	250 mL	0.1 ppm 10.2 ppm 0.5 ppm	2/14/18	[illegible]
MS		B		MP-056/MP-058	M006-042-12 B M006-044-19	0.1 mL 0.045 mL	M006-041-02 1.0	100 mL	100 µg/L		
MS		C			M042017A	0.1			100 ppb		
MS		D			M042017A	0.5			5 ppm		
MS		E		P-117	M006-045-16 M006-045-17 M006-044-15	100 mL 100 mL 100 mL	M006-045-02 10mL M006-041-N 10	1 L	1000 ppm	4/30/23	
MS	022118	A		MP-057/P-117	M006-045-21 M006-045-22 M022017B	4 mL 20 mL 10 mL	M006-045-02 20 mL	2 L	0.2 ppm 10.2 ppm 0.5 ppm	2/14/18	[illegible]
MS		B		MP-056/P-117	M042017B AT M006-044-15 N	1.0 mL 1.0 mL 0.045 mL	M006-045-02 10 mL	1 L 100 mL BY 250 mL	100 ppb 5 ppm	4/30/18	
MS		C			M042017A	1.5 mL 5Y 2/14/18		1	100 ppb		
MS		D			MS1017A	5 mL		1 L	5 ppm		
MS	02/2 022518	D		MP-057/P-117	M006-045-23 M006-045-22 M022018	4 mL 20 mL 10 mL	M006-045-N 20mL	2 L	0.2 ppm 10.2 ppm 0.5 ppm	1/30/19	[illegible]
MS	022718	A	Org Pb	PbS/P-015	MS121417A	0.2 mL	MK121417D	20mL	10 ppm	2/15/18	[illegible]
MS		B				0.1			5		
MS		C				0.04			2		
MS		D				0.02			1		
MS		E				0.004			0.2		
MS		F			MS012418A	0.1			5		
MS	022118	A	1631	P-007/P-109/P-030	CCV MS011615A	1.0 mL	HCl M06-037-22	100mL	100 ppb	3/21/18	[illegible]
MS		B			CCV MS011615B	1.0 mL			100 ppb		

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Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	032018	A	ICP/MS	MY-058/P117	M006-042-04	10 mL	5 mL HNO3 M006-045-02	500 mL	200 ppm	11/30/20	SSR
MS					M006-046-03	50 mL			100 ppm		
MS					M006-042-05						
MS					M006-041-14	10 mL			20 ppm		
MS					M006-042-07						
MS					M006-045-11						
MS					M006-046-18						
MS	032018	B			M032018A	5 mL	10 mL HNO3 M04-046-02	1 L	0.2 ppm → 1 ppm		
MS	032018	C			M006-045-21	0.2 mL			200 ppb	1/3/19	
MS					M006-045-22	0.05 mL			0.50 ppm		
MS					MS020718J	1 mL			1 ppm		
MS					MS032018C	0.3 mL			0.06 - 0.5 ppm		
MS											
MS											
MS											
MS											
MS											
MS											

Reagent Preparation Logbook

PREP DATE	NEW REAGENT ID #	TEST METHOD	REAGENT DESCRIPTION	SOURCE CHEMICAL(S) NAME	SOURCE CHEMICAL(S) ID #	SOURCE CHEMICAL(S) INITIAL AMOUNT	SOLVENT NAME	SOLVENT ID #	FINAL VOLUME	EXPIR. DATE	PREP BY	COMMENTS
07/31/17	R07311701	Metal	1N. NaOAC	Sodium Acetate	M06-17-09	2720g	DI H2O	NA	20 L	07/30/18	805	03/13/19
08/01/17	R08011701	metals	1:1 HNO3	HNO3	M006042208	1.25 L x 30	DI H2O	NA	2.5 x 30	08/01/18	710	
8/2/17	R08021701	Hg	1/NaCl NH2OH	NH2OH·HCl NaCl	M004-43-12 M006-47-20	1.2 kg 1.2 kg	DI H2O	NA	10 L	8/2/18	808	
08/09/17	R08091701	TCLP	1N. NaOH	NaOH	M00634-15	160g	DI H2O	D0809170I NA	4L x 8	08/08/18	805	source = 02/22/21.
08/11/17	R08111701	Metals	1:2 HCl	HCl	M006-41-23	800 x 20	DI H2O	NA	2.4L x 20	08/11/18	710	
8/11/17	R08111702	↓	1:1 HNO3	HNO3	M006-043-08	250 ml ~~500 ml~~ 935 8/11/17	DI H2O	N/A	500 ml	8/11/18	935	
↓	R08111703	↓	1:1 HCl	HCl	M000-042-22	↓	↓	↓	↓	↓	↓	
8/14/17	R08141701	1640	BUFFER	HAc NH4OH	M006-34-13 G007-79-14	140 mL 160 mL	DI H2O	N/A	1L x 2 ~~2L~~ 53 8/14/17	8/14/18	53	
	R08141701		Hydride H2O2	HNO3 H2O2	M006-43-09 M006-40-16	4 mL 20 mL			1L			
	R08141703		Hydride	NaOH NaBH4	M006-19-24 F006-12-01	0.45 4.0g			200 mL x 2			
	R08141704		4M HCl	HCl	M006-37-22	200 mL			500 mL x 2			
	R08141705		1% HNO3 (1L)	HNO3	M006-43-09	10 mL			1L			
	R08141706		1% HNO3 (2L)			20 mL			2L x 2			
	R08141707		Sea Water Blank		M006-43-09 M006-44-03	10 mL 33.33 mL			1L			
8/21/17	R08211702	Hg	5% KMnO4	KMnO4	M006-37-01	500g	DI H2O	NA	10 L	8/21/18	808	

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Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	120717	A	metals		M006-045-01	833mL	Di-H2O	2.5L	1:2 HCl	12/7/18	1080
MR	121117	A	6010/200.7	D044/F002	M006-045-02 M006-045-01	50mL 50mL	Di-H2O	1L X2	6% HNO3, 5% HCl	12/11/18	935
MR		B									
MR		C				100mL 100mL		1L x4	10% HNO3 10% HCl		
MR		D						1L X2			
MR	121217	A	SPLP		Cat 6.44-2 / H2SO4 M006-45-02 / HNO3	6ml 40ml	DI-H2O	100 ml	6% H2SO4 40% HNO3	12/11/18	805
MR	121417	A	Org. Pb	Pipette 04-12016 MIBK D-054	Aliquot 336 M006-35-24	20mL	M006-094-02 MIBK 180mL	200mL	10%: 336/MIBK	6/14/19	1080
MR	121417	B	Org. Pb	Pipette 04-12016 MIBK D-054	10% 336/MIBK MR121417A	20mL	M006-094-02 MIBK 180mL	200mL	1% 336/MIBK	6/14/18	1080
MR	121417	C	Org. Pb	Balance 61 Pipette 01-07-2016	Iodine M007-04-19	6g	M006-09-09 Benzene	200mL	I2 3%	6/14/18	1080
MR	121417	D	Org. Pb	D-054/D-055/Pipette 04012016	Xylene M006-044-14	200mL			BLANKS	6/14/18	1080
MR					MIBK M006-094-02	250mL					
MR					1% 336 MR121417B	50mL					
MR					3% I2	1mL					
MR	12617	A	metals		M006-045-02	1.25L	Di-H2O	2.50L	1:1 HNO3	12/16/18	1080
MR	011218	A	Hg	Bal #59	M006-43-01	50 1000g	DI-H2O	20L	5% KMnO4	1/12/19	868
MR	011218	B	Hg	Bal #59	M006-43-025 M006-42-20	1.2kg 1.2kg	DI-H2O	10L	12% NaCl-NH4OH	1/12/19	868
MR	~~01/30/18~~	A	METALS	—	M006-045-09	4X 1.25L 500mL	DI-H2O	4X 1200mL	1:1 HNO3	01/30/19	710
MR	~~01/31/18~~	A	metals		M006-042-22	833mL	Di-H2O	2.5L	1:2 HCl	1/31/19 19/01/18 1080	1080

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Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	03/2/18	Q	Metals	—	M006-04601	1.25L	DI H2O	2.5L	1:1 HNO_3	3/2/19	[illegible]
MR		R									
MR		S									
MR		T									
MR		U									
MR		V									
MR		W									
MR		X									
MR	03/13/18	A	Ion/mi	P-117	M006-04502	10mL	DI-H_2O	1L	1% HNO_3	3/13/19	[illegible]
MR		B				10mL			1%		
MR		C				20mL			2%		
MR		D			M006-045-02 M006-045-01	120 mL 80 mL		4L	3% HNO_3 2% HCl		
MR		E									
MR		F									
MR											
MR											
MR											
MR											

Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Hydroxylamine	Aeros	5478-11-1	A0332752	10/1/16	500g x 20	P	10/1/13	769	10/1/13	769	
2	Multielement Calib. Std - # 1	High-Purity	ICP-MCS-1	1227704 ~~1312925~~	09/26/14	250ml	P	10/03/13	469	10/03/13	469	
3	" - 7	"	" -7	469 10/13 1312219	"	"	"	"	"	"	"	
4	" - 8	"	" -8	1312925	"	500ml x 2	"	"	"	"	"	
5	" - 10	"	" -10	1319312	"	125ml	"	"	"	"	"	
6	" - 11	"	ICP-AM-11	1307750	"	"	"	"	"	"	"	
7	Tungsten Standard	"	100063-3	1309114	3/26/15	"	"	"	"	"	"	
8	Nitric Acid	EMD	NX-0407-2	53099	10/7/16	2.5L x 8	G	10/6/13	879	10/8/13	879	
9	HCL	EMD	HX0607-2	53010	10/7/16	2.5L x 8	G	10/6/13	879	10/8/13	879	
10	Sulfuric Acid	EMD	SX1247-2	53128	10/15/16	2.5L x 5	G	10/15/13	769	10/15/13	769	
11	Nitric Acid	EMD	NX0407-2	53099	10/15/16	2.5L x 8	G	10/15/13	879	10/16/13	879	
12	Nitric Acid	EMD	NX0407-2	53055	10/24/16	2.5L x 10	G	10/24/13	TR	10/24/13	TR	
13	HCL	EMD	HX0607-2	53010	10/29/16	2.5L x 8	G	10/29/13	879	10/29/13	879	
14	Indium	Accustandard	ICP-MS-2TM-0.1X-1	213025049	03/2018	100mL	P	11/01/13	TR	11/01/13	TR	
15	Scandium	"	ICP-MS-50N-0.1X-1	213055044	05/2014	"	"	"	"	"	"	
16	Boron	"	ICP-07W-1	212050017	10/2017	"	"	"	"	"	"	
17	Tungsten	"	ICP-6TW-1	211105145	11/2016	"	"	"	"	"	"	
18	Lithium	"										
19	Acetic Acid	Fisher	A38C-212	133363		2.5L x 6	G	11/05/13	805	11/5/13	805	CTF: ICP #3 p15-15 Hg #3 p15-16
20	HNO_3	EMD	NX-0407-2	53099	11/05/16	2.5 L x 10	G	11/05/13	781	11/05/13	781	
21	"	"	NX0407/4	52174	"	2.5 L x 02	"	"	"	"	"	
22	Lithium 6	High-Purity	100025-6I	1231246	05/01/15	100mL	P	11/07/13	TR	11/07/13	TR	
23	HNO_3	EMD	NX0407-2	53099	11/13/16	2.5 L x 10	G	11/13/13	781	11/13/13	781	
24	HCL	EMD	HX0609-2	53010	11/13/16	2.5L x 5	G	11/14/13	805	11/14/13	805	
25	Hydrogen Peroxide H_2O_2	EMD	HX0635-2	53115331	5/31/2015	1L x 8	P	11/25/13	879	11/26/13	879	

COMMENTS:

Book Number: 6 cl 11/27/13

Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Nitric Acid	EMD	NX0407-2	55006	5-27-18	2.5x10	G	5-27-15	710	5-29-15	710	
2	Hydrochloric Acid	EMD	HX0607-2	54169	5-27-18	2.5x4	G	5-27-15	710	5-29-15	710	
3	Sulfuric Acid	EMD	SX-1247-2	54132	4/24/18	2.5x4	G	5/27/15	ELV	5/29/15	ELV	
4	BORON	AccuStandard	ICP-07M-1	214655136	7/1/15	100mL	P	5/27/15	TT	5/27/15	TT	
5	QCS-Q-1		QCS-01-1	21410508b	10/4/16	100mL	P					
6	QCS-02-1	SPEX	QCS-02-1	213125083-01	11/13/16	100mL						
7	CL-CAL-3	SPEX CL-CAL-3	CL-CAL-3 CLH-54PP4	CLH-54PP4	5/30/16	125mL						
8	CL-EINT-A1	SPEX CL-EINT-A1	CL-EINT-A1 CLIL-65PP4	CLIL-65PP4								
9	Nitric Acid	EMD	NX0407	55006	5-29-18	2.5x6	G	5-29-15	710	5-29-15	710	
10	Hydrochloric Acid	EMD	HX0607-2	54310	5-29-18	2.5x3	G	5-29-15	710	5-29-15	710	
11	Ytterbium	High Purity	10M66-1	1401628	11/20/16	100ml	P	6/1/15	935	6/1/15	935	
12	Holmium		10M23-1	1400209								
13	Terbium		10M57-1	1425501								
14	Li6		100029-6I	14280J0	11/20/16	100mL	P	6/3/15	SH	6/3/15	SH	
15	Calibration Std. 3	SPEX	CL-CAL-3	CL12-70PP4	5/30/16	125mL x2	P	6/3/15	SH	5/30/16	SH	
16	NaCl	Fischer	S-271-10 6/4/15	146640	6/4/18	10 kg	Bucket	6/4/15	915	6/4/15	915	
17	$SnCl_2$	Fischer	~~AC~~ 5260	148075	6/4/18	500g x1	B	6/4/15	915	6/4/15	915	
18	$K_2S_2O_8$	Fischer	P-231-500	147150	6/4/18	500g x1	B	6/4/15	915	6/4/15	915	
19	$SnCl_2 \cdot 2H_2O$	↓	T168-500	148074	6/4/18	500g	P	6/4/15	110	6/4/15	110	
20	H_2O_2	↓	H325-500	148097	6/4/18	500g	P	6/4/15	110	6/4/15	110	
21	HCl	↓	A508-P212	141450	6/14/17	2x2.5L	P	6/4/15	110	6/4/15	110	
22	H_2O_2	↓	A467-2	1214670	7/24/17	2x2L	P	6/4/15	110	6/4/15	110	
23	Hydrogen Peroxide	Fisher	H325-4	147967	6/9/18	4Lx4	P	6/9/15	710	6/9/15	710	
24	Nitric Acid	EMD	NX0407-2	55006	06/12/18	2.5Lx8	G	06/12/15	942	06/12/15	942	
25	↓	↓	↓	54339	↓	2.5Lx2	↓	↓	↓	↓	↓	

COMMENTS:

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	HCl	EMD	HX0607-2	55253	03/24/19	2.5Lx10	G	03/24/16	1039	03/24/16	1039	
2	Aluminum Standard	ULTRA	ICP-113	CM-1334	04/30/22	125 ml	P	03/28/16	110	03/28/16	110	#1
3	Beryllium Standard		ICP-104	CP-0170	02/28/23	125	P					#2
4	Chromium Standard		ICP-124	CM-6110	12/31/22	125 mL	P					
5	Iron Standard		ICP-126	CP-0549	02/28/23	125 mL	P					
6	Zinc Standard		ICP-130	CP-0155	02/28/23	125 mL	P					
7	Manganese Standard		ICP-125	CM-2432	06/30/22	125 mL	P					
8	Magnesium Standard		ICP-112	CM-4445	09/30/22	125 mL	P					
9	Calcium Standard		ICP-120	CP-0877	04/30/23	125 mL	P					
10	Silicon Standard		ICP-014	TC0477	05/31/21	125 mL	P					
11	Terbium standard		ICP-065	CM-4138	08/31/22	125 mL	P					
12	Xylene	Fisher	XS-4	158943	4/1/19	4Lx4	G	4/1/16	air		.	
13	HNO_3	EMD	HX0407-2	55323	04/13/17	2.5Lx10	G	04/13/16	1039	04/13/16	1039	
14	BOILING STONES	SAINT-GOBAIN	D1067103	K774-4K016	04/19/2021	450g x 2	P	04/19/16	710	04/19/16	710	
15				R674-6A002		450g x 2						
16				S071-6A030		450g x 2						
17	Citric Acid Anhydrous	Fisher	A940-1	160479	04/20/2021	1kg x 12	P	04/21/16	805	04/21/16	805	[illegible]
18	$K_2S_2O_8$	Acros	UN-1492	A0367996	4/21/21	500g x 2	P	4/14/16	aw	4/22/16	aw	
19	Amine dehubble Soln.	Life technologies	A10496	1745205	4/21/19	50ml	P	4/21/16	air	4/21/16	air	
20	H_2SO_4	EMD	SX1247-2	53128	4/27/19	2.5x4	G	4/27/16	710	4/27/16	710	*
21	Hydrochloric Acid	EMD	HX0607-2	55777	05/02/19	2.5x8	G	05/02/16	710	05/02/16	710	[illegible]
22	Nitric Acid	EMD	NX0407-2	55148	05/02/19	2.5x11	G	05/02/16	710	05/02/16	710	
23	Nitric Acid	Fisher	UN2031	1216010	01/20/19							*
24	Aliquat 336	Aldrich	205613-250mL	MKBV4736V	5/24/[illegible]	250mL	G	5/24/16	53L	5/24/16	53L	
25	HNO_3	EMD	HX0407-2	55323	04/13/17	2.5L x26	G	05/26/16	1030	05/26/16	1030	

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LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Hydrochloric Acid	EMD	~~HX0607-2~~ 56027	56027	10/21/19	2.5x10	G	10/21/16	710	10/21/16	710	
2	Nitric Acid	↓	NX0407-2	56020	1030 11/01/16	2.5x11	↓	↓	↓	↓	↓	
3	ICS-INT-01-1	AccuStandard	INT-01-1	I 150 35036-01	~~06/30/18~~ 05/31/18	100mL	P	11/01/16	1030	11/01/16	1030	
4	ICS-INT-02-1		INT-02-1	212075023-03	06/30/18							
5	ICS-INT-03-01		INT-03-01	216065010	06/30/18							
6	ICS-INT-04-5	↓	INT-04-5	213065097-02	05/31/18	500mL	↓	↓	↓	↓	↓	
7	HNO3	EMD	NX0407-2	5-6048	9/11/19	25x20	G	1/09/16	710	1/09/16	710	
8	HCl	EMD	HX0607-2	56027	11/19/19	25x11	G	↓	↓	↓	↓	
9	Arsenic Standard	ULTRA	ICP-433	CP-5341	11/30/23	125mL	P	11/9/16	996	11/9/16	996	
10	ICP Multielement Cal. Std. #1	High Purity	ICP-MCS-1	1515602	10/13/17	250mL	P	11/10/16	935	11/10/16	935	
11	#7		ICP-MCS-7	1518~~6~~018 935 11/10/16		↓						
12	#8		ICP-MCS-8	1520834		500mL						
13	#10		ICP-MCS-10	1515415		250mL						
14	#11		ICP-AM-11	1623105		↓						
15	Sodium - Std.		#10M52-1	1609122	4/13/18	125mL						
16	Potassium - Std.		#10M41-1	1625027		↓						
17	Phosphorus - Std.		#10M39-1K	1609716								
18	Zinc - Std.		#10M68-1	1617621			↓					
19	Sulfur - Std		#10M54-5	1528619								
20	Lithium - Std.		#10M29-1	1604136		↓						
21	Bismuth - Std.		#10006-1	1605722 935 11/10/16	10/	60mL						
22	$NaBH_4$	Alfa Aesar	16940-66-2	P08C022	11/22/22	100g x2	P	11/22/16	534	11/22/16	534	
23	Xylenes	fisher	X5-4	166464	11/28/19	4Lx4	G	11/28/16	935	11/28/16	935	
24	HCl	EMD	HX0607-2	56208	12/02/19	2.5x10	G	12/02/16	1058	12/02/16	1058	
25	HNO3	EMD	NX0407-2	56020	12/02/19	2.5x17	G	12/02/16	1058	12/02/16	1058	

COMMENTS: _____

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED		OPENED		COMMENTS
								DATE	WHO	DATE	WHO	
1	SCP Science 50ml Digitubes	SCP Science	010-500-263	J232266-6360	NA	500pk	P	12/14/16	[illegible]	12/14/16	[illegible]	[illegible]
2	Methyl iso-Butyl Ketone	Fisher Chem.	M213-4	162092	12/14/19	4L x 4	G	12/14/16	935	12/14/16	935	
3	Hydrogen Peroxide	EMD	HX0635-2	56598639	12/16/19	20 x 1L	P	12/16/16	1058	12/16/16	1058	
4	Mixed Standard Solution I	Ultra	ICM-601	CP-1893	5/31/20	125ml	P	12/15/16	935	12/15/16	935	
5	II		ICM-602	CM-3432	7/31/19	125ml						
6	III		ICM-603	CP-3418	8/31/20	125ml						
7	IV		ICM-604	T00621	6/30/18	125ml						
8	V		ICM-605	T00611	6/30/18	125ml						
9	Interference Check Std #1		ICM-221	R01207	12/31/17	50ml						
10	Silicon 1000 mg/ml	High Purity	100050-3	1514036	9/30/17	60ml						
11	Iron	Ultra	ICP-126	CP-4457	5/30/27	125mL	P	12/20/16	[illegible]	12/20/16	[illegible]	
12	Magnesium		ICP-112	CM-4445	9/30/22							
13	Thallium		ICP-181	CP-2010	05/31/23							
14	Strontium		ICP-138	CM-4363	03/30/22							
15	Titanium		ICP-122	CM-1138	04/30/22							
16	Selenium		ICP-134	CM-5316	11/30/22							
17	Lead		ICP-182	CM-3300	7/31/22							
18	Zinc		ICP-130	CP-0155	2/28/23							
19	Manganese		ICP-125	M00334	4/30/18							
20	Sodium		ICP-111	CP-3178	03/30/23							
21	Tin		ICP-150	T00753	7/31/21							
22	Potassium		ICP-119	CP-0352	2/28/23							
23	Antimony		ICP-151	CP-2412	6/30/23							
24	Copper		ICP-129	R00852	5/30/20							
25	Beryllium		ICP-104	CP-0170	2/28/23							

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1	Calcium	Ultra	ICP-120	CP-4462	9/30/23	125mL	P	12/20/16	SJK	12/20/16	SJK	
2	Barium	⎪	ICP-158	CM-6544	1/31/23	⎪	⎪	⎪	⎪	⎪	⎪	
3	Silicon	⎪	ICP-114	CP-1238	4/30/23	⎪	⎪	⎪	⎪	⎪	⎪	
4	Nitric Acid	EMD	NX0407-2	56048	12/30/19	2.5x30	G	12/30/16	710	12/30/16	710	
5	Hydrochloric Acid	EMD	HX0607-2	58208	12/30/19	2.5x20	G	12/30/16	710	12/30/16	710	
6	H_2SO_4	EMD	SX1247-2	55329	01/09/20	2.5L	G	01/09/17	776	01/09/17	776	
7	HNO_3	EMD	NX0407-2	56020	01/11/20	2.5Lx4 24	G	01/11/17	1058	01/11/17	1058	
8	HNO_3	EMD	NX0407-2	56018	01/11/20	2.5x2	G	01/11/17	1058	01/11/17	1058	
9	Phosphorus 10,000 mg/mL	High Purity	10M39-1	1630829	7/10/18	125ml	P	1/11/17	935	1/11/17	935	
10	PH Tape	Micro Essential	#140	216814	06/15/17	4 Rolls	P	01/16/17	1058	01/16/17	1058	
11	HNO_3	Fisher	A509-212 ~~UN2031~~	1116080	03/26/2018	2.5L x18	P	01/23/17	710	01/23/17	710	
12	HCl	⎪	A508-212 ~~UN1789~~	4116060	03/26/19	2.5Lx14	P	01/23/17	710	01/23/17	710	
13	H_2O_2	EMD	HX0635-2	56258639	09/30/18	1 / 2L 20	P	02/06/17	710	2/06/17	710	4 710 2/6/17
14	Al Standard	Ultra	ICP-113	CP 3976	9/30/2023	125ml	P	02/06/17	1030	02/06/17	1030	
15	Boron	Ultra	ICP-105	K00924A	11/31/21	125mL	P	02/06/17	1030	02/06/17	1030	
16	Hydrogen peroxide	Fisher	H325-500	165728	2/10/2020	500ml x2	P	2/10/17	110			
17	Nitric Acid	Fisher	A467-2	1216080	09/07/2019	2Lx2	P	2/10/17	110			Clean room
18	Nitric Acid	Fisher	A509 P212	1116100	11/10/2018	2.5x20	P	2/13/17	710	02/13/17	710	metals DI
19	Silver	Ultra	ICP 047	CP-4409	09/20/23	125mL	P	2/20/17	1030	02/20/17	1030	
20	Silver	Ultra	ICP 147	CP-4495	09/30/23	125mL	P	⎪	⎪	⎪	⎪	
21	Chromium	⎪	ICP-124	CP-1768	05/31/23	⎪	⎪	⎪	⎪	⎪	⎪	
22	Cobalt	⎪	ICP-127	CP-2011	⎪	⎪	⎪	⎪	⎪	⎪	⎪	
23	Nickel	⎪	ICP-128	CP-0006	02/28/23	⎪	⎪	⎪	⎪	⎪	⎪	
24	Sulfur	⎪	ICP-116	CM-5373	11/30/22	⎪	⎪	⎪	⎪	⎪	⎪	
25	Vanadium	⎪	ICP-123	CP-3591	08/31/23	⎪	⎪	⎪	⎪	⎪	⎪	

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1	Sodium	Ultra	ICP-111	CP 3748	9/30/23	125 mL	P	2/20/17	1070	2/20/17	1030	
2	Phosphorus		ICP-115	CP-4381								
3	Potassium		ICP 119	CP-0352	2/28/23							
4	Lithium		ICP-103	T00356	5/31/21							
5	Cadmium		ICP-148	CP-0156	2/28/23							
6	Molybdenum		ICP-142	CL-2360	08/31/21							
7	Bismuth		ICP-183	CP-2124	6/30/23							
8	Sulfuric Acid.	EMD	SX1247-2	~~SX1247-2~~ 65329	2/20/20	2.5L	G	2/20/17	868	2/20/17		
9	Potassium Persulfate	Acros Organics	424185000	A0371662	2/17/19	500g x12	P	2/27/17	868	2/27/17		
10	Sodium Chloride	Alfa	6562	25152	2/17/20	25x2	P	2/17/17	110	2/27/17	110	
11	HNO3	Fisher	A509-P212	1116100	11/10/18	2.5L x10	P	2/28/17	1058	2/28/17	1058	
12	HCl	Fisher	A508-P212	4116090	10/19/19	2.5L x20	P	2/28/17	1058	2/28/17	1058	
13	Instrument calibration standard 2	SPEX	CL-CAL2	CL1-179MKBY	2/22/18	125-cx2	P	3/20/17	SL	3/20/17	SL	
14	1 S	SPEX	CL-CAL 3	CL2-117MKBY	2/22/18	125-cx4	P	1	1	1	1	
15	ICP Multielement Calibration Std-10	High Purity	ICP-MCS-10	1515415	2/21/18	250mL	P	3/22/17	935	3/22/17	935	
16	-8		ICP-MCS-8	1635121		500mL x2						
17	-1		ICP-MCS-1	1515602		500mL						
18	-7		ICP-MCS-7	1705326	2/24/18	500mL						
19	-11		ICP-~~MCS~~ AM11 (3/22/17)	1705327		125 mL						
20	Acetic Acid, Glacial	Fisher	A38C-212 (2.5L)	LOT# 166899	04/03/20	2.5L x4	G	04/04/17	805	04/04/17	805	*
21	Nitric Acid	Fisher	A509-P212	1116080	08/26/2018	2.5L x1	P	04/06/17	710	04/06/17	710	
22	↓	↓	↓	1116100	11/10/2018	2.5L x18	P	↓	↓	↓	↓	
23	↓	↓	↓	1116080	11/30/2018	2.5L x8	P	↓	↓	↓	↓	
24	HCl	Fisher	A508-P212	4116090	11/19/2019	2.5L x20	P	↓	↓	↓	↓	
25	Sodium Borohydride	Fisher	S678-25	161188	4/10/2022	2x25g	P	4/10/17	110	4/10/17	110	

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1	Sodium Selenate decahydrate	Aldrich	450294-5G	MKBX77V	4/UL	5g	G	4/10/17	110	4/13/17	110	
2	Ammonium Hydroxide	Fisher	A572-P500	#711090	10/16/2018	500mLx6	P	04/17/17	805	04/19/17	805	
3	Ci-6	AccuStd	ICP-MS-IS-L16-10X-1	216115021	11/2021	100mL	P	04/20/17	53r	04/20/17	53r	
4	Sc		ICP-MS-50N-0.1X-1	216055006	05/2021	100mL	P					
5	Ga		ICP-MS-WN 0.1X-1	215110067	11/2020	100mL	P					
6	Tb		ICP-MS-53N-0.1X-1	213125126-01	02/2021	100mL	P					
7	Ho		ICP-MS-24N 0.1X-1	217045020	04/2022	100mL	P					
8	Bi		ICP-MS-06N-0.1X-1	217045044	04/2022	100mL	P					
9	Stannous Chloride Dihydrate	Fisher	T163-500	163999	04/2022	500g X6	P	04/25/17	1030	04/25/17	1030	
10	Hydro chloric Acid	Aristar Ultra	87003-216	4216110	01/2020	500mL	P					
11	Na_2SeO_4	Alfa Aesar	11613	71408-04	04/2022	50g	G	04/25/17				
12	$SnCl_2$	Fisher	T1-141-500	145293A	4/2020	500g*1L	P	4/25/17	848	4/26/17	848	
13	BOILING STONES	Saint-Gobain	D1069103	Lot# T74-TC002	04/26/12	450g X8	P	04/27/17	805	04/27/17	805	CTF:# 3 P30-24 P30-25
14	XYLENE	Fisher	XS-4	168622	4/28/20	4L X4	G	4/28/17	53r	4/28/17	53r	
15	HCl.	Fisher	A508-P212	~~4~~116090	~~4/28~~ 10/9/19	2.5x 20.	P	4/28/17	710	4/28/17	710	710 4/28/19
16	HNO3	Fisher	A509-P212	111610	11/30/18	2.5X 20	P	4/28/17	710	4/28/17	710	
17	Sodium [10,000μg/mL]	Ultra	ICP-111	CP-3978	9/30/23	1L	P	5/2/17	935	5/2/17	935	
18	Potassium [10,000 μg/mL]		ICP-119	CR-0917	4/30/24	1L	P	5/2/17	935	5/2/17	935	
19	Hydrogen Peroxide	EMD	HX0635-2	56258639	09/30/18	1L	P	05/05/17	710	5/5/17	710.	
20	Sodium Chloride	Fisher.	S271-10	161535	5/15/20	10Kg	P	5/15/17	848	5/15/17	848	
21	Nitric Acid	Fisher	A509-P212	1117010	~~5/31/19~~ 1/31/19	2.5x20	P	5/23/17	710	5/23/17	710	#710 5/23/17
22	HCl	Fisher	A508-P212	~~4~~116090	10/9/19	2.5X20	P	5/23/17	710	5/23/17	710	
23	Hydrogen peroxide	EMD	HX0635-2	56273642	10/31/18	1LX5	P	5/26/17	710	5/26/17	710	
24	Lead II Chloride	Alfa Aesar	12345	M22B018	5/31/23	50g	P	5/3/17	53r	5/3/17	53r	
25	Buffer pH7.200 Solution (STD)	Fisher	SB36-500	171346.	~~06/06/19~~ 03/31/2019 805 06/06/19	500mLX1	P	06/06/17	805	06/06/17	805	CTF: # 3. P31-3

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1	Potassium Permanganate	VWR	~~2-31-1602~~ 97065-626	3166C309	7/18/18		P	7/18/16	868	6/13/17	868	* Fridge!
2	PH Tape	Micro Essential Lab	~~21635~~ 140 1058 06/07/17	216315	06/15/18	10 rolls	P	06/07/17	1058	06/07/17	1058	
3	ADPC	Sigma	2076	1cBG64HV	6/19/22	100g	S	6/16/17		6/16/17		
4	H_2SO_4	Fisher	~~34-5080~~ UN1830 1030 06/27/17	3115080	11/25/18	2.5 L	P	06/22/17	1030	06/27/17	1030	
5	Nitric Acid	Fisher	A467-2	1216120	01/04/20	2.5L X4	T	6/28/17	53r	6/28/17		
6	Acetic Acid	|	A8071-6	56160	6/28/20	1LX2	T	|		|		
7	100 mg/mL Hg	SPEX	PLHG2-1Y	22-93HGY	6/30/18	125mL	P	6/29/17	868	6/29/17	868	
8	HNO_3	Fisher	A509-P212	1116120	~~7/14/17~~ 12/16/2018 *	2/X 2.5 L	P	7/14/17	710	7/14/17	710	* 710 7/14/17
9	Nitric Acid	Fisher	A467-2	1217010	01/31/20	2LX2	T	7/27/17	53r	7/27/17	53r	
10	Sodium Chloride	Alfa Aesar	10862	25313	7/31/22	500g	P	7/31/17	53r	7/31/17	53r	
11	Sodium Chloride	|	|	25152		25g	|	|	|	|	|	
12	Hydroxylamine Hydrochloride	Fisher	H330-500	163471	~~11/21~~ 8/2/22	500g X6	P	7/24/17	868	8/2/17	868	
13	|	|	|	164843	8/2/22	500g X6	P	|	|	|		
14	Sulfuric Acid	Fisher		3116090	11/2/19	2.5 L	G P	8/7/17	868	8/7/17	868	
15	Tetraethyl Lead	SPEX	SVC-CSEL-8-500	TS1101310012	8/2/18	500mL	G	8/8/17	1080	8/8/17	1080	
16	Gold III Chloride	Acros	43708	A0366219	8/11/22	5g	G	8/4/17	110	8/4/17	110	
17	ICP-MS-QC2-1	AccuStandard	ICP-MS-QC2-1	215075097-02	06/30/19	100mL	P	08/11/17	53r	08/11/17	53r	
18	Beryllium ICP-MS-05N-0.01X-1	|	ICP-MS-05N-0.01X-1	217015012	01/09/22	100mL	P	|	|	|	|	
19	Manganese ICP-MS-33N-0.01X-1	|	ICP-MS-33N-0.01X-1	217035131	03/28/22	100mL	P	|	|	|	|	
20	Aluminum ICP-MS-01N-0.1X-1	|	ICP-MS-01N-0.1X-1	217045036	04/14/22	100mL	P	|	|	|	|	
21	Zinc ICP-MS-70N-0.1X-1	|	ICP-MS-70N-0.1X-1	216035086	03/23/21	100mL	P	|	|	|	|	*
22	Iron ICP-MS-27N-0.1X-1	|	ICP-MS-27N-0.1X-1	216015101	02/17/21	100mL	P	|	|	|	|	
23	Chromium ICP-MS-13N-0.1X-1	|	ICP-MS-13N-0.1X-1	216055077	05/25/21	100mL	P	|	|	|	|	
24	Interferents A	SPEX	CL-INT-A1	CL3-158MKBY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	
25	Analytes B	SPEX	CL-INT-B1	CL3-14MKBY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	

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1	Tuning Solution 1	SPEX	CL-TUNE-1	CL3-79MKBY	08/30/18	125 mL	P	08/11/17	776	08/11/17	776	
2	Sodium	SPEX	PLNA2-3Y	A017-4NAY	08/30/18	125 mL	P	08/11/17	776	08/11/17	776	
3	Ultrapure Sodium Chloride	ESI	seaBlank-0500	170341	08/14/20	500mL x 3	P	08/14/17	SR	08/14/17	SR	
4	Nitric Acid	Fisher	A467-2	1217010	08/16/20	2L x 2	T	8/16/20	SR	8/16/20	SR	
5	Nitric Acid	Fisher	A467-2	1116120	12/16/2018	2.5L x 5	P	08/23/17	1030	08/23/17	1030	
6	Nitric Acid	Fisher	A509-P212	1116111	03/15/19	2.5L x 19	P	08/23/17	1030	08/23/17	1030	
7	HCl	Fisher	A508-P212	4116090	10/19/19	2.5L x 20	P	08/23/17	1030	08/23/17	1030	
8	Sodium Selenate decahydrate	Aldrich	450294-5G	MKBN4778V	09/15/20	1	G	09/15/17	1030	09/15/17	1030	
9	Hydrogen Peroxide	EMD	HX0635-2	56273642	10/31/18	1L x 6	P	9/15/17	1080	09/15/17	1080	
10	Nitric Acid	Fisher	A467-2	1217020	02/22/20	2L x 4	T	09/18/17	SR	09/18/17	SR	
11	Ultrapure Sodium Chloride	ESI	seaBlank-0500	170610	09/20/20	500mL x 2	P	9/20/17	SR	9/20/17	SR	
12	Hydrogen Peroxide	EMD	HX0635-2	56321712	11/30/18	1L x 14	P	9/27/17	1080	9/27/17	1080	
13	Puradisc 25mm 1.0 µm	Whatman	678-0-2510	9816517	02/2022	2 Box x 50	P	09/27/17	1058	09/27/17	1058	
14	Xylenes	Fisher	XS-4	173323	9/29/20	4L x 4	G	9/29/17	1080	9/29/17	1080	
15	Ultra Pure Sodium Chloride	ESI	seaBlank-0500	170603	10/02/20	500 x 3	P	10/2/17	SR	10/2/17	SR	
16	PTFE BOILING STONES-450GRAM	Chemware	D1069103	22569054	~~10/06/17~~ NA	(450gm) 1602A3	P	10/06/17	710	10/06/17	710	710 10/06/17
17	Nitric Acid	Fisher	A509-P212	1117440	04/05/2019	2.5L x 18	P	10/06/17	710	10/06/17	710	
18	Sodium borohydride	Acros Organics	200050250	AC353456	10/06/22	25g x 4	G	10/09/17	SR	10/09/17	SR	
19	Iron Standard	ULTRA	ICP-126-L	CR-3137	08/31/24	1L	P	10/10/17	776	10/10/17	776	
20	Soda Lime	Teledyne Leeman Labs	606-00015	5006-28-B	N/A	200g x 2	P	10/18/17	1080	10/18/17	1080	
21	Sulfuric Acid	Omni Trace	SX1247-2	56175	10/25/18	2.5 L	G	10/25/17	868	10/25/17	868	
22	ICP Analytical Mixture 11	High Purity	ICP-AM-11	1705327	10/18	125 mL	P	10/30/17	935	10/30/17	935	
23	ICP Multi-element Cal. Standard 8	↓	ICP-MCS-8	1635121	↓	500mL x 2	↓	↓	↓	↓	↓	
24	Potassium (10,000 mg/mL)	↓	10M41-1	1723447	4/19	125 mL	↓	↓	↓	↓	↓	
25	APDC	SIGMA	P8765-100G	BCBR189V	10/31/22	100g	G	10/31/17	776	10/31/17	776	

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1	HCl	Fisher	A508-P212	4117010	03/02/20	2.5x20	P	11-09-17	710	11-09-17	710	
2	(HNO3) Nitric Acid	↓	A509-P212	1117042	05/25/19	2.5x12	P	↓	↓	↓	↓	
3	Buffer pH 4.0 Solution (I.C.V.)	VWR	E452-500mL	1257C3/2	11/15/18	500mL x 1	P	11/16/17	805	11/16/17	805	For: pH #5 REF: pH #C-Logbook p.97
4	M.I.B.K	Fisher	M213-4	171549	11/21/20	4L x 4	G	11/20/17	935	11/21/17	935	
5	Hydroxylamine Hydrochloride	Fisher	H330-500	172066	12/1/22	500g x 12	P		848	12/1/17	848	
6	Zirconium	BICCA	MSZRIKN...	4711426	4/2019	100mL	P	12/06/17	Rr	12/06/17	Rr	
7	Buffer pH 4.0 Solution (Standard)	Fisher	SB101-500	173435	04/30/19	500mL x 2	P	12/12/17	805	12/12/17	805	REF: pH Logbook #10 p.60
8	Buffer pH 7.0 Solution (I.C.V)	Fisher	SB108-500	170679	01/31/19	500mL x 2	P	12/12/17	805	12/12/17	805	REF: pH Logbook #1 p.60
9	Nitric Acid	Fisher	A509-P212	1117060	05/15/19	2.5x20	P	11/17/17	710	11/17/17	710	
10	Interferents A	SPEX	CL-INT-A1	CL3-157 MERY	12/30/18	125mL	P	12/19/17	Sr	12/19/17	Sr	
11	Terbium 10,000 µg/mL	High Purity	10M57-1	1716539	6/2019	125mL	P	12/19/17	935	12/19/17	935	
12	0.45 PVDF Filters (For STLC)	MILLEX	SLHVU33NK	R7CA90140	01/08/21	NA	P	01/09/18	805	01/09/18	805	REF: CIF #3, P.31
13	EPA Method 200.7 Int. Check STD #1	Ultra	ICM-221	R01207A	3/31/21	50mL	P	1/10/17	935	1/10/18	935	
14	EPA Method 6010A Mixed STD. Sol. V	↓	ICM-605	CR-3299	8/31/20	125mL	↓	1/10/17	935	1/10/17	935	
15	Hg Mercury 1000 µg/mL 2% HCl	High purity standards	100033-2	1723615	7/1/19	250mL	P	1/11/17	1080	1/11/17	1080	
16	Calcium	Ultra	ICP-120-C	CR-3807	9/30/24	1L	P	1/15/18	Sr	1/15/18	Sr	
17	Magnesium	|	ICP-112-C	CP-0678	9/30/23	1L	P	|	|	|	|	
18	Lead(II) Chloride	ALDRICH	203572-10G	MKCC3373	1/22/2023	10g	P	1/22/18	710	–		
19	Sodium hydroxide monohydrate	Alfa Aesar	41200	61701011	1/22/23	25g	P	1/22/18	Sr	1/22/18	Sr	
20	Sulfuric Acid	Fisher	A300-212	3116093	5/4/20	2.5L	P	1/31/18	848	1/31/18	848	
21	Instrument Calibration Standard 2	SPEX	CL-CAL-2	CL4-...MERY	01/30/19	125mL	P	1/31/18	Sr	1/31/18	Sr	
22	Instrument Calibration Standard 3	|	CL-CAL-3	CL4-...MERY	01/30/19	125mL x 4	|	|	|	|	|	
23	Glass Mikrofiber TCLP filter	Whatman	1810-090	9691301	NA	4	NA	04/25/17	805	04/25/17	805	REF: CIF #3 P.30
24	Hydrogen Peroxide (H_2O_2)	EMD	~~HX~~ HX0635-2 (2-2-18 710)	56273642	10/31/18	12x10	P	02/02/18	710	02/02/18	710	
25	HNO3	Fisher	A509-P212	1117062	07/12/19	2.5x15	P	02/02/18	710	02/02/18	710	

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EPA 245.1 Mercury

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EPA 245.1 Mercury

Initial Calibration
ICV/ICB
CCV/CCB

Sample Data

Quality Control
Method Blank
LCS/LCSD
MS/MSD
PDS/PDSD

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EPA Method 245.1
Initial Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

Analyte	Initial Calibration Verification			
	True	ICV-1 Observed	ICV-1 %REC	Control Limit
Mercury	5.000000	4.729983	95	95 - 105

2018-03-30 12:31

ICV-1 File: ICV MS030518B 03/28/2018 01:10:03 PM

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EPA Method 245.1
Continuing Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Continuing Calibration Verification							
		CCV-1		CCV-2		CCV-3		Control
Analyte	True	Observed	%REC	Observed	%REC	Observed	%REC	Limit
Mercury	2.000000	1.955477	98	1.947275	97	1.947802	97	90 - 110

2018-03-29 18:56

CCV-1 File: CCV 0.2x10ppb 03/28/2018 03:39:27 PM
CCV-2 File: CCV 0.2x10ppb 03/28/2018 04:06:43 PM
CCV-3 File: CCV 0.2x10ppb 03/28/2018 04:34:00 PM

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EPA Method 245.1
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Initial and Continuing Calibration Blanks				
Analyte	ICB-1	CCB-1	CCB-2	CCB-3	RL (No PF)
Mercury	-0.029817	-0.023231	-0.029936	-0.030014	0.100000

2018-03-29 18:56

ICB-1 File: ICB 03/28/2018 01:12:18 PM
CCB-1 File: CCB 03/28/2018 03:41:43 PM
CCB-2 File: CCB 03/28/2018 04:08:59 PM
CCB-3 File: CCB 03/28/2018 04:36:16 PM
Note: Preparation Factor (PF) = 2 L/L

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EPA Method 245.1
Initial Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

Analyte	Initial Calibration Verification			
	True	ICV-1 Observed	ICV-1 %REC	Control Limit
Mercury	5.000000	4.939883	99	95 - 105

2018-03-29 19:12

ICV-1 File: ICV MS030518B 03/29/2018 11:22:35 AM

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EPA Method 245.1
Continuing Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Continuing Calibration Verification							
		CCV-1		CCV-2		CCV-3		Control
Analyte	True	Observed	%REC	Observed	%REC	Observed	%REC	Limit
Mercury	2.000000	1.953618	98	1.964682	98	1.963955	98	90 - 110

2018-03-29 19:13

CCV-1 File: CCV 0.2x10ppb 03/29/2018 01:40:51 PM
CCV-2 File: CCV 0.2x10ppb 03/29/2018 02:45:02 PM
CCV-3 File: CCV 0.2x10ppb 03/29/2018 03:05:44 PM

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EPA Method 245.1
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Initial and Continuing Calibration Blanks				
Analyte	ICB-1	CCB-1	CCB-2	CCB-3	RL (No PF)
Mercury	-0.035211	-0.024860	-0.015131	-0.016736	0.100000

2018-03-29 19:14

ICB-1 File: ICB 03/29/2018 11:24:50 AM
CCB-1 File: CCB 03/29/2018 01:43:06 PM
CCB-2 File: CCB 03/29/2018 02:47:18 PM
CCB-3 File: CCB 03/29/2018 03:08:00 PM
Note: Preparation Factor (PF) = 2 L/L

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:21
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-1.icp

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0009S006**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000214	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:24
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 19:08

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-2.icp

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0011S008**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000294	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:31
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-3.icp

 # 3 **CLIENT SAMPLE NUMBER: CABMP0001S001**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.00000740	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:33
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-4.icp

 # 4 **CLIENT SAMPLE NUMBER: CABMP0002S001**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	0.00000900	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:35
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-5.icp

 # 5 **CLIENT SAMPLE NUMBER: CABMP0003S001**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000171	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:38
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-6.icp

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0003S022**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000165	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:40
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-7.icp

 # 7 **CLIENT SAMPLE NUMBER: FBQW1852Q001**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000418	1.00	ND	0.000200	

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METHOD BLANK ASSOCIATION SUMMARY
FOR METHOD: EPA 245.1

MB SAMPLE ID:	**099-16-484-23**	ANALYZED BY:	868
MB BATCH ID:	180328LA1	D/T ANALYZED:	2018-03-28 15:43
INSTRUMENT:	Mercury 07	REVIEWED BY:	309
EXTRACTION:	EPA 245.1 Total	D/T REVIEWED:	2018-03-29 14:12
D/T EXTRACTED:	2018-03-28 00:00	MATRIX:	Water

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-B-A1.icp

CLIENT WORK ORDER: 18-03-1798

S#	RUN TYPE	CLIENT SAMPLE ID	D/T ANALYZED	DATA FILE
1		A2BMP0009S006	2018-03-29 14:21	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-1.icp
2		A2BMP0011S008	2018-03-29 14:24	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-2.icp
3		CABMP0001S001	2018-03-29 14:31	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-3.icp
4		CABMP0002S001	2018-03-29 14:33	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-4.icp
5		CABMP0003S001	2018-03-29 14:35	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-5.icp
6		EVBMP0003S022	2018-03-29 14:38	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-6.icp
7		FBQW1852Q001	2018-03-29 14:40	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-7.icp

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**099-16-484**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 15:43
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:12

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-B-A1.icp

 # MB **CLIENT SAMPLE NUMBER: Method Blank**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000281	1.00	ND	0.000200	

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LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 245.1

LCS SAMPLE ID:	**099-16-484- 23**	EXTRACTION :	EPA 245.1 Total	ANALYZED BY:	868
LCS/MB BATCH ID:	180328LA1	D/T EXTRACTED:	2018-03-28 00:00	D/T ANALYZED:	2018-03-28 15:46
INSTRUMENT:	Mercury 07			REVIEWED BY:	309
				D/T REVIEWED:	2018-03-29 14:12

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-L-A1.icp

COMPOUND NAME	CONC ADDED	CONC REC	%RECOVERY	%REC CONTROL LIMIT	STATUS	QUALIFIERS
Mercury	0.01000	0.009463	95	80-120	PASS	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 245.1

SPIKED SAMPLE ID: **18-03-1798-2**
MS/MSD BATCH: 180328SA1A
INSTRUMENTS:
SAMPLE: Mercury 07
MS: Mercury 07
MSD: Mercury 07

EXTRACTION: EPA 245.1 Total
D/T EXTRACTED:
SAMPLE: 2018-03-28 00:00
MS: 2018-03-28 00:00
MSD: 2018-03-28 00:00

ANALYZED BY: 868
D/T ANALYZED:
SAMPLE: 2018-03-29 14:24
MS: 2018-03-29 14:26
MSD: 2018-03-29 14:28
REVIEWED BY: 309
D/T REVIEWED: 2018-03-29 19:08

COMMENT:

COMPOUND NAME	SAMPLE	INITIAL	FINAL	MS CONC	% MS.REC	MSD CONC	% MSD.REC	% REC CL	RPD	RPD CL	STATUS	QUALIFIERS
Mercury	ND	0.005000	0.01000	0.009579	96	0.009316	93	75-125	3	0-20	PASS	

Data Files:

TYPE	DATA FILE	DATA FILE PATH
MS	18-03-1798-2 MS.icp	W:\MERCURY_DATA\FINAL\180329G1\
MSD	18-03-1798-2 MSD.icp	W:\MERCURY_DATA\FINAL\180329G1\

Method: EPA 7470A+7471A-Hg-6 Page 1 Date: 3/28/2018 12:00:17 PM

Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 1
Sample ID: Calib blank_868 Date Collected: 3/28/2018 11:53:35 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: Calib blank_868 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0001	0.0014	0.0001	11:54:39 AM	Yes
2		[0.00]	0.0001	0.0009	0.0001	11:55:24 AM	Yes
Mean:		[0.00]	0.0001				
SD:		0.0000	0.0000				
%RSD:		0.00%	9.98				

Auto-zero performed.

Sequence No.: 2 Autosampler Location: 2
Sample ID: 0.025ppb 0.005x5ppb Date Collected: 3/28/2018 11:55:49 AM
Analyst: 861 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 0.025ppb 0.005x5ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.025]	0.0002	0.0018	0.0003	11:56:52 AM	Yes
2		[0.025]	0.0001	0.0014	0.0003	11:57:37 AM	Yes
Mean:		[0.025]	0.0002				
SD:		0.00000	0.0000				
%RSD:		0.00%	17.32				

Standard number 1 applied. [0.025]
Correlation Coef.: 1.000000 Slope: 0.00620 Intercept: 0.00000

Sequence No.: 3 Autosampler Location: 3
Sample ID: 0.10ppb MS030518AAX0.0001 Date Collected: 3/28/2018 11:58:02 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 0.10ppb MS030518AAX0.0001 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.100]	0.0006	0.0030	0.0008	11:59:06 AM	Yes
2		[0.100]	0.0007	0.0029	0.0008	11:59:51 AM	Yes
Mean:		[0.100]	0.0007				
SD:		0.00000	0.0000				
%RSD:		0.00%	5.08				

Standard number 2 applied. [0.100]
Correlation Coef.: 0.999857 Slope: 0.00666 Intercept: -0.00000

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Sequence No.: 4 Autosampler Location: 4
Sample ID: 1.00ppb MS030518AAX0.0001 Date Collected: 3/28/2018 12:00:17 PM
Analyst: 368 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 1.00ppb MS030518AAX0.0001 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.000]	0.0078	0.0295	0.0079	12:01:22 PM	Yes
2		[1.000]	0.0078	0.0293	0.0079	12:02:07 PM	Yes
Mean:		[1.000]	0.0078				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.21				

Standard number 3 applied. [1.000]
Correlation Coef.: 0.999913 Slope: 0.00782 Intercept: -0.00005

Sequence No.: 5 Autosampler Location: 5
Sample ID: 2.00ppb MS030518AAX0.002 Date Collected: 3/28/2018 12:02:33 PM
Analyst: 368 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 2.00ppb MS030518AAX0.002 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.000]	0.0154	0.0583	0.0156	12:03:37 PM	Yes
2		[2.000]	0.0154	0.0584	0.0155	12:04:22 PM	Yes
Mean:		[2.000]	0.0154				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.23				

Standard number 4 applied. [2.000]
Correlation Coef.: 0.999964 Slope: 0.00774 Intercept: -0.00004

Sequence No.: 6 Autosampler Location: 6
Sample ID: 5.00ppb MS030518AAX0.005 Date Collected: 3/28/2018 12:04:49 PM
Analyst: 368 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 5.00ppb MS030518AAX0.005 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[5.000]	0.0380	0.1428	0.0382	12:05:52 PM	Yes
2		[5.000]	0.0381	0.1437	0.0382	12:06:37 PM	Yes
Mean:		[5.000]	0.0381				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.12				

Standard number 5 applied. [5.000]
Correlation Coef.: 0.999974 Slope: 0.00763 Intercept: 0.00002

Sequence No.: 7 Autosampler Location: 7
Sample ID: 10.0ppb MS030518AAX0.01 Date Collected: 3/28/2018 12:07:02 PM
Analyst: 368 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 10.0ppb MS030518AAX0.01 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

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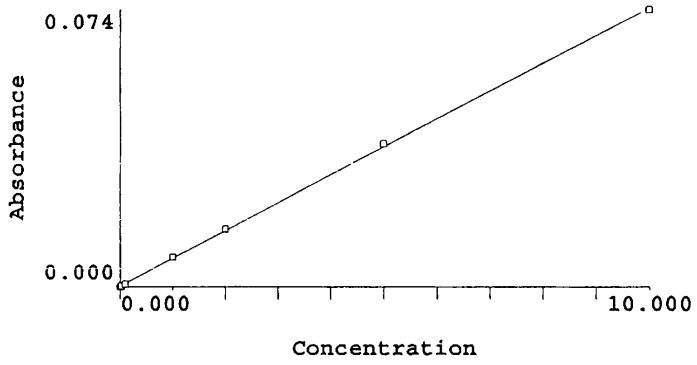
1	[10.00]	0.0741	0.2805	0.0742	12:08:06 PM	Yes
2	[10.00]	0.0741	0.2808	0.0743	12:08:50 PM	Yes
Mean:	[10.00]	0.0741				
SD:	0.0000	0.0000				
%RSD:	0.00%	0.04				

Standard number 6 applied. [10.00]
Correlation Coef.: 0.999893 Slope: 0.00743 Intercept: 0.00021



Calibration data for Hg 253.7 **Equation: Linear, Calculated Intercept**

ID	Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD
Calib blank_868	0.0000	0	-0.027920	0.00	9.98
0.025ppb 0.005x5ppb	0.0002	0.025	-0.007066	0.00	17.32
0.10ppb MS030518AAX0.0001	0.0007	0.100	0.061175	0.00	5.08
1.00ppb MS030518AAX0.0001	0.0078	1.000	1.017491	0.00	0.21
2.00ppb MS030518AAX0.002	0.0154	2.000	2.044385	0.00	0.23
5.00ppb MS030518AAX0.005	0.0381	5.000	5.094186	0.00	0.12
10.0ppb MS030518AAX0.01	0.0741	10.00	9.942749	0.00	0.04

Correlation Coef.: 0.999893 Slope: 0.00743 Intercept: 0.00021

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 8
Sample ID: ICV MS030518B Date Collected: 3/28/2018 1:08:13 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: ICV MS030518B Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00476	4.76	0.0356	0.1413	0.0357	1:09:18 PM	Yes
2	0.00470	4.70	0.0351	0.1383	0.0353	1:10:03 PM	Yes
Mean:	0.00473	4.73	0.0354				
SD:	0.000047	0.047	0.0004				
%RSD:	1.00%	1.00%	1.00				

QC value within limits for Hg 253.7 Recovery = 94.60%
All analyte(s) passed QC.

Sequence No.: 2 Autosampler Location: 1
Sample ID: ICB Date Collected: 3/28/2018 1:10:29 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: ICB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000029	-0.0286	-0.0000	0.0004	0.0001	1:11:33 PM	Yes
2	-0.000031	-0.0311	-0.0000	0.0004	0.0001	1:12:18 PM	Yes
Mean:	-0.000030	-0.0298	-0.0000				
SD:	0.0000018	0.00176	0.0000				
%RSD:	5.89%	5.89%	92.66				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 3 Autosampler Location: 9
Sample ID: CRQL 0.25 Date Collected: 3/28/2018 1:12:43 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: CRQL 0.25 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.000461	0.230	0.0019	0.0079	0.0020	1:13:48 PM	Yes
2	0.000475	0.237	0.0020	0.0080	0.0021	1:14:33 PM	Yes
Mean:	0.000468	0.234	0.0019				
SD:	0.0000099	0.0049	0.0000				
%RSD:	2.11%	2.11%	1.89				

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 3:37:36 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00195	1.95	0.0147	0.0602	0.0149	3:38:41 PM	Yes
2	0.00196	1.96	0.0148	0.0603	0.0149	3:39:27 PM	Yes
Mean:	0.00196	1.96	0.0147				
SD:	0.000004	0.004	0.0000				
%RSD:	0.19%	0.19%	0.18				

QC value within limits for Hg 253.7 Recovery = 97.77%
All analyte(s) passed QC.

Sequence No.: 2 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 3:39:54 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000022	-0.0217	0.0000	0.0017	0.0002	3:40:57 PM	Yes
2	-0.000025	-0.0247	0.0000	0.0014	0.0002	3:41:43 PM	Yes
Mean:	-0.000023	-0.0232	0.0000				
SD:	0.0000021	0.00214	0.0000				
%RSD:	9.20%	9.20%	45.57				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 3 Autosampler Location: 45
Sample ID: 180327-B-A1 Date Collected: 3/28/2018 3:42:08 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 180327-B-A1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000055	-0.0273	0.0000	0.0012	0.0001	3:43:12 PM	Yes
2	-0.000058	-0.0290	-0.0000	0.0008	0.0001	3:43:58 PM	Yes
Mean:	-0.000056	-0.0281	-0.0000				
SD:	0.0000024	0.00119	0.0000				
%RSD:	4.21%	4.21%	574.11				

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Sequence No.: 4
Sample ID: 180328-L-A1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 46
Date Collected: 3/28/2018 3:44:24 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 180328-L-A1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00946	4.73	0.0354	0.1397	0.0355	3:45:29 PM	Yes
2	0.00947	4.73	0.0354	0.1399	0.0355	3:46:14 PM	Yes
Mean:	0.00946	4.73	0.0354				
SD:	0.000007	0.003	0.0000				
%RSD:	0.07%	0.07%	0.07				

Sequence No.: 5
Sample ID: 18-03-1974-X5
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

3.09
03/28/18

Autosampler Location: 47
Date Collected: 3/28/2018 3:46:40 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-X5 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000046	-0.0229	0.0000	0.0009	0.0002	3:47:45 PM	Yes
2	-0.000045	-0.0227	0.0000	0.0012	0.0002	3:48:30 PM	Yes
Mean:	-0.000046	-0.0228	0.0000				
SD:	0.0000003	0.00017	0.0000				
%RSD:	0.73%	0.73%	3.27				

Sequence No.: 6
Sample ID: 18-03-1974-5 MS
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 48
Date Collected: 3/28/2018 3:48:57 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-5 MS Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00869	4.34	0.0325	0.1297	0.0326	3:50:02 PM	Yes
2	0.00863	4.31	0.0323	0.1291	0.0324	3:50:47 PM	Yes
Mean:	0.00866	4.33	0.0324				
SD:	0.000043	0.021	0.0002				
%RSD:	0.49%	0.49%	0.49				

Sequence No.: 7
Sample ID: 18-03-1974-5 MSD
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 49
Date Collected: 3/28/2018 3:51:14 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-5 MSD Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00910	4.55	0.0340	0.1371	0.0342	3:52:19 PM	Yes
2	0.00903	4.51	0.0338	0.1364	0.0339	3:53:04 PM	Yes
Mean:	0.00907	4.53	0.0339				
SD:	0.000053	0.026	0.0002				
%RSD:	0.58%	0.58%	0.58				

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Sequence No.: 8 Autosampler Location: 50
Sample ID: 18-03-1974-1 Date Collected: 3/28/2018 3:53:32 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000049	-0.0245	0.0000	0.0005	0.0002	3:54:36 PM	Yes
2	-0.000041	-0.0207	0.0001	0.0008	0.0002	3:55:21 PM	Yes
Mean:	-0.000045	-0.0226	0.0000				
SD:	0.0000054	0.00269	0.0000				
%RSD:	11.88%	11.88%	50.89				

Sequence No.: 9 Autosampler Location: 51
Sample ID: 18-03-1974-2 Date Collected: 3/28/2018 3:55:48 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000067	-0.0335	-0.0000	0.0002	0.0001	3:56:52 PM	Yes
2	-0.000065	-0.0325	-0.0000	0.0002	0.0001	3:57:38 PM	Yes
Mean:	-0.000066	-0.0330	-0.0000				
SD:	0.0000015	0.00073	0.0000				
%RSD:	2.22%	2.22%	14.40				

Sequence No.: 10 Autosampler Location: 52
Sample ID: 18-03-1974-3 Date Collected: 3/28/2018 3:58:04 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000030	-0.0148	0.0001	0.0004	0.0002	3:59:08 PM	Yes
2	-0.000027	-0.0136	0.0001	0.0010	0.0002	3:59:54 PM	Yes
Mean:	-0.000028	-0.0142	0.0001				
SD:	0.0000017	0.00086	0.0000				
%RSD:	6.01%	6.01%	6.26				

Sequence No.: 11 Autosampler Location: 53
Sample ID: 18-03-1974-4 Date Collected: 3/28/2018 4:00:20 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000068	-0.0340	-0.0000	-0.0001	0.0001	4:01:25 PM	Yes
2	-0.000071	-0.0357	-0.0001	-0.0001	0.0001	4:02:10 PM	Yes
Mean:	-0.000070	-0.0349	-0.0001				
SD:	0.0000025	0.00124	0.0000				
%RSD:	3.54%	3.54%	17.77				

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Sequence No.: 12 Autosampler Location: 54
Sample ID: 18-03-1974-6 Date Collected: 3/28/2018 4:02:36 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000061	-0.0304	-0.0000	0.0003	0.0001	4:03:41 PM	Yes
2	-0.000066	-0.0330	-0.0000	0.0000	0.0001	4:04:26 PM	Yes
Mean:	-0.000063	-0.0317	-0.0000				
SD:	0.0000036	0.00180	0.0000				
%RSD:	5.69%	5.69%	47.60				

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Sequence No.: 13 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 4:04:53 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00197	1.97	0.0149	0.0577	0.0150	4:05:58 PM	Yes
2	0.00192	1.92	0.0145	0.0572	0.0146	4:06:43 PM	Yes
Mean:	0.00195	1.95	0.0147				
SD:	0.000033	0.033	0.0002				
%RSD:	1.69%	1.69%	1.66				

QC value within limits for Hg 253.7 Recovery = 97.36%
All analyte(s) passed QC.

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Sequence No.: 14 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 4:07:10 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000029	-0.0291	-0.0000	0.0004	0.0001	4:08:14 PM	Yes
2	-0.000031	-0.0308	-0.0000	0.0001	0.0001	4:08:59 PM	Yes
Mean:	-0.000030	-0.0299	-0.0000				
SD:	0.0000012	0.00117	0.0000				
%RSD:	3.90%	3.90%	57.99				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

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Sequence No.: 15 Autosampler Location: 55
Sample ID: 18-03-1974-7 Date Collected: 3/28/2018 4:09:24 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-7 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000080	-0.0401	-0.0001	-0.0002	0.0000	4:10:29 PM	Yes
2	-0.000084	-0.0418	-0.0001	-0.0003	0.0000	4:11:14 PM	Yes
Mean:	-0.000082	-0.0409	-0.0001				

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SD:	0.0000025	0.00126	0.0000
%RSD:	3.08%	3.08%	9.67

Sequence No.: 16
Sample ID: 18-03-1968-4
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 56
Date Collected: 3/28/2018 4:11:40 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1968-4

Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000047	-0.0236	0.0000	-0.0001	0.0002	4:12:45 PM	Yes
2	-0.000039	-0.0197	0.0001	-0.0000	0.0002	4:13:30 PM	Yes
Mean:	-0.000043	-0.0216	0.0000				
SD:	0.0000056	0.00279	0.0000				
%RSD:	12.87%	12.87%	44.42				

Sequence No.: 17
Sample ID: 18032%-B-A2
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 57
Date Collected: 3/28/2018 4:13:56 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18032%-B-A2

Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000072	-0.0359	-0.0001	-0.0002	0.0001	4:15:01 PM	Yes
2	-0.000076	-0.0378	-0.0001	-0.0004	0.0001	4:15:46 PM	Yes
Mean:	-0.000074	-0.0368	-0.0001				
SD:	0.0000026	0.00130	0.0000				
%RSD:	3.54%	3.54%	14.61				

Sequence No.: 18
Sample ID: 18032%-L-A2
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 58
Date Collected: 3/28/2018 4:16:12 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18032%-L-A2

Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00957	4.78	0.0358	0.1404	0.0359	4:17:17 PM	Yes
2	0.00944	4.72	0.0353	0.1390	0.0354	4:18:02 PM	Yes
Mean:	0.00950	4.75	0.0355				
SD:	0.000093	0.046	0.0003				
%RSD:	0.98%	0.98%	0.97				

Sequence No.: 19
Sample ID: 18-03-1723-F-1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 59
Date Collected: 3/28/2018 4:18:29 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1

Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000065	-0.0323	-0.0000	-0.0001	0.0001	4:19:33 PM	Yes
2	-0.000063	-0.0317	-0.0000	-0.0001	0.0001	4:20:18 PM	Yes
Mean:	-0.000064	-0.0320	-0.0000				

Return to Contents

SD:	0.0000009	0.00043	0.0000
%RSD:	1.33%	1.33%	10.36

Sequence No.: 20 Autosampler Location: 60
Sample ID: 18-03-1723-F-1 MS Date Collected: 3/28/2018 4:20:45 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 MS Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00914	4.57	0.0342	0.1377	0.0343	4:21:50 PM	Yes
2	0.00920	4.60	0.0344	0.1378	0.0345	4:22:35 PM	Yes
Mean:	0.00917	4.58	0.0343				
SD:	0.000042	0.021	0.0002				
%RSD:	0.46%	0.46%	0.46				

Sequence No.: 21 Autosampler Location: 61
Sample ID: 18-03-1723-F-1 MSD Date Collected: 3/28/2018 4:23:02 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 MSD Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00915	4.57	0.0342	0.1358	0.0343	4:24:07 PM	Yes
2	0.00907	4.54	0.0339	0.1353	0.0341	4:24:53 PM	Yes
Mean:	0.00911	4.55	0.0341				
SD:	0.000053	0.026	0.0002				
%RSD:	0.58%	0.58%	0.58				

Sequence No.: 22 Autosampler Location: 62
Sample ID: 18-03-1723-F-2 Date Collected: 3/28/2018 4:25:20 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000067	-0.0335	-0.0000	-0.0005	0.0001	4:26:25 PM	Yes
2	-0.000066	-0.0332	-0.0000	-0.0001	0.0001	4:27:10 PM	Yes
Mean:	-0.000067	-0.0333	-0.0000				
SD:	0.0000004	0.00020	0.0000				
%RSD:	0.59%	0.59%	3.60				

Sequence No.: 23 Autosampler Location: 63
Sample ID: 18-03-1974-F-1 Date Collected: 3/28/2018 4:27:36 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000074	-0.0368	-0.0001	-0.0005	0.0001	4:28:41 PM	Yes
2	-0.000066	-0.0331	-0.0000	-0.0002	0.0001	4:29:26 PM	Yes
Mean:	-0.000070	-0.0350	-0.0001				

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SD:	0.0000052	0.00261	0.0000
%RSD:	7.48%	7.48%	37.12

Sequence No.: 24 Autosampler Location: 64
Sample ID: 18-03-1974-F-2 Date Collected: 3/28/2018 4:29:53 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000077	-0.0386	-0.0001	-0.0005	0.0000	4:30:58 PM	Yes
2	-0.000070	-0.0351	-0.0001	-0.0000	0.0001	4:31:43 PM	Yes
Mean:	-0.000074	-0.0368	-0.0001				
SD:	0.0000049	0.00247	0.0000				
%RSD:	6.70%	6.70%	27.73				

Sequence No.: 25 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 4:32:09 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00196	1.96	0.0148	0.0567	0.0149	4:33:14 PM	Yes
2	0.00194	1.94	0.0146	0.0569	0.0147	4:34:00 PM	Yes
Mean:	0.00195	1.95	0.0147				
SD:	0.000016	0.016	0.0001				
%RSD:	0.83%	0.83%	0.82				

QC value within limits for Hg 253.7 Recovery = 97.39%
All analyte(s) passed QC.

Sequence No.: 26 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 4:34:27 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000032	-0.0323	-0.0000	0.0000	0.0001	4:35:30 PM	Yes
2	-0.000028	-0.0277	0.0000	0.0001	0.0001	4:36:16 PM	Yes
Mean:	-0.000030	-0.0300	-0.0000				
SD:	0.0000033	0.00329	0.0000				
%RSD:	10.97%	10.97%	157.20				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 27 Autosampler Location: 65
Sample ID: 18-03-1974-F-3 Date Collected: 3/28/2018 4:36:41 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-3 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000050	-0.0251	0.0000	-0.0002	0.0001	4:37:46 PM	Yes
2	-0.000046	-0.0228	0.0000	0.0003	0.0002	4:38:31 PM	Yes
Mean:	-0.000048	-0.0239	0.0000				
SD:	0.0000032	0.00160	0.0000				
%RSD:	6.69%	6.69%	40.04				

Sequence No.: 28 Autosampler Location: 66
Sample ID: 18-03-1974-F-4 Date Collected: 3/28/2018 4:38:58 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000077	-0.0384	-0.0001	-0.0002	0.0000	4:40:02 PM	Yes
2	-0.000072	-0.0361	-0.0001	-0.0001	0.0001	4:40:48 PM	Yes
Mean:	-0.000075	-0.0373	-0.0001				
SD:	0.0000033	0.00167	0.0000				
%RSD:	4.48%	4.48%	17.88				

Sequence No.: 29 Autosampler Location: 67
Sample ID: 18-03-1974-F-5 Date Collected: 3/28/2018 4:41:14 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-5 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000073	-0.0367	-0.0001	-0.0004	0.0001	4:42:19 PM	Yes
2	-0.000070	-0.0349	-0.0001	-0.0003	0.0001	4:43:04 PM	Yes
Mean:	-0.000072	-0.0358	-0.0001				
SD:	0.0000026	0.00132	0.0000				
%RSD:	3.70%	3.70%	16.83				

Sequence No.: 30 Autosampler Location: 68
Sample ID: 18-03-1974-F-6 Date Collected: 3/28/2018 4:43:31 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000071	-0.0357	-0.0001	-0.0003	0.0001	4:44:35 PM	Yes
2	-0.000072	-0.0359	-0.0001	-0.0002	0.0001	4:45:20 PM	Yes
Mean:	-0.000072	-0.0358	-0.0001				
SD:	0.0000003	0.00017	0.0000				
%RSD:	0.48%	0.48%	2.19				

Sequence No.: 31 Autosampler Location: 69
Sample ID: 180327-B-A3 Date Collected: 3/28/2018 4:45:47 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 180327-B-A3 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000073	-0.0363	-0.0001	-0.0002	0.0001	4:46:52 PM	Yes
2	-0.000070	-0.0350	-0.0001	-0.0001	0.0001	4:47:37 PM	Yes
Mean:	-0.000071	-0.0356	-0.0001				
SD:	0.0000018	0.00089	0.0000				
%RSD:	2.49%	2.49%	11.53				

Sequence No.: 32 Autosampler Location: 70
Sample ID: 18032%-L-A3 Date Collected: 3/28/2018 4:48:04 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18032%-L-A3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00919	4.59	0.0344	0.1410	0.0345	4:49:08 PM	Yes
2	0.00924	4.62	0.0346	0.1410	0.0347	4:49:54 PM	Yes
Mean:	0.00921	4.61	0.0345				
SD:	0.000039	0.020	0.0001				
%RSD:	0.42%	0.42%	0.42				

Sequence No.: 33 Autosampler Location: 71
Sample ID: 180327-L-A3D Date Collected: 3/28/2018 4:50:20 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18032%-L-A3D Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00927	4.63	0.0346	0.1406	0.0348	4:51:25 PM	Yes
2	0.00929	4.64	0.0347	0.1413	0.0349	4:52:10 PM	Yes
Mean:	0.00928	4.64	0.0347				
SD:	0.000016	0.008	0.0001				
%RSD:	0.17%	0.17%	0.17				

Sequence No.: 34 Autosampler Location: 72
Sample ID: 18-03-1957-F-6 Date Collected: 3/28/2018 4:52:37 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1957-F-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000049	-0.0247	0.0000	0.0002	0.0002	4:53:42 PM	Yes
2	-0.000047	-0.0234	0.0000	0.0002	0.0002	4:54:27 PM	Yes
Mean:	-0.000048	-0.0241	0.0000				
SD:	0.0000019	0.00093	0.0000				
%RSD:	3.87%	3.87%	24.11				

Sequence No.: 35 Autosampler Location: 73
Sample ID: 18-03-1676-1 Date Collected: 3/28/2018 4:54:54 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1676-1 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000088	-0.0439	-0.0001	-0.0006	0.0000	4:56:00 PM	Yes
2	-0.000082	-0.0412	-0.0001	-0.0008	0.0000	4:56:45 PM	Yes
Mean:	-0.000085	-0.0426	-0.0001				
SD:	0.0000038	0.00190	0.0000				
%RSD:	4.47%	4.47%	12.98				

==========

Sequence No.: 36 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 4:57:12 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00189	1.89	0.0143	0.0564	0.0144	4:58:17 PM	Yes
2	0.00190	1.90	0.0143	0.0567	0.0145	4:59:02 PM	Yes
Mean:	0.00190	1.90	0.0143				
SD:	0.000004	0.004	0.0000				
%RSD:	0.22%	0.22%	0.22				

QC value within limits for Hg 253.7 Recovery = 94.90%
All analyte(s) passed QC.

==========

Sequence No.: 37 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 4:59:29 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000030	-0.0303	-0.0000	-0.0001	0.0001	5:00:33 PM	Yes
2	-0.000029	-0.0292	-0.0000	0.0002	0.0001	5:01:18 PM	Yes
Mean:	-0.000030	-0.0297	-0.0000				
SD:	0.0000008	0.00079	0.0000				
%RSD:	2.67%	2.67%	43.44				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180329G1.sifx
Batch ID:
Results Data Set: 180329G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 1
Sample ID: Calib blank_868 Date Collected: 3/29/2018 10:58:13 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: Calib blank_868 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0001	0.0001	0.0001	10:59:17 AM	Yes
2		[0.00]	0.0001	-0.0001	0.0001	11:00:02 AM	Yes
Mean:		[0.00]	0.0001				
SD:		0.0000	0.0000				
%RSD:		0.00%	6.28				

Auto-zero performed.

Sequence No.: 2 Autosampler Location: 2
Sample ID: 0.025ppb 0.005x5ppb Date Collected: 3/29/2018 11:00:28 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 0.025ppb 0.005x5ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.025]	0.0002	0.0013	0.0003	11:01:32 AM	Yes
2		[0.025]	0.0001	0.0005	0.0002	11:02:17 AM	Yes
Mean:		[0.025]	0.0002				
SD:		0.00000	0.0000				
%RSD:		0.00%	12.84				

Standard number 1 applied. [0.025]
Correlation Coef.: 1.000000 Slope: 0.00642 Intercept: 0.00000

Sequence No.: 3 Autosampler Location: 3
Sample ID: 0.10ppb MS030518AAX0.0001 Date Collected: 3/29/2018 11:02:43 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 0.10ppb MS030518AAX0.0001 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.100]	0.0006	0.0022	0.0007	11:03:47 AM	Yes
2		[0.100]	0.0006	0.0020	0.0007	11:04:32 AM	Yes
Mean:		[0.100]	0.0006				
SD:		0.00000	0.0000				
%RSD:		0.00%	2.15				

Standard number 2 applied. [0.100]
Correlation Coef.: 0.999720 Slope: 0.00586 Intercept: 0.00001

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Sequence No.: 4 Autosampler Location: 4
Sample ID: 1.00ppb MS030518AAX0.0001 Date Collected: 3/29/2018 11:04:59 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 1.00ppb MS030518AAX0.0001 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.000]	0.0070	0.0282	0.0071	11:06:03 AM	Yes
2		[1.000]	0.0071	0.0282	0.0071	11:06:49 AM	Yes
Mean:		[1.000]	0.0070				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.19				

Standard number 3 applied. [1.000]
Correlation Coef.: 0.999882 Slope: 0.00708 Intercept: -0.00004

Sequence No.: 5 Autosampler Location: 5
Sample ID: 2.00ppb MS030518AAX0.002 Date Collected: 3/29/2018 11:07:15 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 2.00ppb MS030518AAX0.002 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.000]	0.0147	0.0599	0.0148	11:08:20 AM	Yes
2		[2.000]	0.0148	0.0602	0.0149	11:09:05 AM	Yes
Mean:		[2.000]	0.0147				
SD:		0.00000	0.0001				
%RSD:		0.00%	0.51				

Standard number 4 applied. [2.000]
Correlation Coef.: 0.999761 Slope: 0.00736 Intercept: -0.00009

Sequence No.: 6 Autosampler Location: 6
Sample ID: 5.00ppb MS030518AAX0.005 Date Collected: 3/29/2018 11:09:33 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 5.00ppb MS030518AAX0.005 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[5.000]	0.0357	0.1438	0.0358	11:10:36 AM	Yes
2		[5.000]	0.0356	0.1439	0.0357	11:11:21 AM	Yes
Mean:		[5.000]	0.0356				
SD:		0.00000	0.0001				
%RSD:		0.00%	0.19				

Standard number 5 applied. [5.000]
Correlation Coef.: 0.999880 Slope: 0.00716 Intercept: 0.00001

Sequence No.: 7 Autosampler Location: 7
Sample ID: 10.0ppb MS030518AAX0.01 Date Collected: 3/29/2018 11:11:46 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 10.0ppb MS030518AAX0.01 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

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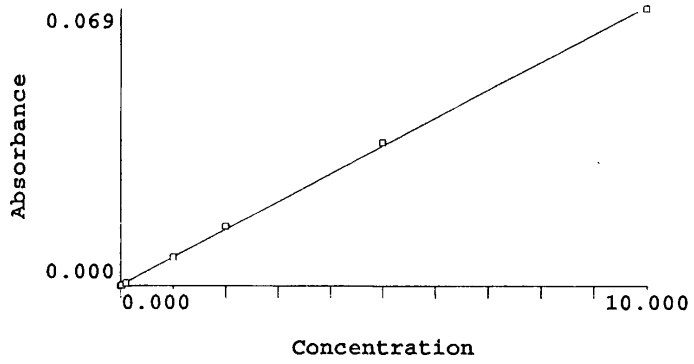
1	[10.00]	0.0689	0.2825	0.0690	11:12:50 AM	Yes
2	[10.00]	0.0693	0.2829	0.0694	11:13:35 AM	Yes
Mean:	[10.00]	0.0691				
SD:	0.0000	0.0003				
%RSD:	0.00%	0.37				

Standard number 6 applied. [10.00]
Correlation Coef.: 0.999821 Slope: 0.00694 Intercept: 0.00022



Calibration data for Hg 253.7 Equation: Linear, Calculated Intercept

ID	Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD
Calib blank_868	0.0000	0	-0.032344	0.00	6.28
0.025ppb 0.005x5ppb	0.0002	0.025	-0.009203	0.00	12.84
0.10ppb MS030518AAX0.0001	0.0006	0.100	0.052717	0.00	2.15
1.00ppb MS030518AAX0.0001	0.0070	1.000	0.983476	0.00	0.19
2.00ppb MS030518AAX0.002	0.0147	2.000	2.093573	0.00	0.51
5.00ppb MS030518AAX0.005	0.0356	5.000	5.106570	0.00	0.19
10.0ppb MS030518AAX0.01	0.0691	10.00	9.930211	0.00	0.37

Correlation Coef.: 0.999821 Slope: 0.00694 Intercept: 0.00022

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180329G1.sifx
Batch ID:
Results Data Set: 180329G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 8
Sample ID: ICV MS030518B Date Collected: 3/29/2018 11:20:46 AM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: ICV MS030518B Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00496	4.96	0.0346	0.1402	0.0347	11:21:50 AM	Yes
2	0.00492	4.92	0.0343	0.1395	0.0344	11:22:35 AM	Yes
Mean:	0.00494	4.94	0.0345				
SD:	0.000029	0.029	0.0002				
%RSD:	0.58%	0.58%	0.58				

QC value within limits for Hg 253.7 Recovery = 98.80%
All analyte(s) passed QC.

Sequence No.: 2 Autosampler Location: 1
Sample ID: ICB Date Collected: 3/29/2018 11:23:02 AM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: ICB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000038	-0.0379	-0.0000	-0.0019	0.0000	11:24:05 AM	Yes
2	-0.000032	-0.0325	-0.0000	-0.0019	0.0001	11:24:50 AM	Yes
Mean:	-0.000035	-0.0352	-0.0000				
SD:	0.0000039	0.00386	0.0000				
%RSD:	10.97%	10.97%	134.66				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 3 Autosampler Location: 9
Sample ID: CRQL 0.25 Date Collected: 3/29/2018 11:25:15 AM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: CRQL 0.25 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.000435	0.218	0.0017	0.0055	0.0018	11:26:20 AM	Yes
2	0.000441	0.220	0.0018	0.0054	0.0018	11:27:05 AM	Yes
Mean:	0.000438	0.219	0.0017				
SD:	0.0000039	0.0019	0.0000				
%RSD:	0.88%	0.88%	0.77				

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Sequence No.: 20 2442
Sample ID: 18-03-~~2422~~-1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

309
03/29/18

Autosampler Location: 126
Date Collected: 3/29/2018 1:36:42 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-~~2422~~-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000057	-0.0287	0.0000	-0.0002	0.0001	1:37:47 PM	Yes
2	-0.000060	-0.0302	0.0000	-0.0001	0.0001	1:38:33 PM	Yes
Mean:	-0.000059	-0.0294	0.0000				
SD:	0.0000021	0.00106	0.0000				
%RSD:	3.62%	3.62%	36.72				

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Sequence No.: 21
Sample ID: CCV 0.2x10ppb
Analyst: 868 HG-7
Initial Sample Wt:
Dilution:
Wash Time (before sample): 0

Autosampler Location: 5
Date Collected: 3/29/2018 1:39:00 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00196	1.96	0.0138	0.0574	0.0139	1:40:05 PM	Yes
2	0.00195	1.95	0.0137	0.0574	0.0138	1:40:51 PM	Yes
Mean:	0.00195	1.95	0.0138				
SD:	0.000007	0.007	0.0000				
%RSD:	0.37%	0.37%	0.36				

QC value within limits for Hg 253.7 Recovery = 97.68%
All analyte(s) passed QC.

==========

Sequence No.: 22
Sample ID: CCB
Analyst: 868 HG-7
Initial Sample Wt:
Dilution:
Wash Time (before sample): 0

Autosampler Location: 1
Date Collected: 3/29/2018 1:41:18 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000024	-0.0240	0.0001	0.0001	0.0001	1:42:21 PM	Yes
2	-0.000026	-0.0257	0.0000	-0.0002	0.0001	1:43:06 PM	Yes
Mean:	-0.000025	-0.0249	0.0001				
SD:	0.0000012	0.00120	0.0000				
%RSD:	4.84%	4.84%	16.09				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180329G1.sifx
Batch ID:
Results Data Set: 180329G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

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Sequence No.: 1 Autosampler Location: 127
Sample ID: 18-03-1798-1 Date Collected: 3/29/2018 2:20:02 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000043	-0.0214	0.0001	0.0010	0.0002	2:21:08 PM	Yes
2	-0.000043	-0.0213	0.0001	0.0011	0.0002	2:21:53 PM	Yes
Mean:	-0.000043	-0.0214	0.0001				
SD:	0.0000003	0.00013	0.0000				
%RSD:	0.60%	0.60%	1.17				

User canceled analysis.

==========

Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180329G1.sifx
Batch ID:
Results Data Set: 180329G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

==========

Sequence No.: 2 Autosampler Location: 128
Sample ID: 18-03-1798-2 Date Collected: 3/29/2018 2:22:25 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000059	-0.0295	0.0000	0.0006	0.0001	2:23:31 PM	Yes
2	-0.000059	-0.0293	0.0000	0.0007	0.0001	2:24:16 PM	Yes
Mean:	-0.000059	-0.0294	0.0000				
SD:	0.0000002	0.00009	0.0000				
%RSD:	0.31%	0.31%	3.12				

==========

Sequence No.: 3 Autosampler Location: 129
Sample ID: 18-03-1798-2 MS Date Collected: 3/29/2018 2:24:43 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-2 MS Analyte: Hg 253.7

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Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00960	4.80	0.0335	0.1431	0.0336	2:25:49 PM	Yes
2	0.00955	4.78	0.0334	0.1435	0.0334	2:26:34 PM	Yes
Mean:	0.00958	4.79	0.0334				
SD:	0.000035	0.017	0.0001				
%RSD:	0.36%	0.36%	0.36				

Sequence No.: 4 Autosampler Location: 130
Sample ID: 18-03-1798-2 MSD Date Collected: 3/29/2018 2:27:02 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-2 MSD Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00932	4.66	0.0325	0.1388	0.0326	2:28:08 PM	Yes
2	0.00931	4.65	0.0325	0.1390	0.0326	2:28:53 PM	Yes
Mean:	0.00932	4.66	0.0325				
SD:	0.000010	0.005	0.0000				
%RSD:	0.10%	0.10%	0.10				

Sequence No.: 5 Autosampler Location: 131
Sample ID: 18-03-1798-3 Date Collected: 3/29/2018 2:29:21 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000025	-0.0127	0.0001	0.0008	0.0002	2:30:26 PM	Yes
2	-0.000004	-0.00204	0.0002	0.0012	0.0003	2:31:11 PM	Yes
Mean:	-0.000015	-0.00740	0.0002				
SD:	0.0000151	0.007569	0.0001				
%RSD:	102.35%	102.35%	30.34				

Sequence No.: 6 Autosampler Location: 132
Sample ID: 18-03-1798-4 Date Collected: 3/29/2018 2:31:39 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.000014	0.00717	0.0003	0.0013	0.0004	2:32:45 PM	Yes
2	0.000022	0.0108	0.0003	0.0016	0.0004	2:33:30 PM	Yes
Mean:	0.000018	0.00900	0.0003				
SD:	0.0000052	0.002591	0.0000				
%RSD:	28.80%	28.80%	6.27				

Sequence No.: 7 Autosampler Location: 133
Sample ID: 18-03-1798-5 Date Collected: 3/29/2018 2:33:57 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-5 Analyte: Hg 253.7

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Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000041	-0.0204	0.0001	0.0006	0.0002	2:35:03 PM	Yes
2	-0.000028	-0.0139	0.0001	0.0008	0.0002	2:35:48 PM	Yes
Mean:	-0.000034	-0.0171	0.0001				
SD:	0.0000092	0.00459	0.0000				
%RSD:	26.81%	26.81%	30.21				

Sequence No.: 8 Autosampler Location: 134
Sample ID: 18-03-1798-6 Date Collected: 3/29/2018 2:36:16 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000034	-0.0172	0.0001	0.0007	0.0002	2:37:22 PM	Yes
2	-0.000032	-0.0159	0.0001	0.0005	0.0002	2:38:07 PM	Yes
Mean:	-0.000033	-0.0165	0.0001				
SD:	0.0000018	0.00090	0.0000				
%RSD:	5.42%	5.42%	5.67				

Sequence No.: 9 Autosampler Location: 135
Sample ID: 18-03-1798-7 Date Collected: 3/29/2018 2:38:34 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-7 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000086	-0.0428	-0.0001	-0.0003	0.0000	2:39:40 PM	Yes
2	-0.000082	-0.0408	-0.0001	-0.0003	0.0000	2:40:25 PM	Yes
Mean:	-0.000084	-0.0418	-0.0001				
SD:	0.0000027	0.00137	0.0000				
%RSD:	3.27%	3.27%	14.44				

Sequence No.: 10 Autosampler Location: 136
Sample ID: 18-03-1798-F-1 Date Collected: 3/29/2018 2:40:53 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000065	-0.0325	-0.0000	-0.0000	0.0001	2:41:59 PM	Yes
2	-0.000067	-0.0334	-0.0000	0.0001	0.0001	2:42:44 PM	Yes
Mean:	-0.000066	-0.0329	-0.0000				
SD:	0.0000013	0.00064	0.0000				
%RSD:	1.94%	1.94%	112.72				

Sequence No.: 11 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/29/2018 2:43:11 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

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Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00196	1.96	0.0138	0.0577	0.0139	2:44:17 PM	Yes
2	0.00197	1.97	0.0139	0.0579	0.0140	2:45:02 PM	Yes
Mean:	0.00196	1.96	0.0138				
SD:	0.000008	0.008	0.0001				
%RSD:	0.41%	0.41%	0.40				

QC value within limits for Hg 253.7 Recovery = 98.23%
All analyte(s) passed QC.

Sequence No.: 12 **Autosampler Location: 1**
Sample ID: CCB **Date Collected: 3/29/2018 2:45:29 PM**
Analyst: 868 HG-7 **Data Type: Original**
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**
Wash Time (before sample): 0 **Auto Dilution Factor: 1.0000**

Replicate Data: CCB **Analyte: Hg 253.7**

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000011	-0.0114	0.0001	0.0008	0.0002	2:46:33 PM	Yes
2	-0.000019	-0.0188	0.0001	0.0006	0.0002	2:47:18 PM	Yes
Mean:	-0.000015	-0.0151	0.0001				
SD:	0.0000052	0.00521	0.0000				
%RSD:	34.44%	34.44%	30.27				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 13 **Autosampler Location: 137**
Sample ID: 18-03-1798-F-1 MS **Date Collected: 3/29/2018 2:47:43 PM**
Analyst: 868 HG-7 **Data Type: Original**
Initial Sample Wt: **Initial Sample Vol:**
Dilution: 2X **Sample Prep Vol:**
Wash Time (before sample): 0 **Auto Dilution Factor: 1**

Replicate Data: 18-03-1798-F-1 MS **Analyte: Hg 253.7**

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00977	4.88	0.0341	0.1455	0.0342	2:48:49 PM	Yes
2	0.00985	4.93	0.0344	0.1474	0.0345	2:49:34 PM	Yes
Mean:	0.00981	4.91	0.0342				
SD:	0.000060	0.030	0.0002				
%RSD:	0.61%	0.61%	0.61				

Sequence No.: 14 **Autosampler Location: 138**
Sample ID: 18-03-1798-F-1 MSD **Date Collected: 3/29/2018 2:50:02 PM**
Analyst: 868 HG-7 **Data Type: Original**
Initial Sample Wt: **Initial Sample Vol:**
Dilution: 2X **Sample Prep Vol:**
Wash Time (before sample): 0 **Auto Dilution Factor: 1**

Replicate Data: 18-03-1798-F-1 MSD **Analyte: Hg 253.7**

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00950	4.75	0.0332	0.1412	0.0332	2:51:08 PM	Yes
2	0.00943	4.72	0.0329	0.1411	0.0330	2:51:53 PM	Yes
Mean:	0.00947	4.73	0.0330				
SD:	0.000046	0.023	0.0002				
%RSD:	0.48%	0.48%	0.48				

Sequence No.: 15 **Autosampler Location: 139**
Sample ID: 18-03-1798-F-2 **Date Collected: 3/29/2018 2:52:21 PM**
Analyst: 868 HG-7 **Data Type: Original**
Initial Sample Wt: **Initial Sample Vol:**
Dilution: 2X **Sample Prep Vol:**

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Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.000055	0.0273	0.0004	0.0020	0.0005	2:53:26 PM	Yes
2	-0.000001	-0.000634	0.0002	0.0016	0.0003	2:54:12 PM	Yes
Mean:	0.000027	0.0133	0.0003				
SD:	0.0000395	0.01976	0.0001				
%RSD:	148.14%	148.14%	43.26				

==========

Sequence No.: 16 Autosampler Location: 140
Sample ID: 18-03-1798-F-3 Date Collected: 3/29/2018 2:54:39 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000054	-0.0268	0.0000	0.0006	0.0001	2:55:45 PM	Yes
2	-0.000051	-0.0253	0.0000	0.0004	0.0001	2:56:30 PM	Yes
Mean:	-0.000052	-0.0261	0.0000				
SD:	0.0000021	0.00107	0.0000				
%RSD:	4.10%	4.10%	16.97				

==========

Sequence No.: 17 Autosampler Location: 141
Sample ID: 18-03-1798-F-4 Date Collected: 3/29/2018 2:56:58 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000063	-0.0316	0.0000	0.0002	0.0001	2:58:04 PM	Yes
2	-0.000056	-0.0281	0.0000	0.0006	0.0001	2:58:49 PM	Yes
Mean:	-0.000060	-0.0299	0.0000				
SD:	0.0000050	0.00249	0.0000				
%RSD:	8.32%	8.32%	101.09				

==========

Sequence No.: 18 Autosampler Location: 142
Sample ID: 18-03-1798-F-5 Date Collected: 3/29/2018 2:59:16 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-5 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000062	-0.0311	0.0000	-0.0001	0.0001	3:00:22 PM	Yes
2	-0.000067	-0.0335	-0.0000	-0.0004	0.0001	3:01:07 PM	Yes
Mean:	-0.000065	-0.0323	0.0000				
SD:	0.0000033	0.00167	0.0000				
%RSD:	5.16%	5.16%	>999.9%				

==========

Sequence No.: 19 Autosampler Location: 143
Sample ID: 18-03-1798-F-6 Date Collected: 3/29/2018 3:01:35 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:

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Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000066	-0.0328	-0.0000	-0.0004	0.0001	3:02:41 PM	Yes
2	-0.000064	-0.0322	0.0000	-0.0003	0.0001	3:03:26 PM	Yes
Mean:	-0.000065	-0.0325	-0.0000				
SD:	0.0000008	0.00041	0.0000				
%RSD:	1.25%	1.25%	224.80				

==========

Sequence No.: 20 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/29/2018 3:03:53 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00194	1.94	0.0137	0.0564	0.0138	3:04:59 PM	Yes
2	0.00198	1.98	0.0140	0.0571	0.0141	3:05:44 PM	Yes
Mean:	0.00196	1.96	0.0138				
SD:	0.000027	0.027	0.0002				
%RSD:	1.38%	1.38%	1.36				

QC value within limits for Hg 253.7 Recovery = 98.20%
All analyte(s) passed QC.

==========

Sequence No.: 21 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/29/2018 3:06:11 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000009	-0.00938	0.0002	0.0002	0.0002	3:07:14 PM	Yes
2	-0.000024	-0.0241	0.0001	-0.0003	0.0001	3:08:00 PM	Yes
Mean:	-0.000017	-0.0167	0.0001				
SD:	0.0000104	0.01040	0.0001				
%RSD:	62.12%	62.12%	66.62				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

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EPA 245.1 Mercury

Run Logs

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180328G1

Carrier solution R06141703 **Reducing Agent R06141702**

Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
Calib blank_868	868 HG-7		Hg 253.7	3/28/2018	11:55:24 AM		ug/L		mg/L	
0.025ppb 0.005x5ppb	868 HG-7		Hg 253.7	3/28/2018	11:57:37 AM		ug/L		mg/L	
0.10ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/28/2018	11:59:51 AM		ug/L		mg/L	
1.00ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/28/2018	12:02:07 PM		ug/L		mg/L	
2.00ppb MS030518AAX0.002	868 HG-7		Hg 253.7	3/28/2018	12:04:22 PM		ug/L		mg/L	
5.00ppb MS030518AAX0.005	868 HG-7		Hg 253.7	3/28/2018	12:06:37 PM		ug/L		mg/L	
10.0ppb MS030518AAX0.01	868 HG-7		Hg 253.7	3/28/2018	12:08:50 PM		ug/L		mg/L	
ICV MS030518B *	868 HG-7		Hg 253.7	3/28/2018	12:47:40 PM	0.172897	ug/L	0.000173	mg/L	0.999893
ICV MS030518B *	868 HG-7		Hg 253.7	3/28/2018	1:10:03 PM	4.729983	ug/L	0.00473	mg/L	0.999893
ICB	868 HG-7		Hg 253.7	3/28/2018	1:12:18 PM	-0.02982	ug/L	-2.98E-05	mg/L	0.999893
CRQL 0.25	868 HG-7		Hg 253.7	3/28/2018	1:14:33 PM	0.233944	ug/L	0.000468	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	1:16:50 PM	1.963562	ug/L	0.001964	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	1:19:06 PM	-0.03086	ug/L	-3.09E-05	mg/L	0.999893
CCV 0.2x10ppb **	868 HG-7		Hg 253.7	3/28/2018	3:39:27 PM	1.955477	ug/L	0.001955	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	3:41:43 PM	-0.02323	ug/L	-2.32E-05	mg/L	0.999893
180328-B-A1	868 HG-7		Hg 253.7	3/28/2018	3:43:58 PM	-0.02813	ug/L	-5.63E-05	mg/L	0.999893
180328-L-A1	868 HG-7		Hg 253.7	3/28/2018	3:46:14 PM	4.731277	ug/L	0.009463	mg/L	0.999893
18-03-1974-5	868 HG-7		Hg 253.7	3/28/2018	3:48:30 PM	-0.02283	ug/L	-4.57E-05	mg/L	0.999893
18-03-1974-5 MS	868 HG-7		Hg 253.7	3/28/2018	3:50:47 PM	4.3281	ug/L	0.008656	mg/L	0.999893
18-03-1974-5 MSD	868 HG-7		Hg 253.7	3/28/2018	3:53:04 PM	4.532539	ug/L	0.009065	mg/L	0.999893
18-03-1974-1	868 HG-7		Hg 253.7	3/28/2018	3:55:21 PM	-0.02264	ug/L	-4.53E-05	mg/L	0.999893
18-03-1974-2	868 HG-7		Hg 253.7	3/28/2018	3:57:38 PM	-0.033	ug/L	-6.60E-05	mg/L	0.999893
18-03-1974-3	868 HG-7		Hg 253.7	3/28/2018	3:59:54 PM	-0.01424	ug/L	-2.85E-05	mg/L	0.999893
18-03-1974-4	868 HG-7		Hg 253.7	3/28/2018	4:02:10 PM	-0.03487	ug/L	-6.97E-05	mg/L	0.999893
18-03-1974-6	868 HG-7		Hg 253.7	3/28/2018	4:04:26 PM	-0.03171	ug/L	-6.34E-05	mg/L	0.999893

* failed, rerun - passed
** time gap

Reviewed/Assign to Logbook Date: 03-28-18
Analysis Hg Checklist ID: 309
Logbook Page: 32 Instrument ID: Hg-7

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Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:06:43 PM	1.947275	ug/L	0.001947	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	4:08:59 PM	-0.02994	ug/L	-2.99E-05	mg/L	0.999893
18-03-1974-7	868 HG-7		Hg 253.7	3/28/2018	4:11:14 PM	-0.04095	ug/L	-8.19E-05	mg/L	0.999893
18-03-1968-4	868 HG-7		Hg 253.7	3/28/2018	4:13:30 PM	-0.02165	ug/L	-4.33E-05	mg/L	0.999893
180328-B-A2	868 HG-7		Hg 253.7	3/28/2018	4:15:46 PM	-0.03684	ug/L	-7.37E-05	mg/L	0.999893
180328-L-A2	868 HG-7		Hg 253.7	3/28/2018	4:18:02 PM	4.751384	ug/L	0.009503	mg/L	0.999893
18-03-1723-F-1	868 HG-7		Hg 253.7	3/28/2018	4:20:18 PM	-0.03202	ug/L	-6.40E-05	mg/L	0.999893
18-03-1723-F-1 MS	868 HG-7		Hg 253.7	3/28/2018	4:22:35 PM	4.58476	ug/L	0.00917	mg/L	0.999893
18-03-1723-F-1 MSD	868 HG-7		Hg 253.7	3/28/2018	4:24:53 PM	4.55445	ug/L	0.009109	mg/L	0.999893
18-03-1723-F-2	868 HG-7		Hg 253.7	3/28/2018	4:27:10 PM	-0.03334	ug/L	-6.67E-05	mg/L	0.999893
18-03-1974-F-1	868 HG-7		Hg 253.7	3/28/2018	4:29:26 PM	-0.03496	ug/L	-6.99E-05	mg/L	0.999893
18-03-1974-F-2	868 HG-7		Hg 253.7	3/28/2018	4:31:43 PM	-0.03681	ug/L	-7.36E-05	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:34:00 PM	1.947802	ug/L	0.001948	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	4:36:16 PM	-0.03001	ug/L	-3.00E-05	mg/L	0.999893
18-03-1974-F-3	868 HG-7		Hg 253.7	3/28/2018	4:38:31 PM	-0.02392	ug/L	-4.78E-05	mg/L	0.999893
18-03-1974-F-4	868 HG-7		Hg 253.7	3/28/2018	4:40:48 PM	-0.03727	ug/L	-7.45E-05	mg/L	0.999893
18-03-1974-F-5	868 HG-7		Hg 253.7	3/28/2018	4:43:04 PM	-0.03579	ug/L	-7.16E-05	mg/L	0.999893
18-03-1974-F-6	868 HG-7		Hg 253.7	3/28/2018	4:45:20 PM	-0.0358	ug/L	-7.16E-05	mg/L	0.999893
180328-B-A3	868 HG-7		Hg 253.7	3/28/2018	4:47:37 PM	-0.03563	ug/L	-7.13E-05	mg/L	0.999893
180328-L-A3	868 HG-7		Hg 253.7	3/28/2018	4:49:54 PM	4.607026	ug/L	0.009214	mg/L	0.999893
180328-L-A3D	868 HG-7		Hg 253.7	3/28/2018	4:52:10 PM	4.638428	ug/L	0.009277	mg/L	0.999893
18-03-1957-F-6	868 HG-7		Hg 253.7	3/28/2018	4:54:27 PM	-0.02406	ug/L	-4.81E-05	mg/L	0.999893
18-03-1676-1	868 HG-7		Hg 253.7	3/28/2018	4:56:45 PM	-0.04256	ug/L	-8.51E-05	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:59:02 PM	1.897963	ug/L	0.001898	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	5:01:18 PM	-0.02975	ug/L	-2.97E-05	mg/L	0.999893
CCV 0.2x10ppb *	868 HG-7		Hg 253.7	3/28/2018	7:02:56 PM	1.880503	ug/L	0.001881	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	7:05:12 PM	-0.02506	ug/L	-2.51E-05	mg/L	0.999893
18-03-1116-1	868 HG-7		Hg 253.7	3/28/2018	7:07:29 PM	-0.0214	ug/L	-4.28E-05	mg/L	0.999893
18-03-1894-2 PDS	868 HG-7		Hg 253.7	3/28/2018	7:09:47 PM	4.718692	ug/L	0.009437	mg/L	0.999893

* time gap

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Carrier solution R06141703 **Reducing Agent R06141702**

Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
Calib blank_868	868 HG-7		Hg 253.7	3/29/2018	11:00:02 AM		ug/L		mg/L	
0.025ppb 0.005x5ppb	868 HG-7		Hg 253.7	3/29/2018	11:02:17 AM		ug/L		mg/L	
0.10ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/29/2018	11:04:32 AM		ug/L		mg/L	
1.00ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/29/2018	11:06:49 AM		ug/L		mg/L	
2.00ppb MS030518AAX0.002	868 HG-7		Hg 253.7	3/29/2018	11:09:05 AM		ug/L		mg/L	
5.00ppb MS030518AAX0.005	868 HG-7		Hg 253.7	3/29/2018	11:11:21 AM		ug/L		mg/L	
10.0ppb MS030518AAX0.01	868 HG-7		Hg 253.7	3/29/2018	11:13:35 AM		ug/L		mg/L	
ICV MS030518B	868 HG-7		Hg 253.7	3/29/2018	11:22:35 AM	4.939883	ug/L	0.00494	mg/L	0.999821
ICB	868 HG-7		Hg 253.7	3/29/2018	11:24:50 AM	-0.03521	ug/L	-3.52E-05	mg/L	0.999821
CRQL 0.25	868 HG-7		Hg 253.7	3/29/2018	11:27:05 AM	0.219097	ug/L	0.000438	mg/L	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	11:29:22 AM	2.075333	ug/L	0.002075	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	11:31:37 AM	-0.03018	ug/L	-3.02E-05	mg/L	0.999821
180329-B-A1	868 HG-7		Hg 253.7	3/29/2018	12:54:53 PM	-0.04138	ug/L	-8.28E-05	mg/L	0.999821
180329-L-A1	868 HG-7		Hg 253.7	3/29/2018	12:57:10 PM	4.469033	ug/L	0.008938	mg/L	0.999821
18-03-2193-TC-2	868 HG-7		Hg 253.7	3/29/2018	12:59:29 PM	-0.01408	ug/L	-2.82E-05	mg/L	0.999821
18-03-2193-TC-2 MS	868 HG-7		Hg 253.7	3/29/2018	1:01:47 PM	4.245198	ug/L	0.00849	mg/L	0.999821
18-03-2193-TC-2 MSD	868 HG-7		Hg 253.7	3/29/2018	1:04:05 PM	4.229803	ug/L	0.00846	mg/L	0.999821
180329-B-A2	868 HG-7		Hg 253.7	3/29/2018	1:06:23 PM	-0.02598	ug/L	-5.20E-05	mg/L	0.999821
180329-L-A2	868 HG-7		Hg 253.7	3/29/2018	1:08:41 PM	4.558496	ug/L	0.009117	mg/L	0.999821
18-03-1467-1	868 HG-7		Hg 253.7	3/29/2018	1:10:59 PM	-0.02931	ug/L	-5.86E-05	mg/L	0.999821
18-03-1467-1 MS	868 HG-7		Hg 253.7	3/29/2018	1:13:17 PM	4.254392	ug/L	0.008509	mg/L	0.999821
18-03-1467-1 MSD	868 HG-7		Hg 253.7	3/29/2018	1:15:35 PM	3.864069	ug/L	0.007728	mg/L	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	1:17:52 PM	1.976634	ug/L	0.001977	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	1:20:09 PM	-0.02529	ug/L	-2.53E-05	mg/L	0.999821
18-03-1467-F-1	868 HG-7		Hg 253.7	3/29/2018	1:22:24 PM	-0.04163	ug/L	-8.33E-05	mg/L	0.999821

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Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
18-03-1466-1	868 HG-7		Hg 253.7	3/29/2018	1:24:42 PM	-0.04149	ug/L	-8.30E-05	mg/L	0.999821
18-03-1466-F-1	868 HG-7		Hg 253.7	3/29/2018	1:27:00 PM	-0.04316	ug/L	-8.63E-05	mg/L	0.999821
18-03-1468-1	868 HG-7		Hg 253.7	3/29/2018	1:29:19 PM	-0.03078	ug/L	-6.16E-05	mg/L	0.999821
18-03-1468-2	868 HG-7		Hg 253.7	3/29/2018	1:31:37 PM	-0.03616	ug/L	-7.23E-05	mg/L	0.999821
18-03-1468-F-1	868 HG-7		Hg 253.7	3/29/2018	1:33:55 PM	-0.02659	ug/L	-5.32E-05	mg/L	0.999821
18-03-1468-F-2	868 HG-7		Hg 253.7	3/29/2018	1:36:14 PM	-0.03243	ug/L	-6.49E-05	mg/L	0.999821
18-03-2442-1	868 HG-7		Hg 253.7	3/29/2018	1:38:33 PM	-0.02944	ug/L	-5.89E-05	mg/L	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	1:40:51 PM	1.953618	ug/L	0.001954	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	1:43:06 PM	-0.02486	ug/L	-2.49E-05	mg/L	0.999821
18-03-1798-1	868 HG-7		Hg 253.7	3/29/2018	2:21:53 PM	-0.02135	ug/L	-4.27E-05	mg/L	0.999821
18-03-1798-2	868 HG-7		Hg 253.7	3/29/2018	2:24:16 PM	-0.02941	ug/L	-5.88E-05	mg/L	0.999821
18-03-1798-2 MS	868 HG-7		Hg 253.7	3/29/2018	2:26:34 PM	4.789736	ug/L	0.009579	mg/L	0.999821
18-03-1798-2 MSD	868 HG-7		Hg 253.7	3/29/2018	2:28:53 PM	4.657792	ug/L	0.009316	mg/L	0.999821
18-03-1798-3	868 HG-7		Hg 253.7	3/29/2018	2:31:11 PM	-0.0074	ug/L	-1.48E-05	mg/L	0.999821
18-03-1798-4	868 HG-7		Hg 253.7	3/29/2018	2:33:30 PM	0.008999	ug/L	1.80E-05	mg/L	0.999821
18-03-1798-5	868 HG-7		Hg 253.7	3/29/2018	2:35:48 PM	-0.01714	ug/L	-3.43E-05	mg/L	0.999821
18-03-1798-6	868 HG-7		Hg 253.7	3/29/2018	2:38:07 PM	-0.01654	ug/L	-3.31E-05	mg/L	0.999821
18-03-1798-7	868 HG-7		Hg 253.7	3/29/2018	2:40:25 PM	-0.04181	ug/L	-8.36E-05	mg/L	0.999821
18-03-1798-F-1	868 HG-7		Hg 253.7	3/29/2018	2:42:44 PM	-0.03291	ug/L	-6.58E-05	mg/L	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	2:45:02 PM	1.964682	ug/L	0.001965	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	2:47:18 PM	-0.01513	ug/L	-1.51E-05	mg/L	0.999821
18-03-1798-F-1 MS	868 HG-7		Hg 253.7	3/29/2018	2:49:34 PM	4.905035	ug/L	0.00981	mg/L	0.999821
18-03-1798-F-1 MSD	868 HG-7		Hg 253.7	3/29/2018	2:51:53 PM	4.732684	ug/L	0.009465	mg/L	0.999821
18-03-1798-F-2	868 HG-7		Hg 253.7	3/29/2018	2:54:12 PM	0.013341	ug/L	2.67E-05	mg/L	0.999821
18-03-1798-F-3	868 HG-7		Hg 253.7	3/29/2018	2:56:30 PM	-0.02605	ug/L	-5.21E-05	mg/L	0.999821
18-03-1798-F-4	868 HG-7		Hg 253.7	3/29/2018	2:58:49 PM	-0.02988	ug/L	-5.98E-05	mg/L	0.999821
18-03-1798-F-5	868 HG-7		Hg 253.7	3/29/2018	3:01:07 PM	-0.03228	ug/L	-6.46E-05	mg/L	0.999821
18-03-1798-F-6	868 HG-7		Hg 253.7	3/29/2018	3:03:26 PM	-0.03252	ug/L	-6.50E-05	mg/L	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	3:05:44 PM	1.963955	ug/L	0.001964	mg/L	0.999821

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Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
CCB	868 HG-7		Hg 253.7	3/29/2018	3:08:00 PM	-0.01674	ug/L	-1.67E-05	mg/L	0.999821
180329-B-03	868 HG-7	0.59	Hg 253.7	3/29/2018	3:13:01 PM	-0.04247	ug/L	-0.0072	mg/kg	0.999821
180329-L-03	868 HG-7	0.61	Hg 253.7	3/29/2018	3:15:17 PM	4.401595	ug/L	0.721573	mg/kg	0.999821
18-03-1304-1	868 HG-7	0.59	Hg 253.7	3/29/2018	3:17:34 PM	0.232528	ug/L	0.039412	mg/kg	0.999821
18-03-1304-1 MS	868 HG-7	0.63	Hg 253.7	3/29/2018	3:21:52 PM	4.581207	ug/L	0.727176	mg/kg	0.999821
18-03-1304-1 MSD	868 HG-7	0.63	Hg 253.7	3/29/2018	3:24:07 PM	4.765152	ug/L	0.756373	mg/kg	0.999821
18-03-1304-2	868 HG-7	0.59	Hg 253.7	3/29/2018	3:26:22 PM	0.2684	ug/L	0.045492	mg/kg	0.999821
18-03-1304-3	868 HG-7	0.63	Hg 253.7	3/29/2018	3:28:36 PM	0.287145	ug/L	0.045579	mg/kg	0.999821
18-03-1304-4	868 HG-7	0.62	Hg 253.7	3/29/2018	3:30:51 PM	0.302738	ug/L	0.048829	mg/kg	0.999821
18-03-1304-5	868 HG-7	0.6	Hg 253.7	3/29/2018	3:33:05 PM	0.161892	ug/L	0.026982	mg/kg	0.999821
18-03-1304-6	868 HG-7	0.63	Hg 253.7	3/29/2018	3:35:20 PM	0.134976	ug/L	0.021425	mg/kg	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	3:37:37 PM	1.856315	ug/L	0.001856	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	3:39:53 PM	-0.0145	ug/L	-1.45E-05	mg/L	0.999821
18-03-1993-1	868 HG-7	0.6	Hg 253.7	3/29/2018	3:42:08 PM	1.567103	ug/L	0.261184	mg/kg	0.999821
18-03-1993-2	868 HG-7	0.61	Hg 253.7	3/29/2018	3:44:24 PM	3.1008	ug/L	0.508328	mg/kg	0.999821
18-03-1962-1	868 HG-7	0.6	Hg 253.7	3/29/2018	3:46:40 PM	0.005038	ug/L	0.00084	mg/kg	0.999821
18-03-1865-1	868 HG-7	0.63	Hg 253.7	3/29/2018	3:48:56 PM	1.809847	ug/L	0.287277	mg/kg	0.999821
18-03-1823-1	868 HG-7	0.6	Hg 253.7	3/29/2018	3:51:13 PM	0.275075	ug/L	0.045846	mg/kg	0.999821
18-03-1640-3	868 HG-7	0.64	Hg 253.7	3/29/2018	3:53:30 PM	0.062654	ug/L	0.00979	mg/kg	0.999821
18-03-1926-1	868 HG-7	0.57	Hg 253.7	3/29/2018	3:55:47 PM	0.006068	ug/L	0.001065	mg/kg	0.999821
18-03-1926-2	868 HG-7	0.61	Hg 253.7	3/29/2018	3:58:02 PM	0.014718	ug/L	0.002413	mg/kg	0.999821
18-03-1926-3	868 HG-7	0.59	Hg 253.7	3/29/2018	4:00:17 PM	-0.0278	ug/L	-0.00471	mg/kg	0.999821
18-03-1926-4	868 HG-7	0.57	Hg 253.7	3/29/2018	4:02:32 PM	0.158084	ug/L	0.027734	mg/kg	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	4:04:48 PM	2.043615	ug/L	0.002044	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	4:07:04 PM	-0.01217	ug/L	-1.22E-05	mg/L	0.999821
18-03-1926-5	868 HG-7	0.6	Hg 253.7	3/29/2018	4:09:19 PM	0.016241	ug/L	0.002707	mg/kg	0.999821
18-03-1925-1	868 HG-7	0.58	Hg 253.7	3/29/2018	4:11:34 PM	-0.03383	ug/L	-0.00583	mg/kg	0.999821
18-03-1925-2	868 HG-7	0.61	Hg 253.7	3/29/2018	4:13:49 PM	-0.03517	ug/L	-0.00577	mg/kg	0.999821
18-03-1925-3	868 HG-7	0.59	Hg 253.7	3/29/2018	4:16:05 PM	-0.03783	ug/L	-0.00641	mg/kg	0.999821

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EPA 245.1 Mercury

Preparation Log

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Mercury Sample Preparation Logbook (Aqueous)

METHOD	MATRIX	EQUIPMENT ID #	REAGENT ID #	REAGENT / STANDARD ID #
☐ EPA 7470A ☐ EPA 245.1	360 03/28/16 Aqueous	Thermometer GT-04 (CF 0.0 °C) Block Digester 3 Pipetter / Dispenser P67	HNO_3 MQ06-43-08 1.25 mL H_2SO_4 MQ06-45-20 2.5 mL 5% $KMnO_4$ MR011218A	5% $K_2S_2O_8$ MR090817A 4 mL NaCl-H_3NO-HCl MR011218B mL Spike MS030518AA

BATCH NUMBER	SUPPLY LOT #	ACID PRESERVATION AND FILTRATION	STANDARD ID #
MS/MSD 180328-SA1 (Specify)	Digestion Tube 170164 Filter	☑ None ☐ Lab Filtered ☐ Lab Preserved Book # _____ Page # _____	IC MS030518AA ICV B

DIGESTION									SAMPLE		5% $KMnO_4$	SPIKE OR IC/ICV
	START			END								
DATE	TIME	TEMP W/O CF (°C)	PREP TECH ID #	TIME	TEMP W/O CF (°C)	PREP TECH ID #	INITIAL pH	ECI ID #	INITIAL (mL)	FINAL (mL)	V (mL)	V (µL)
3/28/16	10:36	95	808	12:30	95	808	≤2	MS 18-03-1974-5A	50	100	7.5	500
							≤2	MSD "	808			"
								LCS 180328-LA1	03/28/16			
								LCSD / MB 180328-BA1				
							≤2	18-03-1974-1A				
							≤2	" 2				
							≤2	" 3				
							≤2	" 4				
							≤2	" 5				
							≤2	" 6				
							≤2	" 7				
							≤2	18-03-1968-4A				
							≤2	18-03-1676-1E				
	14:00			16:00			≤2	18-03-1798-1B				
							≤2	" 2				
							≤2	" 3				
							≤2	" 4				
							≤2	" 5				
							≤2	" 6				
							≤2	" 7				
							≤2	MS 2				500
							≤2	MSD 2				1
								IC				
								ICV				
								CB				

COMMENTS: D-048 / D-047 / D-058 / D-073 / D-063

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Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	030918	C	org Pb	P-115 / P-015	MS121417A	0.04 mL	MR121417D	20 mL	2 ppm	3/10/18	1080
MS	"	D	"	"	"	0.02	"	"	1	"	"
MS	"	E	"	"	"	0.1 conf	"	"	0.2	"	"
MS	"	F	"	"	MS012418A	0.1	"	"	5	"	"
MS	030518A	A	Hg	MP-060	M006-18-04	1 mL	M006-43-06 5 mL	100 mL	1 ppb	4/5/18	826
MS	"	B	"	"	M006-43-01	"	M006-43-08 5 mL	"	"	"	"
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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
4/27/17	M042717A	6010/200.7	Na [10,000 PPM]	M006-023-23	1 ml	See SOP Appx C	200 ml	See SOP Appx C	12 ml HNO_3 10 ml HCl	M006-041-22 ~~M006-042-23~~	~~4/27/18~~ 12/13/17	935	
			Sn [10,000 PPM]	-16	0.05 ml					M006-041-24 4/28/17			
			Si [1,000 PPM]	040-23 ~~M006-039-17~~ 935 4/27/17	1.77 ml								
4/27/17	M042717B	1640	100 ppm Se	M006-042-11	0.25 g	powder	1 L	100 ppm	H_2O	N/A	4/27/18	100	
4/19/17	M041717C	6010/200.7	Internal Std Conc.										
			Sc	M006-042-04	10 mL	1000 ppm	500 mL	2 ppm	5 mL HNO_3	M006-41-22	3 yr	87	05/2021
			Li-6	M006-042-03	50 mL			100 ppm					11/2021
			Ga	M006-042-05	50 mL			/					11/2020
			In	M006-042-04	10 mL			2 ppm					03/2018
			Ho	M006-042-07	10 mL								04/2021
			Tb	M006-042-06	10 mL								04/2021
			Bi	M006-042-08	10 mL								04/2021
	M041717D		Internal Std	M041717C	5 mL	1000 ppm	1 L	5 ppm	10 mL HNO_3				
4/5/17	M050317A	Hg	100 ppm Hg	M006-36-15	10 mL	1000 ppm	100 mL	100 ppm	5 mL HNO_3	M006-41-22	12/20/17	868	
	M050317B		1 ppm STD	M050317A	1 mL	100 ppm	100 mL	1 ppm	5 mL HNO_3	M006-41-22	6/3/17	868	

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Reagent Preparation Logbook

PREP DATE	NEW REAGENT ID #	TEST METHOD	REAGENT DESCRIPTION	SOURCE CHEMICAL(S) NAME	SOURCE CHEMICAL(S) ID #	INITIAL AMOUNT	SOLVENT NAME	SOLVENT ID #	FINAL VOLUME	EXPIR. DATE	PREP BY	COMMENTS
04/25/17	R0425170z	org. Pb	10% 336/MIBK	Aliquat 336	M006-35-24	20mL	MIBK	M006-32-?	200mL	4/25/20	5?r	
|	R0425?703	|	1% 336/MIBK	10% 336	R0425?702	20mL	MIBK	M006-32-?	200mL	|	5?	
04/27/17	R0427?701	Gow/?or.8	3% HNO_3	HNO_3	M006-041-??	1?0mL	DI water	00?? 71701	4L X 5	4/27/1?	5??	
04/28/17	R0428170?	Hg	Aqua Regia 1:1	HCl HNO_3	M006-041-~~22~~ 24 M006-041-22	300mL 100mL	DI H_2O	N/A	800mL	~~4/24~~/28/18	868	Daily
04/28/17	R0428170Z	Hg	5% $KMnO_4$	$KMnO_4$ ~~M006-37-01~~ SKS 4/(?/?)	M006-37-01	500g	DI H_2O	NA	10L	4/28/18	868	
06/08/17	R0608170	Hg	12% $NH_2OH \cdot Cl$	$NH_2OH \cdot HCl$ NaCl	M006-36-02 M006-~~??~~ SKS 6/8/17 42-20	1.2Kg	DI H_2O	NA	10L	6/08/18	868	
06/09/17	R0609?70?	org. Pb	Blank	Xylene	M006-042-14	200mL	NA	NA	?00mL X4	12/?/17	5??	
|		|	|	MIBK	M006-03?-0?	250mL	|	|	|	|	|	
|		|	|	1% .336	R0609?703	50mL	|	|	|	|	|	
|		|		3% I_2	R0609?704	1mL	|	|	|	|	|	
|	R0609?70?	|	10% .336/MIBK	Aliquat 336	M006-35-24	20mL	MIBK	M006-033-??	200mL	|	|	
|	R0609(703	|	1% .336/mIBK	10% .336/MIBK	R0609170?	?0mL	MIBK	|	200mL	|	|	
|	R0609?704	|	I_2 3%	Iodine	G007-04-1?	6g	Benzene	M006-05-0?	200mL	|	|	2/2 3/25
6/14/17	R0614170?	Hg	? Aqua Regia	HCl HNO_3	M006-041-24 M006-41-22	360ml 1?0ml	DI H_2O	NA	800 ml	~~6/2~~6/14/17	868	Daily
|	R0614?702	|	$SnCl_2 \cdot 2H_2O$ Reducing agent	HCl $SnCl_2 \cdot 2H_2O$	M006-42-22 M006-41-12	60ml 22g	~~DI H2O 60mL HCl~~ 868 06/14/17	NA ~~M006-42-22~~	2L x 2	6/14/18	868	✓ Daily
|	R0614?703	|	3% HCl carrier solution	HCl	M006-42-22	60mL	DI H_2O	NA	2L X 2	6/14/18	|	|
6/20/17	R0620?701	metals	1:1 HNO3	HNO3	M006-042-2?	1.25X30	DI H_2O	NA	2.5x30	06/20/18	710	
06/27/17	R06271??	1631	$NH_2OH \cdot HCl$	$NH_2OH \cdot HCL$	M006-34-24	60g	DI H_2O	NA	200mL	10/8/17	1030	
06/28/17	R0628170?	metals	1:1 HNO3	HNO_3	M006-041-11	500mL	DI H_2O	NA	1000mL	6/28/18	1080	
06/28/17	R0628170?	|	1:2 HCl	HCl	M006-042-2?	?00X20	DI H_2O	NA	2000 ml x20	6/28/18	2??	

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Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	081717	A	metals		HNO3 MCC6-043-08	500mL	Nano Pure Type 1 grade water reagent	1000mL	1:1 HNO3	08/17/18	1080
MR	083117	A	200.7 metals		~~5/31/17 1080 HNO3 MCC6-044-06~~ HCl	500mL	Type 1 grade water	2000mL	1:4 HCl	08/31/18	1080
MR					MCC6-042-22						
MR	09/08/17	A	Hg	Balance 59	MCC6-41-09	500g	~~5/8/17~~ DI H2O	1000mL	5% $K_2S_2O_3$	9/8/18	808
MR	091917	A	metals		MCC6-042-15	833mL	Type 1 grade water	2.5L	1:2 HCl	9/19/18	1080
MR	092717	A	metals		~~MCC6-44-06~~	1.25L	DI H2O Type 1	2.50L	1:1 HNO3 ~~HCl~~	~~09/27/18~~	710
MR	10/10/17-01	A	TCLP		NAOH MCC6-34-15	160gram	DI H2O	4.0L x8	1N	10/09/18	805
MR	10/10/17-04	A	STLC		NAOH MCC6-34-15	640gram	DI H2O	4.0L x8	4N	10/09/18	805
MR	101117	A	1631	Balance 64	MCC6-043-12	60g	DI - H2O	200mL	NH2OH·HCl	10/11/18	996
MR	102817	A	metals		MCC6-44-07	833mL	Type 1 grade water	2.5L	1:2 HCl	10/28/18	1080
MR	110117	A	Metals	D-044	MCC6-44-17	250mL	DI-H2O	500mL	1:1 HNO3	11/01/18	1058
MR	110117	B	1	F002	MCC641-23	250mL	DI-H2O	50mL	1:1 HCL	11/01/18	1058
MR	~~110417~~	~~A~~	~~1631~~		~~MCC6-43-12~~	60g	200mL DI - H2O	~~200mL~~	11/4/17 1080		
MR	110917	A	1631	Balance 64	MCC6-032-04 MCC6007-016-19	2.16g 3.04g	MCC6-036-24 HCl	200mL	BrCl	11/3/18	1080
MR	111617	A	METALS	D-044	MCC6-045-02	100mL	DI-H2O	2L	5% HNO3	11/16/18	5TK
MR	112717	A	TCLP		MCC6-44-07	8.33x(4)	DI-H2O	100x4= 400mL	1N	11/26/18	805
MR	11/21/17	A	METALS	D-044 F-002	MCC6-045-02 MCC6-45-01	120mL 320mL	DI-H2O	2L	6% HNO3 16% HCl	11/21/18	578
MR	12/1/17	A	Hg	Balance 59	MCC6-42-20 MCC6-45-05	1.2kg 1.2kg	DI-H2O	10L	12% NaCl·NH4OH	12/1/18	808

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Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	120717	A	metals		MOOG-045-01	833mL	DI-H2O	2.5L	1:2 HCl	12/7/18	1080
MR	121117	A	6010/200.7	D044 / F002	MOOG-045-02 MOOG-045-01	60mL 90mL	DI-H2O	1L X2	6% HNO3 5% HCl	12/11/18	935
MR	↓	B	↓	↓	↓	↓	↓	↓	↓	↓	↓
MR	↓	C	↓	↓	↓	100mL 100mL	↓	1L x4	10% HNO3 10% HCl	↓	↓
MR	↓	D	↓	↓	↓	↓	↓	1L X2	↓	↓	↓
MR	121217	A	SPLP		MOOG-44-21 H2SO4 MOOG-44-02 HNO3	60ml 40ml =100ml	DI-H2O.	100 ml	60% H2SO4 40% HNO3	12/11/18	805
MR	121417	A	Org. Pb	Pipette 040 12016 MIBK D-054	Aliquot 336 MOOG-35-24	20mL	MOOG-039-02 MIBK 180mL	200mL	10% 336 MIBK	6/14/18	1080
MR	121417	B	Org. Pb	Pipette 040 12016 MIBK D-054	10% - 336/MIBK MR121417A	20mL	MOOG-039-02 MIBK 180mL	200mL	1% 336 MIBK	6/14/18	1080
MR	121417	C	Org Pb	Balance 61 Pipette 040 12016	Iodine 6007-04-19.	6g	MOOG-039-09 Benzene	200mL	I_2 3%	6/14/18	1080
MR	121417	D	Org. Pb	D-054/D-055/Pipette 040 12016	Xylene MOOG-044-14	200mL			BLANKS	6/14/18	1080
MR	↓	↓	↓	↓	MIBK MOOG-039-02	250mL	↓	↓	↓	↓	↓
MR	↓	↓	↓	↓	1% - 336 MR121417B	50mL	↓	↓	↓	↓	↓
MR	↓	↓	↓	↓	3% I_2	1mL	↓	↓	↓	↓	↓
MR	121617	A	metals		MOOG-045-02	1.25L	DI-H_2O	2.50L	1:1 HNO_3	12/16/18	1080
MR	011218	A	Hg	Bal #59	MOOG-43-01	50 1000g	DI-H_2O	20L	5% $KMnO_4$	1/12/19	868
MR	011218	B	Hg	Bal #59	MOOG-43-025 MOOG-42-20	1.2 kg 1.2 kg	DI-H_2O	10L	12% NaCl-NH_4H	1/12/19	868
MR	01/30/18	A	METALS	—	MOOG-045-09	4X 1.25L 500mL	DI-H_2O	4X 1200mL	1:1 HNO3	01/30/19	710
MR	01/31/18 01/30/18	A	metals		MOOG-042-22	833mL	DI-H_2O	2.5L	1:2 HCl	1/31/19 12/14/18 1080	1080

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Nitric Acid	EMD	NX0407/4	52088	8/31/15	2.5L x2	G	8/31/12	469	8/31/12	469	
2	Hydrochloric Acid	EMD	HX0607/4	51122	8/31/15	2.5L x2	G	8/31/12	469	8/31/12	469	
3	↓	EMD	HX0607/4	51258	↓	2.5L x2	G	8/31/12	↓	↓	↓	
4	Instrument Calibration STD #3	SPEX	CL-6AC-3	CL43-8443	08/30/13	125mL x2	P	09/06/12	JSF	09/06/12	JSF	
5	Instrument Calibration STD #2	SPEX	CL-CAL-2	CL5-1684P	08/30/13	1LT mL	P	09/06/12	JSF	09/06/12	JSF	
6	HCL Acid	EMD	HX0607/4	51258	09/07/15	2.5L x7	G	09/07/12	805	09/07/12	805	
7	↓	↓	HX0607/4	51122	↓	2.5L x3	G	↓	↓	↓	↓	
8	↓	↓	HX0607/4	51181	↓	2.5L x1	G	↓	↓	↓	↓	
9	Nitric Acid	EMD	NX0407/4	52012	09/06/15	2.5L x10	G	09/07/12	805	09/07/12	805	
10	↓	↓	↓	52088	↓	2.5L x1	G	↓	↓	↓	↓	
11	HCL Acid	EMD	HX0607/4	51258	09/13/15	2.5L x8	G	09/14/12	805	09/14/12	805	
12	Nitric Acid	EMD	NX0407/4	52012	09/13/15	2.5L x8	G	09/14/12	805	09/14/12	↓	
13	Stannous Chloride	VWR	BDH0304-500g	13196 3	NA	500g x5	P	9/17/12	769	9/17/12	769	
14	Potassium Permanganate	Fisher	P279-212	116168	9/18/17	2.5kg x4	G	9/18/12	769	9/18/12	769	
15	Acetic Acid, Glacial	Amresco	0714-2.5L	2372c462	02/30/13	2.5L x4	G	09/18/12	805	09/18/12	805	CTF-3 p8-28
16	Hydrogen Peroxide	EMD	HX0635-2	51283217	10/31/13	1L x6	P	9/26/12	769	9/26/12	769	
17	Nitric Acid	EMD	NX0407/1	52012	9/27/15	500mL	G	9/27/12	JSF	9/27/12	JSF	
18	|	|	|	51331		500mL x8	|	|	|	|	|	
19	Nitric Acid	Fisher	A467-2	121020	2/23/15	2L x2	T	10/3/12	776	10/3/12	776	
20	Acetic Acid	Fisher	A507-P212	611007	6/2014	2.5L x2	P	10/3/12	776	10/3/12	776	
21	Potassium Persulfate	Fisher	P281-500	120909	10/5/17	500g x12	P	10/5/12	769	10/5/12	769	
22	Hydroxylamine Hydrochloride	Acros	41205000	A0315671	10/5/17	500g x6	|	|	|	|	|	
23	Nitric Acid	EMD	NX0407/4	52012	10/08/15	25x5	G	10/08/12	805	10/08/12	805	
24	Hydroxylamine Hydro	ALDRICH	431362-50G	MKBL3454V	10/8/17	50g	P	10/8/12	776	10/8/12	776	
25	Stannous Chloride Dihydrate	Fisher	T163-500	122973	10/9/17	500g x6	P	10/9/12	776	10/9/12	776	

COMMENTS:

Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Zinc Standard	Accu Trace	ICP-MS-70N-0.1X-1	2140410001	4/2019	100ml	P	4/8/14	769	4/8/14	769	
2	Iron standard		ICP-MS-57N-0.1X-1	2130151021	1/2018	100ml						
3	Chromium Standard		ICP-MS-53N-0.1X-1	2130255146	3/2018	100ml						
4	Mercury standard		ICP-MS-54N-0.1X-1	2131150801	7/2018	100ml						
5	Nitric Acid	EMD	NX0407-2	53358	4-10-17	2.5Lx5	G	4-11-14	879	4-11-14	879	
6	Hydrochloric Acid	EMD	HX0607-2	54028	4-10-17	2.5Lx5	G	4-11-14	879	4-11-14	879	
7	Hydrochloric Acid	EMD	HX0607-2	53010	4-14-17	2.5Lx8	G	4-15-14	879			Lot # verified
8	Nitric Acid	EMD	NX-0407-2	53358	4-20-17	2.5Lx5	G	4-21-14	879	4-21-14	879	Lot # verified
9	Hydrochloric Acid	EMD	HX0607-2	54028	4-20-17	2.5Lx5	G	4-21-14	879	4-21-14	879	Lot # verified
10	Hydrogen peroxide	Fisher	H325-500	140441	4/17/2	500ml	P	4/21/14	110	4/21/14	110	
11	Hydrogen Peroxide	EMD	HX-0635-2	54044409	8/28/16	1Lx10	P	4/24/14	879	~~4-24-14~~	~~879~~	Lot # verified
12	Hydroxylamine Hydrochloride	Reagent world	5470-11-1	FZ0661	4/25/17	500gx1	D	4/25/14	769	4/25/14	769	
13	Hydrochloric Acid	EMD	HX067-2	54028	4/29/17	2.5Lx5	G	4/29/14	914	4/29/14	914	
14	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	4/29/14	914	4/29/14	914	
15	Ammonium Hydroxide	BDH	87003-214	7214010	3/04/17	2x500ml	P	4/30/14	110	4/30/14	110	
16	Hydrochloric Acid	EMD	HX0607-4	52310	4/30/17	2.5x5	G	4/30/14	914	4/30/14	914	
17	Hydrochloric Acid	EMD	HX0607-4	54028	4/30/17	2.5Lx5	G	5/5/14	879	6/9/14	915	Lot # verified
18	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/5/14	879	5/5/14	879	Lot # verified
19	Nitric Acid	EMD	NX0407-2	53157	05/21/17	2.5Lx2	G	05/22/14	805	05/22/14	805	
20	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/22/14	879	5/22/14	879	Lot # verified
21	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/23/14	879	5/27/14	879	Lot verified
22	Hydrochloric Acid	EMD	~~HX0607-4~~ 4-23	54028	4/30/17	2.5Lx5	G	5/23/14	879	6/2/14	915	HX0607-2
23	Sulfuric Acid 93-98%	~~EMD~~ ~~Omni Trace~~	SX-1247-2	53123	3/24/17	2.5L	G	5/30/14	915	5/30/14	915	
24	$KMnO_4$	Fisher	0279 212	136746	5/30/14	2.5Kgx2	G	5/30/14	915	6/11/14	915	
25	Nitric Acid	Fisher	A467-2	121311	11/14/16	2Lx2	T	6/4/14	RA	[illegible]	RA	

COMMENTS:

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Chemical and Supply Receiving Logbook

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1	Potassium Permanganate	EMD	PX1550-5	16BIL0662	7/27/18	2.5x5	P	7/22/16	BUS	7/27/16	SKB	
2	ICV IDX - Solution - A	High Purity	SM-2011-003 S.A	1619011	7/18/17	250 ml	P	7/27/16	BUS	7/27/16	BUS	
3	- B		-B	1619013								
4	- C		-C	1619013								
5	- D		-D	1619014								
6	Spike #1		SM-2011-004	1619015		1 L						
7	Spike #2		SM-2011-001	1619010								
8	HNO_3	EMD	NX0418-2	56020	08/03/19	18x 2.5L	G	08/04/16	1030	08/04/16	1030	
9	Hydrogen Peroxide	Fisher	H325-500	162633	08/04/19	500 mL	P	08/04/16	776	08/04/16	776	
10	HCL	EMD	HX0607-2	55320	08/04/19	2.5L	G	08/04/16	1030	08/04/16	1030	
11	TETRAETHYL LEAD	SPEX	SVO-CSEL-8-500	EN1605180001	8/18/17	500mL	G	8/19/16	SKB	8/19/16	SKB	
12	Hydrogen peroxid	EMD	500/HX0635-2	56039624	8/22/19	1L	P	8/24/16	710	8/24/16	710	710 8/24/16
13	HNO_3	EMD	NX0407-2	553-23	9/1/19	2.5Lx20	G	9/1/16	SKB	9/1/16	SKB	
14	Citric Acid Anhydrous	Fisher	A940-1	160994	09/01/21	1 Kg X8	P	09/01/16	1030	09/01/16	1030	
15	HCL	EMD	HX-0607-2	56027	09/26/19	2.5LX10	G	09/26/16	1030	09/26/16	1030	
16	HNO_3	EMD	HX-0407-2	56020	09/26/19	2.5LX18	G	09/26/16	1030	09/26/16	1030	
17	TUNE	SPEX	CL-TUNG-1	CCI-16MKBK	03/30/17	09/26/16 1030 125mL	P	09/30/16	SKB	09/30/16	SKB	
18	Cal Std #3		CL-CAL-3	CCI-36MKBK		125mL						
19	Interferents A		CL-INT-A1	CCI-123MKBK		125mLx2						
20	Analytes B		CL-INT-B1	CCI-50MKBK		125mL						
21	Nitric Acid	Fisher	A467-2	1216050	05/31/19	2L x2	P	10/03/16	776	10/03/16	776	
22	Hydrochloric Acid	Fisher	A508-P212	411 6040	05/13/19	2.5L x4	P					
23	Zr	Accustandard	ICP-MS-71N-0.1X-1	21404503-02	06/2021	100mL	P	10/13/16	SKB	10/13/16	SKB	
24	Li^6	1	ICP MS-IS-L16-10X-1	216025072	02/15/204	100mL	P	10/14/16	SKB	10/14/16	SKB	
25	Hydrogen peroxide	EMD	HX0635-2	56039624	10/19/19	1L	P	10/14/16	710	10/14/16	710	

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1	HCl	EMD	HX0607-2	55320	05/26/17	2.5L 26	G	05/26/16	1030	05/26/16	1030	710 5/26/16
2	Hydroxylamine. Hydrochloride	Fisher	H330-500	149336A	06/30/21	500g x 12	P	5/26/16	868	5/31/16	868	
3	Nitric Acid	Fisher	UN2031	1216010	06/26/19	2L x 2	P	06/08/16	110			
4	$SnCl_2 \cdot 2H_2O$	Fisher	UN3260	158453	06/08/21	500g x 6	P	06/08/16	110			
5	Soda lime.	Teledyne LABS	PN#666-0015	8006-28-8	06/09/2021	20g x 1	P	06/09/16	110	06/09/16	110	
6	$H_3NO \cdot HCl$	Fisher	H330-500	156156	06/20/21	500g x 6	P	06/20/16	868	6/20/16	710	
7	Instrument Cal. Std #2	SPEX	CL-CAL-2	CL2-119MK8F	6/30/17	125 mL	P	6/20/16	592	6/20/16	592	
8	#3		CL-CAL-3	CL1-36MK8F	6/30/17							
9	Mercury		PLHG2-1Y	21-44HG F	6/30/17							
10	Lithium		PLLI2-2F	21-57LIF	6/30/17							
11	$SnCl_2$	Fisher	T142-500	138452	6/21/19	500g x 12	P	6/21/16	776	6/21/16	776	
12	Hydrogen Peroxide	EMD	HX0635-2	55314605	11/30/17	1L x 18	P	06/23/16	1030	06/23/16	1030	
13	HNO_3	EMD	HX0407-2	55323	04/13/17	2.5L x 10	G	06/23/16	1030	06/23/16	1030	
14	HCl	EMD	HX0607-2	56027	06/23/19	2.5L x 15	G	06/23/16	1030	06/23/16	1030	
15	Mercury	High-Purity	100033-2	1604607	12/20/17	100 mL	P	06/27/16	776	06/27/16	776	
16	Terbium		10M57-1	1608539	12/20/17							
17	Spike 1		SM-2011-004	1616806	06/20/17	250 mL						
18	Spike 2		SM-2011-001	1616805								
19	Buffer pH 4.0 Solution (STD)	Fisher	SB101-500	160779	01/31/18	500 mL x 2	P	06/29/16	805	06/29/16	805	EFF #3, p.28-3
20	Buffer pH 7.0 Solution (STD)	Fisher	SB107-500	162805	04/30/18	500 mL x 2	P	06/29/16	805	06/29/16	805	EFF #3, p.28-4
21	Buffer pH 10.0 Solution (STD)	Fisher	SB115-500	162803	04/30/18	500 mL x 2	P	06/29/16	805	06/29/16	805	EFF #3 p.28-5
22	Buffer pH 7.00 Solution (ICV)	Fisher	SB108-500	158639	12/31/17	500 mL x 2	P	06/29/16	805	06/29/16	805	EFF #3 p.28-6
23	Isopropyl Alcohol	Fisher	A451-4	157398	07/05/19	4L x 2	G	07/06/16	805	07/06/16	805	EFF:
24	Hydrochloric Acid	Fisher	A508-P212	4116020	03/17/19	2.5L x 2	P	07/21/16	776	07/21/16	776	
25	Acetic Acid	EMD	AX0078-6	55223	07/21/19	1L x 3	P	07/21/16	776	07/21/16	776	

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1	Calcium	Ultra	ICP-120	CP-4462	9/30/23	125-mL	P	12/20/16	SH	12/21/16	SH	
2	Barium	"	ICP-158	CM-6544	1/31/23	"	"	"	"	"	"	
3	Silicon	"	ICP-114	CP-1238	4/30/23	"	"	"	"	"	"	
4	Nitric Acid	EMD	NX0407-2	56048	12/30/16	2.5x30	G	12/30/16	710	12/30/16	710	
5	Hydrochloric Acid	EMD	HX0607-2	58208	12/30/19	2.5x20	G	12/30/16	710	12/30/16	710	
6	H_2SO_4	EMD	SX1247-2	55329	01/09/20	2.5L	G	01/09/17	996	01/09/17	996	
7	HNO_3	EMD	NX0407-2	56020	01/11/20	2.5L x 24	G	01/11/17	1058	01/11/17	1058	
8	HNO_3	EMD	NX0407-2	56018	01/11/20	2.5x2	G	01/11/17	1058	01/11/17	1058	
9	Phosphorus 10,000 mg/mL	High Purity	10M39-1	1630829	7/10/18	125ml	P	1/11/17	935	1/11/17	935	
10	PH Tape	Micro Essential	#140	216814	06/15/17	4 Rolls	P	01/16/17	1058	01/16/17	1058	
11	HNO_3	Fisher	A509-P212 ~~UN2031~~ 710 01/23/17	1116080	08/26/2018	2.5L x 18	P	01/23/17	710	01/23/17	710	
12	HCl	↓	A508-P212 ~~UN1789~~ 710 01/23/17	4116060	07/26/19	2.5L x 14	P	01/23/17	710	01/23/17	710	
13	H_2O_2	EMD	HX0638-2	56258639	~~09/30/18~~ 11/06/18	1 L x 10	P	02/06/17	710	2/06/17	710	4 710 2/6/17
14	AL Standard	Ultra	ICP-113	CP-3976	9/30/2023	125mL	P	02/06/17	1030	02/06/17	1030	
15	Boron	Ultra	ICP-105	K00924A	11/31/21	125mL	P	02/06/17	1030	02/06/17	1030	
16	Hydrogen peroxide	Fisher	H325-500	165728	2/10/2020	500ml x 2	P	2/10/17	110			
17	Nitric Acid	Fisher	A467-2	1216080	09/07/2019	2L x 2	P	2/10/17	110			Clean room for metals DPD
18	Nitric Acid	Fisher	A509-P212	1116100	11/10/2018	2.5x20	P	2/13/17	710	02/13/17	710	
19	Silver	Ultra	ICP-047	CP-4409	09/20/23	125mL	P	2/20/17	1030	02/20/17	1030	
20	Silver	Ultra	ICP-147	CP-4495	09/30/23	125ml	P					
21	Chromium		ICP-124	CP-1768	05/31/23							
22	Cobalt		ICP-127	CP-2011								
23	Nickel		ICP-128	CP-0006	02/28/23							
24	Sulfur		ICP-116	CM-5373	11/30/22							
25	Vanadium		ICP-123	CP-3591	08/31/23							

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1	Sodium	Ultra	ICP-111	CP-3978	9/30/23	125 mL	P	2/20/17	1070	2/20/17	1030	
2	Phosphorus		ICP-115	CP-4381								
3	Potasium		ICP-119	CP-0352	2/28/23							
4	Lithium		ICP-103	T30356	5/31/21							
5	Cadmium		ICP-148	CP-0166	2/28/23							
6	Molybdenum		ICP-142	CL-2860	08/31/21							
7	Bismuth		ICP-183	CP-2124	6/30/23							
8	Sulfuric Acid.	EMD	SX1247-2	~~SX1247-2~~ 65329	2/20/20	2.5L	G	2/20/17	848	2/20/17		
9	Potassium Persulfate	Acros Organics	424185000	A0371012	2/11/19	500g x12	P	2/27/17	848	2/27/17		
10	Sodium Chloride	ALPHA	10862	25752	2/17/20	25 x [illegible]	P	2/17/17	RO	2/27/17	RO	
11	HNO3	Fisher	A509-P212	1116100	11/10/18	2.5L x10	P	2/28/17	1058	2/28/17	1058	
12	HCL	Fisher	A508-P212	4116090	10/19/19	2.5L x20	P	2/28/17	1058	2/28/17	1058	
13	Instrument Calibration Standard 2	SPEX	CL-CAL2	CL1-179MKBY	2/24/18	125mL x2	P	3/10/17	[illegible]	3/10/17	[illegible]	
14	3	SPEX	CL-CAL3	CL2-117MEBY	2/24/18	125mL x4	P					
15	ICP Multielement Calibration Std-10	High Purity	ICP-MCS-10	1515415	2/21/18	250mL	P	3/22/17	935	3/22/17	935	
16	-8		ICP-MCS-8	1637121		500mL X2						
17	-1		ICP-MCS-1	1515602		500mL						
18	-7		ICP-MCS-7	1705326	2/24/18	500mL						
19	-11		ICP-~~MCS~~-AM11	1705327		125 mL						
20	Acetic Acid, Glacial	Fisher	A38C-212	LOT#166899	04/03/20	2.5L x4	G	04/04/17	805	04/04/17	805	
21	Nitric Acid	Fisher	A509-P212	1116080	08/26/2018	2.5 x1	P	04/06/17	710	04/06/17	710	
22				1116100	11/10/2018	2.5 x18	P					
23				1116080	11/30/2018	2.5 x8	P					
24	HCl	Fisher	A508-P212	4116090	11/19/2019	2.5 x20	P					
25	Sodium Borohydride	Fisher	S678-25	161168	4/10/2022	2 x 25g	P	4/10/17	110	4/10/17	110	

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1	Sodium Selenate decahydrate	Aldrich	450294-5G	MKCB4774	4/02	5g	G	4/10/17	110	4/13/17	110	
2	Ammonium Hydroxide	Fisher	A572-P500	#711090	10/16/2018	500mLx6	P	04/17/17	805	04/19/19	805	
3	Ci-6	AccuStd	ICP-MS-IS-LI6-10X-1	216115021	11/2021	100mL	P	04/20/17	53r	04/20/17	53r	
4	Sc		ICP-MS-SON-0.1X-1	216055006	05/2021	100mL	P					
5	Ga		ICP-MS-WN 0.1X-1	215110067	11/2020	100mL	P					
6	Tb		ICP-MS-15N-0.1X-1	213125126-01	02/2021	100mL	P					
7	Ho		ICP-MS-24N-0.1X-1	217045020	04/2022	100mL	P					
8	Bi		ICP-MS-08N-0.1X-1	217045044	04/2022	100mL	P					
9	Stannous Chloride Dihydrate	Fisher	T163-500	163999	04/2022	500g X6	P	04/25/17	1030	04/25/17	1030	
10	Hydro Chloric Acid	Aristar Ultra	87003-216	4216110	01/2020	500mL	P					
11	Na_2SeO_4	Alfa Aesar	11613	71408-04	04/2022	50g	G	04/25/17				
12	$SnCl_2$	Fisher.	T1-141-500	145293A	4/2020	500g*12	P	4/25/17	848	4/26/17	848	
13	~~Boiling Stones~~	Saint-Gobain	D1069103	Lot# T714-TC02	04/2022	450g X8	P	04/27/17	805	04/27/19	805	CTF: #3 P30-34 P30-35
14	XYLENE	Fisher	X5-4	168622	4/28/20	4L X4	G	4/28/17	53r	4/-/17	53r	
15	HCl.	Fisher	A508-P212	4116090	~~4/28~~ 10/9/19	2.5x 20.	P	4/28/17	710	4/28/17	710	710 4/28/19
16	HNO3	Fisher	A509-P212	111610	11/30/18	2.5 X 20	P	4/28/17	710	4/28/17	710	
17	Sodium [10,000μg/mL]	Ultra	ICP-111	CP-3978	9/30/23	1L	P	5/2/17	935	5/2/17	935	
18	Potassium [10,000μg/mL]		ICP-119	CR-0917	4/30/24	1L	P	5/2/17	935	5/2/17	935	
19	Hydrogen Peroxide	EMD	HX0635-2	56258639	09/30/18	1L	P	05/05/17	710	5/5/17	710.	
20	Sodium Chloride	Fisher.	S271-10	161535	05/15/22	10Kg	P	5/15/17	848	5/15/17	848	
21	Nitric Acid	Fisher	A509-P212	1117010	~~5/23/17~~	2.5x20	P	5/23/17	710	5/23/17	710	#710 5/23/17
22	HCl	Fisher	A508-P212	4116090	10/9/19	2.5X20	P	5/23/17	710	5/23/17	710	
23	Hydrogen peroxide	EMD	HX0635-2	56273642	10/31/18	1L X 5	P	5/26/17	710	5/26/17	710	
24	Lead II Chloride	Alfa Aesar	12345	M22B018	5/31/23	50g	P	6/3/17	53r	5/3/17	53r	
25	Buffer pH7.200 Solution (STD)	Fisher	SB56-500	171346	07/31/2019 ~~06/06/19~~ 805 06/06/19	500mLx1	P	06/06/17	805	06/06/17	805	CTF: #3. P31-33

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1	Potassium Permanganate	VWR	97065-626 ~~231-180~~	3166C309	7/15/16		P	7/18/16	868	6/13/17	868	* Purge / to log...
2	PH TAPE	Micro Essential LAB	~~216715~~ 140 1058 06/13/17	216315	06/15/18	10 rolls	P	06/07/17	1058	06/07/17	1058	
3	ADPC	Sigma	287652-1006	0CBGG4HV	6/18/22	100g	G	6/13/17	53r	6/13/17	53r	
4	H_2SO_4	Fisher	UN1830 ~~211-5080~~ 1030 06/27/17	3115080	11/25/18	2.5L	P	06/22/17	1030	06/27/17	1030	
5	Nitric Acid	Fisher	A467-2	1216120	01/04/20	2.5L x2	T	6/28/17	53r	6/28/17	53r	
6	Acetic Acid	|	A38077-6	56126	6/28/20	1L x 2	T	|	53r	|	53r	
7	100 µg/mL Hg	SPEX	PLHG2-1Y	22-93HGY	6/30/18	125mL	P	6/29/17	868	6/29/17	868	
8	HNO3	Fisher	A509-P212	1116120	12/16/2018 ~~7/14/17~~ *	2 x 2.5L	P	7/14/17	710	7/14/17	710	* 710 7/14/17
9	Nitric Acid	Fisher	A467-2	1217010	01/31/20	2L x 2	T	7/27/17	53r	7/27/17	53r	
10	Sodium Chloride	Alfa Aesar	10862	25313	7/31/22	500g	P	7/31/17	53r	7/31/17	53r	
11	Sodium Chloride	|	|	25152	|	25g	|	|	|	|	|	
12	Hydroxylamine Hydrochloride	Fisher	H330-500	163471	8/2/22 ~~11/21/17~~ 868 8/2/17	500g x 6	P	7/24/17	868	8/2/17	868	
13	|	|	|	164543	8/2/22	500g x 6	P	|	|	|		
14	Sulfuric Acid	Fisher		3116090	11/2/19	2.5L	G P	8/7/17	868	8/7/17	868	
15	Tetraethyl Lead	SPEX	SVG-CSEL-8-500	TS170731012	8/2/18	500mL	G	8/8/17	1080	8/8/17	1080	
16	Gold III Chloride	Acros	43708	A0366219	8/4/22	5g	G	8/4/17	110	8/4/17	110	
17	ICP-MS-QC2-1	AccuStandard	ICP-MS-QC2-1	215075097-02	06/30/19	100mL	P	08/11/17	53r	08/11/17	53r	
18	Beryllium ICP-MS-05N-0.01X-1	|	ICP-MS-05N-0.01X-1	217015012	01/09/22	100mL	P	|	|	|	|	
19	Manganese ICP-MS-33N-0.01X-1	|	ICP-MS-33N-0.01X-1	217035131	03/28/22	100mL	P	|	|	|	|	
20	Aluminum ICP-MS-01N-0.1X-1	|	ICP-MS-01N-0.1X-1	217045036	04/14/22	100mL	P	|	|	|	|	
21	Zinc ICP-MS-70N-0.1X-1	|	ICP-MS-70N-0.1X-1	216035086	03/23/21	100mL	P	|	|	|	|	
22	Iron ICP-MS-27N-0.1X-1	|	ICP-MS-27N-0.1X-1	216015101	02/17/21	100mL	P	|	|	|	|	
23	Chromium ICP-MS-13N-0.1X-1	|	ICP-MS-13N-0.1X-1	216055077	05/25/21	100mL	P	|	|	|	|	
24	Interferents A	SPEX	CL-INT-A1	CL3-158MKBY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	
25	Analytes B	SPEX	CL-INT-B1	CL3-14MKBY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	

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1	Tuning Solution 1	SPEX	CL-TUNE-1	CL3-79MKBY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	
2	Sodium	SPEX	PLNA2-3Y	A017-4NAY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	
3	Ultrapure Sodium Chloride	ESI	seaBlank-0500	170341	08/14/20	500mL x3	P	08/14/17	SR	08/14/17	SR	
4	Nitric Acid	Fisher	A467-2	1217010	08/16/20	2L x2	T	8/16/17	SR	8/16/17	SR	
5	Nitric Acid	Fisher	A467-2	1116120	12/16/2018	2.5L x5	P	08/23/17	1030	08/23/17	1030	
6	Nitric Acid	Fisher	A509-P212	1116111	03/15/19	2.5L x19	P	08/23/17	1030	08/23/17	1030	
7	HCL	Fisher	A508-P212	4116090	10/19/19	2.5L x20	P	08/23/17	1030	08/23/17	1030	
8	Sodium Selenate decahydrate	Aldrich	450294-5G	MKBN4778V	09/15/20	1	G	09/15/17	1030	09/15/17	1030	
9	Hydrogen Peroxide	EMD	HX0635-2	56273642	10/31/18	1L x6	P	9/15/17	1080	09/15/17	1080	
10	Nitric Acid	Fisher	A467-2	1217020	02/22/20	2L x4	T	09/18/17	SR	09/18/17	SR	
11	Ultrapure Sodium Chloride	ESI	seaBlank-0500	170610	09/20/20	500mL x2	P	9/20/17	SR	9/20/17	SR	
12	Hydrogen Peroxide	EMD	HX0635-2	56321712	11/30/18	1L x14	P	9/27/17	1080	9/27/17	1080	
13	Puradisc 25mm 1.0µM	Whatman	678-0-2510	9818517	02/2022	2 Box x50	P	09/22/17	1058	09/27/17	1058	
14	Xylenes	Fisher	XS-4	173323	9/29/20	4L x4	G	9/29/17	1080	9/29/17	1080	
15	Ultra Pure Sodium Chloride	ESI	seaBlank-0500	170603	10/02/20	500 x3	P	10/2/17	SR	10/2/17	SR	
16	PTFE BOILING STONES-450GRAM	chemware	D1069103	22569054	~~10/06/17~~ NA	(450gm) 16OZ x2	P	10/06/17	710	10/06/17	710	710 10/6/17
17	Nitric Acid	Fisher	A509-P212	1117040	04/05/2019	2.5L x18	P	10/06/17	710	10/06/17	710	
18	Sodium borohydride	ACROS ORGANICS	200050250	AC353486	10/06/22	25g x4	G	10/09/17	SR	10/09/17	SR	
19	Iron Standard	ULTRA	ICP-126-L	CR-3137	08/31/24	1L	P	10/10/17	776	10/10/17	776	
20	Soda Lime	Teledyne Leeman Labs	606-00015	E006-28-8	N/A	200g x2	P	10/18/17	1080	10/18/17	1080	
21	Sulfuric Acid	Omni Trace	SX1247-2	56175	10/25/18	2.5L	G	10/15/17	846	10/15/17	846	
22	ICP Analytical Mixture 11	High Purity	ICP-AM-11	1705327	10/18	125mL	P	10/30/17	935	10/30/17	935	
23	ICP Multi-element Cal. Standard 8	↓	ICP-MCS-8	1635121	↓	500mL x2	↓	↓	↓	↓	↓	
24	Potassium (10,000 µg/mL)	↓	10M41-1	1723447	4/19	125mL	↓	↓	↓	↓	↓	
25	APDC	SIGMA	P8765-100G	BCBR189V	10/31/22	100g	G	10/31/17	776	10/31/17	776	

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LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	HCl	Fisher	A508-P212	4117010	03/02/20	2.5x20	P	11-09-17	710	11-09-17	710	
2	(HNO3) Nitric Acid	↓	A509-P212	1117042	05/05/19	2.5x12	P	↓	↓	↓	↓	
3	Buffer pH 4.0 Solution (I.C.V)	VWR	E452-500mL	1257C3/2	11/15/18	500ml x 1	P	11/16/17	805	11/16/17	805	For: pH #5 REF: pH #C Logbook p.97
4	M.I.B.K	Fisher	M213-4	171549	11/21/20	4L x 4	G	11/20/17	935	11/21/17	935	
5	P Hydroxylamine Hydrochloride	Fisher	H330-500	172066	12/1/22	500g x 12	P		848	12/1/17	848	
6	Zirconium	BICCA	MSZR1KN	4711426	4/2019	100mL	P	12/06/17	Rr	12/06/17	Rr	
7	Buffer pH 4.0 Solution (Standard)	Fisher	SB101-500	173485	04/30/19	500ml x 2	P	12/12/17	805	12/12/17	805	REF: pH Log book #10 p.60
8	Buffer pH 7.0 Solution (I.C.V)	Fisher	SB108-500	170679	01/31/19	500ml x 2	P	12/12/17	805	12/12/17	805	REF: pH Log book # p.60
9	Nitric Acid	Fisher	A509-P212	1117060	06/15/19	2.5x20	P	11/17/17	710	11/17/17	710	
10	Interferents A	SPEX	CL-INT-A1	CL3-157MLBY	12/30/18	125mL	P	12/13/17	Str	12/13/17	Str	
11	Terbium 10,000 µg/mL	High Purity	10M57-1	1716539	6/2019	125ml	P	12/19/17	935	12/19/17	935	
12	0.45 PVDF Filters (For STLC)	MILLEX	SLHV033NK	R7CA90140	01/08/21	NA	P	01/09/18	805	01/09/18	805	REF: CTF:3. P.31-18
13	EPA Method 200.7 Int. Check STD #1	Ultra	ICM-221	R01207A	3/31/21	50ml	P	1/10/17	935	1/10/18	935	
14	EPA Method 6010A Mixed STD. Sol. V	↓	ICM-605	CR-3299	8/31/20	125ml	↓	1/10/17	935	1/10/18	935	
15	Hg Mercury 1000µg/mL 2% HCl	High purity standards	100033-2	1723615	7/1/19	250mL	P	1/11/17	1080	1/11/17	1080	
16	Calcium	Ultra	ICP-120-L	CR-3808	9/30/24	1L	P	1/11/18	Str	1/15/18	Str	
17	Magnesium	|	ICP-112-L	CP-0678	9/30/23	1L	P	|	|	|	|	
18	Lead (II) Chloride	ALDRICH	203572-10G	MKCC3373	1/22/2023	10g	P	1/22/18	710	—		
19	Sodium hydroxide monohydrate	Alfa Aesar	41290	61701011	1/22/23	25g	P	1/22/18	Str	1/22/18	Str	
20	Sulfuric Acid	Fisher	A576-P212	3116493	5/4/20	7.5L	P	1/31/18	848	1/31/18	848	
21	Instrument Calibration Standard 2	SPEX	CL-CAL-2	CL4-81MLBY	01/30/19	125mL	P	1/31/18	Rr	1/31/18	Rr	
22	Instrument Calibration Standard 3	|	CL-CAL-3	CL4-01MLBY	01/30/19	125mL x 4	|	|	|	|	|	
23	Glass Microfiber TCLP filter	Whatman	1810-090	9691301	NA	4	NA	04/25/17	805	04/25/17	805	REF: CTF:3 P.30-17
24	Hydrogen Peroxide (H_2O_2)	EMD	~~HX~~ HX0635-2 (2-2-18 710)	56273642	10/31/18	12x10	P	02/02/18	710	02/02/18	710	
25	HNO3	Fisher	A509-P212	1117062	07/12/19	2.5x15	P	02/02/18	710	02/02/18	710	

COMMENTS: ___

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EPA 245.1 Mercury

Filtered

RAW DATA

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EPA 245.1 Mercury

Filtered

Initial Calibration
ICV/ICB
CCV/CCB

Sample Data

Quality Control
Method Blank
LCS/LCSD
MS/MSD

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eurofins | Calscience

EPA Method 245.1
Initial Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

Analyte	Initial Calibration Verification			
	True	ICV-1 Observed	ICV-1 %REC	Control Limit
Mercury	5.000000	4.729983	95	95 - 105

2018-03-30 12:31

ICV-1 File: ICV MS030518B 03/28/2018 01:10:03 PM

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EPA Method 245.1
Continuing Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Continuing Calibration Verification							
		CCV-1		CCV-2		CCV-3		Control
Analyte	True	Observed	%REC	Observed	%REC	Observed	%REC	Limit
Mercury	2.000000	1.955477	98	1.947275	97	1.947802	97	90 - 110

2018-03-29 18:56

CCV-1 File: CCV 0.2x10ppb 03/28/2018 03:39:27 PM
CCV-2 File: CCV 0.2x10ppb 03/28/2018 04:06:43 PM
CCV-3 File: CCV 0.2x10ppb 03/28/2018 04:34:00 PM

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eurofins | Calscience

EPA Method 245.1
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Initial and Continuing Calibration Blanks				
Analyte	ICB-1	CCB-1	CCB-2	CCB-3	RL (No PF)
Mercury	-0.029817	-0.023231	-0.029936	-0.030014	0.100000

2018-03-29 18:56

ICB-1 File: ICB 03/28/2018 01:12:18 PM
CCB-1 File: CCB 03/28/2018 03:41:43 PM
CCB-2 File: CCB 03/28/2018 04:08:59 PM
CCB-3 File: CCB 03/28/2018 04:36:16 PM
Note: Preparation Factor (PF) = 2 L/L

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EPA Method 245.1
Initial Calibration Verification

Work Order No.: 18-03-1798

Instrument ID: HG 7 (G)

Concentration Unit: µg/L

Test Method: EPA 245.1

Analyte	Initial Calibration Verification			
		ICV-1		Control
	True	Observed	%REC	Limit
Mercury	5.000000	4.939883	99	95 - 105

2018-03-29 19:12

ICV-1 File: ICV MS030518B 03/29/2018 11:22:35 AM

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EPA Method 245.1
Continuing Calibration Verification

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Continuing Calibration Verification							
		CCV-1		CCV-2		CCV-3		Control
Analyte	True	Observed	%REC	Observed	%REC	Observed	%REC	Limit
Mercury	2.000000	1.953618	98	1.964682	98	1.963955	98	90 - 110

2018-03-29 19:13

CCV-1 File: CCV 0.2x10ppb 03/29/2018 01:40:51 PM
CCV-2 File: CCV 0.2x10ppb 03/29/2018 02:45:02 PM
CCV-3 File: CCV 0.2x10ppb 03/29/2018 03:05:44 PM

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EPA Method 245.1
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1798
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Initial and Continuing Calibration Blanks				
Analyte	ICB-1	CCB-1	CCB-2	CCB-3	RL (No PF)
Mercury	-0.035211	-0.024860	-0.015131	-0.016736	0.100000

2018-03-29 19:14

ICB-1 File: ICB 03/29/2018 11:24:50 AM
CCB-1 File: CCB 03/29/2018 01:43:06 PM
CCB-2 File: CCB 03/29/2018 02:47:18 PM
CCB-3 File: CCB 03/29/2018 03:08:00 PM
Note: Preparation Factor (PF) = 2 L/L

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:42
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 19:10

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-1.icp

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0009S006**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000329	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:54
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-2.icp

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0011S008**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	0.0000133	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:56
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-3.icp

 # 3 **CLIENT SAMPLE NUMBER: CABMP0001S001**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000261	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 14:58
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-4.icp

 # 4 **CLIENT SAMPLE NUMBER: CABMP0002S001**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000299	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 15:01
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-5.icp

 # 5 **CLIENT SAMPLE NUMBER: CABMP0003S001**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000323	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1798**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-29 15:03
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	

DATA FILE: W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-6.icp

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0003S022**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2A	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000325	1.00	ND	0.000200	

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METHOD BLANK ASSOCIATION SUMMARY
FOR METHOD: EPA 245.1

MB SAMPLE ID:	**099-16-520-20**	ANALYZED BY:	868
MB BATCH ID:	180328LA2F	D/T ANALYZED:	2018-03-28 16:15
INSTRUMENT:	Mercury 07	REVIEWED BY:	309
EXTRACTION:	EPA 245.1 Filt.	D/T REVIEWED:	2018-03-29 14:27
D/T EXTRACTED:	2018-03-28 00:00	MATRIX:	Water

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-B-A2.icp

CLIENT WORK ORDER: 18-03-1798

S#	RUN TYPE	CLIENT SAMPLE ID	D/T ANALYZED	DATA FILE
1		A2BMP0009S006	2018-03-29 14:42	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-1.icp
2		A2BMP0011S008	2018-03-29 14:54	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-2.icp
3		CABMP0001S001	2018-03-29 14:56	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-3.icp
4		CABMP0002S001	2018-03-29 14:58	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-4.icp
5		CABMP0003S001	2018-03-29 15:01	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-5.icp
6		EVBMP0003S022	2018-03-29 15:03	W:\MERCURY_DATA\FINAL\180329G1\18-03-1798-F-6.icp

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**099-16-520**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:15
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:27

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-B-A2.icp

 # MB **CLIENT SAMPLE NUMBER: Method Blank**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000368	1.00	ND	0.000200	

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LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 245.1

LCS SAMPLE ID:	**099-16-520- 20**	EXTRACTION :	EPA 245.1 Filt.	ANALYZED BY:	868
LCS/MB BATCH ID:	180328LA2F	D/T EXTRACTED:	2018-03-28 00:00	D/T ANALYZED:	2018-03-28 16:18
INSTRUMENT:	Mercury 07			REVIEWED BY:	309
				D/T REVIEWED:	2018-03-29 14:27

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-L-A2.icp

COMPOUND NAME	CONC ADDED	CONC REC	%RECOVERY	%REC CONTROL LIMIT	STATUS	QUALIFIERS
Mercury	0.01000	0.009503	95	80-120	PASS	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 245.1

SPIKED SAMPLE ID: **18-03-1798-1**
MS/MSD BATCH: 180328SA2A
INSTRUMENTS:
SAMPLE: Mercury 07
MS: Mercury 07
MSD: Mercury 07

EXTRACTION: EPA 245.1 Filt.
D/T EXTRACTED:
SAMPLE: 2018-03-28 00:00
MS: 2018-03-28 00:00
MSD: 2018-03-28 00:00

ANALYZED BY: 868
D/T ANALYZED:
SAMPLE: 2018-03-29 14:42
MS: 2018-03-29 14:49
MSD: 2018-03-29 14:51
REVIEWED BY: 309
D/T REVIEWED: 2018-03-29 19:10

COMMENT:

COMPOUND NAME	SAMPLE	INITIAL	FINAL	MS CONC	% MS.REC	MSD CONC	% MSD.REC	% REC CL	RPD	RPD CL	STATUS	QUALIFIERS
Mercury	ND	0.005000	0.01000	0.009810	98	0.009465	95	75-125	4	0-20	PASS	

Data Files:

TYPE	DATA FILE	DATA FILE PATH
MS	18-03-1798-F-1 MS.icp	W:\MERCURY_DATA\FINAL\180329G1\
MSD	18-03-1798-F-1 MSD.icp	W:\MERCURY_DATA\FINAL\180329G1\

Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 1
Sample ID: Calib blank_868 Date Collected: 3/28/2018 11:53:35 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: Calib blank_868 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0001	0.0014	0.0001	11:54:39 AM	Yes
2		[0.00]	0.0001	0.0009	0.0001	11:55:24 AM	Yes
Mean:		[0.00]	0.0001				
SD:		0.0000	0.0000				
%RSD:		0.00%	9.98				

Auto-zero performed.

Sequence No.: 2 Autosampler Location: 2
Sample ID: 0.025ppb 0.005x5ppb Date Collected: 3/28/2018 11:55:49 AM
Analyst: 861 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 0.025ppb 0.005x5ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.025]	0.0002	0.0018	0.0003	11:56:52 AM	Yes
2		[0.025]	0.0001	0.0014	0.0003	11:57:37 AM	Yes
Mean:		[0.025]	0.0002				
SD:		0.00000	0.0000				
%RSD:		0.00%	17.32				

Standard number 1 applied. [0.025]
Correlation Coef.: 1.000000 Slope: 0.00620 Intercept: 0.00000

Sequence No.: 3 Autosampler Location: 3
Sample ID: 0.10ppb MS030518AAX0.0001 Date Collected: 3/28/2018 11:58:02 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 0.10ppb MS030518AAX0.0001 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.100]	0.0006	0.0030	0.0008	11:59:06 AM	Yes
2		[0.100]	0.0007	0.0029	0.0008	11:59:51 AM	Yes
Mean:		[0.100]	0.0007				
SD:		0.00000	0.0000				
%RSD:		0.00%	5.08				

Standard number 2 applied. [0.100]
Correlation Coef.: 0.999857 Slope: 0.00666 Intercept: -0.00000

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Sequence No.: 4 Autosampler Location: 4
Sample ID: 1.00ppb MS030518AAX0.0001 Date Collected: 3/28/2018 12:00:17 PM
Analyst: 368 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 1.00ppb MS030518AAX0.0001 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.000]	0.0078	0.0295	0.0079	12:01:22 PM	Yes
2		[1.000]	0.0078	0.0293	0.0079	12:02:07 PM	Yes
Mean:		[1.000]	0.0078				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.21				

Standard number 3 applied. [1.000]
Correlation Coef.: 0.999913 Slope: 0.00782 Intercept: -0.00005

Sequence No.: 5 Autosampler Location: 5
Sample ID: 2.00ppb MS030518AAX0.002 Date Collected: 3/28/2018 12:02:33 PM
Analyst: 368 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 2.00ppb MS030518AAX0.002 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.000]	0.0154	0.0583	0.0156	12:03:37 PM	Yes
2		[2.000]	0.0154	0.0584	0.0155	12:04:22 PM	Yes
Mean:		[2.000]	0.0154				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.23				

Standard number 4 applied. [2.000]
Correlation Coef.: 0.999964 Slope: 0.00774 Intercept: -0.00004

Sequence No.: 6 Autosampler Location: 6
Sample ID: 5.00ppb MS030518AAX0.005 Date Collected: 3/28/2018 12:04:49 PM
Analyst: 368 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 5.00ppb MS030518AAX0.005 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[5.000]	0.0380	0.1428	0.0382	12:05:52 PM	Yes
2		[5.000]	0.0381	0.1437	0.0382	12:06:37 PM	Yes
Mean:		[5.000]	0.0381				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.12				

Standard number 5 applied. [5.000]
Correlation Coef.: 0.999974 Slope: 0.00763 Intercept: 0.00002

Sequence No.: 7 Autosampler Location: 7
Sample ID: 10.0ppb MS030518AAX0.01 Date Collected: 3/28/2018 12:07:02 PM
Analyst: 368 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 10.0ppb MS030518AAX0.01 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

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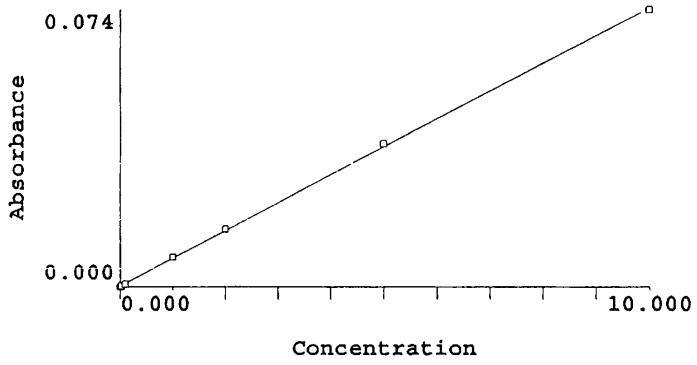
1	[10.00]	0.0741	0.2805	0.0742	12:08:06 PM	Yes
2	[10.00]	0.0741	0.2808	0.0743	12:08:50 PM	Yes
Mean:	[10.00]	0.0741				
SD:	0.0000	0.0000				
%RSD:	0.00%	0.04				

Standard number 6 applied. [10.00]
Correlation Coef.: 0.999893 Slope: 0.00743 Intercept: 0.00021



Calibration data for Hg 253.7 **Equation: Linear, Calculated Intercept**

ID	Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD
Calib blank_868	0.0000	0	-0.027920	0.00	9.98
0.025ppb 0.005x5ppb	0.0002	0.025	-0.007066	0.00	17.32
0.10ppb MS030518AAX0.0001	0.0007	0.100	0.061175	0.00	5.08
1.00ppb MS030518AAX0.0001	0.0078	1.000	1.017491	0.00	0.21
2.00ppb MS030518AAX0.002	0.0154	2.000	2.044385	0.00	0.23
5.00ppb MS030518AAX0.005	0.0381	5.000	5.094186	0.00	0.12
10.0ppb MS030518AAX0.01	0.0741	10.00	9.942749	0.00	0.04

Correlation Coef.: 0.999893 Slope: 0.00743 Intercept: 0.00021

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 8
Sample ID: ICV MS030518B Date Collected: 3/28/2018 1:08:13 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: ICV MS030518B Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00476	4.76	0.0356	0.1413	0.0357	1:09:18 PM	Yes
2	0.00470	4.70	0.0351	0.1383	0.0353	1:10:03 PM	Yes
Mean:	0.00473	4.73	0.0354				
SD:	0.000047	0.047	0.0004				
%RSD:	1.00%	1.00%	1.00				

QC value within limits for Hg 253.7 Recovery = 94.60%
All analyte(s) passed QC.

Sequence No.: 2 Autosampler Location: 1
Sample ID: ICB Date Collected: 3/28/2018 1:10:29 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: ICB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000029	-0.0286	-0.0000	0.0004	0.0001	1:11:33 PM	Yes
2	-0.000031	-0.0311	-0.0000	0.0004	0.0001	1:12:18 PM	Yes
Mean:	-0.000030	-0.0298	-0.0000				
SD:	0.0000018	0.00176	0.0000				
%RSD:	5.89%	5.89%	92.66				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 3 Autosampler Location: 9
Sample ID: CRQL 0.25 Date Collected: 3/28/2018 1:12:43 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: CRQL 0.25 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.000461	0.230	0.0019	0.0079	0.0020	1:13:48 PM	Yes
2	0.000475	0.237	0.0020	0.0080	0.0021	1:14:33 PM	Yes
Mean:	0.000468	0.234	0.0019				
SD:	0.0000099	0.0049	0.0000				
%RSD:	2.11%	2.11%	1.89				

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 3:37:36 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00195	1.95	0.0147	0.0602	0.0149	3:38:41 PM	Yes
2	0.00196	1.96	0.0148	0.0603	0.0149	3:39:27 PM	Yes
Mean:	0.00196	1.96	0.0147				
SD:	0.000004	0.004	0.0000				
%RSD:	0.19%	0.19%	0.18				

QC value within limits for Hg 253.7 Recovery = 97.77%
All analyte(s) passed QC.

Sequence No.: 2 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 3:39:54 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000022	-0.0217	0.0000	0.0017	0.0002	3:40:57 PM	Yes
2	-0.000025	-0.0247	0.0000	0.0014	0.0002	3:41:43 PM	Yes
Mean:	-0.000023	-0.0232	0.0000				
SD:	0.0000021	0.00214	0.0000				
%RSD:	9.20%	9.20%	45.57				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 3 Autosampler Location: 45
Sample ID: 180327-B-A1 Date Collected: 3/28/2018 3:42:08 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 180327-B-A1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000055	-0.0273	0.0000	0.0012	0.0001	3:43:12 PM	Yes
2	-0.000058	-0.0290	-0.0000	0.0008	0.0001	3:43:58 PM	Yes
Mean:	-0.000056	-0.0281	-0.0000				
SD:	0.0000024	0.00119	0.0000				
%RSD:	4.21%	4.21%	574.11				

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Sequence No.: 4
Sample ID: 180328-L-A1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 46
Date Collected: 3/28/2018 3:44:24 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 180328-L-A1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00946	4.73	0.0354	0.1397	0.0355	3:45:29 PM	Yes
2	0.00947	4.73	0.0354	0.1399	0.0355	3:46:14 PM	Yes
Mean:	0.00946	4.73	0.0354				
SD:	0.000007	0.003	0.0000				
%RSD:	0.07%	0.07%	0.07				

Sequence No.: 5
Sample ID: 18-03-1974-X5
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

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Autosampler Location: 47
Date Collected: 3/28/2018 3:46:40 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-X5 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000046	-0.0229	0.0000	0.0009	0.0002	3:47:45 PM	Yes
2	-0.000045	-0.0227	0.0000	0.0012	0.0002	3:48:30 PM	Yes
Mean:	-0.000046	-0.0228	0.0000				
SD:	0.0000003	0.00017	0.0000				
%RSD:	0.73%	0.73%	3.27				

Sequence No.: 6
Sample ID: 18-03-1974-5 MS
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 48
Date Collected: 3/28/2018 3:48:57 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-5 MS Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00869	4.34	0.0325	0.1297	0.0326	3:50:02 PM	Yes
2	0.00863	4.31	0.0323	0.1291	0.0324	3:50:47 PM	Yes
Mean:	0.00866	4.33	0.0324				
SD:	0.000043	0.021	0.0002				
%RSD:	0.49%	0.49%	0.49				

Sequence No.: 7
Sample ID: 18-03-1974-5 MSD
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 49
Date Collected: 3/28/2018 3:51:14 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-5 MSD Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00910	4.55	0.0340	0.1371	0.0342	3:52:19 PM	Yes
2	0.00903	4.51	0.0338	0.1364	0.0339	3:53:04 PM	Yes
Mean:	0.00907	4.53	0.0339				
SD:	0.000053	0.026	0.0002				
%RSD:	0.58%	0.58%	0.58				

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Sequence No.: 8 Autosampler Location: 50
Sample ID: 18-03-1974-1 Date Collected: 3/28/2018 3:53:32 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000049	-0.0245	0.0000	0.0005	0.0002	3:54:36 PM	Yes
2	-0.000041	-0.0207	0.0001	0.0008	0.0002	3:55:21 PM	Yes
Mean:	-0.000045	-0.0226	0.0000				
SD:	0.0000054	0.00269	0.0000				
%RSD:	11.88%	11.88%	50.89				

Sequence No.: 9 Autosampler Location: 51
Sample ID: 18-03-1974-2 Date Collected: 3/28/2018 3:55:48 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000067	-0.0335	-0.0000	0.0002	0.0001	3:56:52 PM	Yes
2	-0.000065	-0.0325	-0.0000	0.0002	0.0001	3:57:38 PM	Yes
Mean:	-0.000066	-0.0330	-0.0000				
SD:	0.0000015	0.00073	0.0000				
%RSD:	2.22%	2.22%	14.40				

Sequence No.: 10 Autosampler Location: 52
Sample ID: 18-03-1974-3 Date Collected: 3/28/2018 3:58:04 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000030	-0.0148	0.0001	0.0004	0.0002	3:59:08 PM	Yes
2	-0.000027	-0.0136	0.0001	0.0010	0.0002	3:59:54 PM	Yes
Mean:	-0.000028	-0.0142	0.0001				
SD:	0.0000017	0.00086	0.0000				
%RSD:	6.01%	6.01%	6.26				

Sequence No.: 11 Autosampler Location: 53
Sample ID: 18-03-1974-4 Date Collected: 3/28/2018 4:00:20 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000068	-0.0340	-0.0000	-0.0001	0.0001	4:01:25 PM	Yes
2	-0.000071	-0.0357	-0.0001	-0.0001	0.0001	4:02:10 PM	Yes
Mean:	-0.000070	-0.0349	-0.0001				
SD:	0.0000025	0.00124	0.0000				
%RSD:	3.54%	3.54%	17.77				

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Sequence No.: 12 Autosampler Location: 54
Sample ID: 18-03-1974-6 Date Collected: 3/28/2018 4:02:36 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000061	-0.0304	-0.0000	0.0003	0.0001	4:03:41 PM	Yes
2	-0.000066	-0.0330	-0.0000	0.0000	0.0001	4:04:26 PM	Yes
Mean:	-0.000063	-0.0317	-0.0000				
SD:	0.0000036	0.00180	0.0000				
%RSD:	5.69%	5.69%	47.60				

==========

Sequence No.: 13 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 4:04:53 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00197	1.97	0.0149	0.0577	0.0150	4:05:58 PM	Yes
2	0.00192	1.92	0.0145	0.0572	0.0146	4:06:43 PM	Yes
Mean:	0.00195	1.95	0.0147				
SD:	0.000033	0.033	0.0002				
%RSD:	1.69%	1.69%	1.66				

QC value within limits for Hg 253.7 Recovery = 97.36%
All analyte(s) passed QC.

==========

Sequence No.: 14 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 4:07:10 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000029	-0.0291	-0.0000	0.0004	0.0001	4:08:14 PM	Yes
2	-0.000031	-0.0308	-0.0000	0.0001	0.0001	4:08:59 PM	Yes
Mean:	-0.000030	-0.0299	-0.0000				
SD:	0.0000012	0.00117	0.0000				
%RSD:	3.90%	3.90%	57.99				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

==========

Sequence No.: 15 Autosampler Location: 55
Sample ID: 18-03-1974-7 Date Collected: 3/28/2018 4:09:24 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-7 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000080	-0.0401	-0.0001	-0.0002	0.0000	4:10:29 PM	Yes
2	-0.000084	-0.0418	-0.0001	-0.0003	0.0000	4:11:14 PM	Yes
Mean:	-0.000082	-0.0409	-0.0001				

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SD:	0.0000025	0.00126	0.0000
%RSD:	3.08%	3.08%	9.67

Sequence No.: 16
Sample ID: 18-03-1968-4
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 56
Date Collected: 3/28/2018 4:11:40 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1968-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000047	-0.0236	0.0000	-0.0001	0.0002	4:12:45 PM	Yes
2	-0.000039	-0.0197	0.0001	-0.0000	0.0002	4:13:30 PM	Yes
Mean:	-0.000043	-0.0216	0.0000				
SD:	0.0000056	0.00279	0.0000				
%RSD:	12.87%	12.87%	44.42				

Sequence No.: 17
Sample ID: 18032%-B-A2
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 57
Date Collected: 3/28/2018 4:13:56 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18032%-B-A2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000072	-0.0359	-0.0001	-0.0002	0.0001	4:15:01 PM	Yes
2	-0.000076	-0.0378	-0.0001	-0.0004	0.0001	4:15:46 PM	Yes
Mean:	-0.000074	-0.0368	-0.0001				
SD:	0.0000026	0.00130	0.0000				
%RSD:	3.54%	3.54%	14.61				

Sequence No.: 18
Sample ID: 18032%-L-A2
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 58
Date Collected: 3/28/2018 4:16:12 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18032%-L-A2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00957	4.78	0.0358	0.1404	0.0359	4:17:17 PM	Yes
2	0.00944	4.72	0.0353	0.1390	0.0354	4:18:02 PM	Yes
Mean:	0.00950	4.75	0.0355				
SD:	0.000093	0.046	0.0003				
%RSD:	0.98%	0.98%	0.97				

Sequence No.: 19
Sample ID: 18-03-1723-F-1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 59
Date Collected: 3/28/2018 4:18:29 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000065	-0.0323	-0.0000	-0.0001	0.0001	4:19:33 PM	Yes
2	-0.000063	-0.0317	-0.0000	-0.0001	0.0001	4:20:18 PM	Yes
Mean:	-0.000064	-0.0320	-0.0000				

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SD:	0.0000009	0.00043	0.0000
%RSD:	1.33%	1.33%	10.36

Sequence No.: 20 Autosampler Location: 60
Sample ID: 18-03-1723-F-1 MS Date Collected: 3/28/2018 4:20:45 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 MS Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00914	4.57	0.0342	0.1377	0.0343	4:21:50 PM	Yes
2	0.00920	4.60	0.0344	0.1378	0.0345	4:22:35 PM	Yes
Mean:	0.00917	4.58	0.0343				
SD:	0.000042	0.021	0.0002				
%RSD:	0.46%	0.46%	0.46				

Sequence No.: 21 Autosampler Location: 61
Sample ID: 18-03-1723-F-1 MSD Date Collected: 3/28/2018 4:23:02 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 MSD Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00915	4.57	0.0342	0.1358	0.0343	4:24:07 PM	Yes
2	0.00907	4.54	0.0339	0.1353	0.0341	4:24:53 PM	Yes
Mean:	0.00911	4.55	0.0341				
SD:	0.000053	0.026	0.0002				
%RSD:	0.58%	0.58%	0.58				

Sequence No.: 22 Autosampler Location: 62
Sample ID: 18-03-1723-F-2 Date Collected: 3/28/2018 4:25:20 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000067	-0.0335	-0.0000	-0.0005	0.0001	4:26:25 PM	Yes
2	-0.000066	-0.0332	-0.0000	-0.0001	0.0001	4:27:10 PM	Yes
Mean:	-0.000067	-0.0333	-0.0000				
SD:	0.0000004	0.00020	0.0000				
%RSD:	0.59%	0.59%	3.60				

Sequence No.: 23 Autosampler Location: 63
Sample ID: 18-03-1974-F-1 Date Collected: 3/28/2018 4:27:36 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000074	-0.0368	-0.0001	-0.0005	0.0001	4:28:41 PM	Yes
2	-0.000066	-0.0331	-0.0000	-0.0002	0.0001	4:29:26 PM	Yes
Mean:	-0.000070	-0.0350	-0.0001				

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SD:	0.0000052	0.00261	0.0000
%RSD:	7.48%	7.48%	37.12

Sequence No.: 24 Autosampler Location: 64
Sample ID: 18-03-1974-F-2 Date Collected: 3/28/2018 4:29:53 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000077	-0.0386	-0.0001	-0.0005	0.0000	4:30:58 PM	Yes
2	-0.000070	-0.0351	-0.0001	-0.0000	0.0001	4:31:43 PM	Yes
Mean:	-0.000074	-0.0368	-0.0001				
SD:	0.0000049	0.00247	0.0000				
%RSD:	6.70%	6.70%	27.73				

Sequence No.: 25 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 4:32:09 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00196	1.96	0.0148	0.0567	0.0149	4:33:14 PM	Yes
2	0.00194	1.94	0.0146	0.0569	0.0147	4:34:00 PM	Yes
Mean:	0.00195	1.95	0.0147				
SD:	0.000016	0.016	0.0001				
%RSD:	0.83%	0.83%	0.82				

QC value within limits for Hg 253.7 Recovery = 97.39%
All analyte(s) passed QC.

Sequence No.: 26 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 4:34:27 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000032	-0.0323	-0.0000	0.0000	0.0001	4:35:30 PM	Yes
2	-0.000028	-0.0277	0.0000	0.0001	0.0001	4:36:16 PM	Yes
Mean:	-0.000030	-0.0300	-0.0000				
SD:	0.0000033	0.00329	0.0000				
%RSD:	10.97%	10.97%	157.20				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 27 Autosampler Location: 65
Sample ID: 18-03-1974-F-3 Date Collected: 3/28/2018 4:36:41 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-3 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000050	-0.0251	0.0000	-0.0002	0.0001	4:37:46 PM	Yes
2	-0.000046	-0.0228	0.0000	0.0003	0.0002	4:38:31 PM	Yes
Mean:	-0.000048	-0.0239	0.0000				
SD:	0.0000032	0.00160	0.0000				
%RSD:	6.69%	6.69%	40.04				

Sequence No.: 28 Autosampler Location: 66
Sample ID: 18-03-1974-F-4 Date Collected: 3/28/2018 4:38:58 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000077	-0.0384	-0.0001	-0.0002	0.0000	4:40:02 PM	Yes
2	-0.000072	-0.0361	-0.0001	-0.0001	0.0001	4:40:48 PM	Yes
Mean:	-0.000075	-0.0373	-0.0001				
SD:	0.0000033	0.00167	0.0000				
%RSD:	4.48%	4.48%	17.88				

Sequence No.: 29 Autosampler Location: 67
Sample ID: 18-03-1974-F-5 Date Collected: 3/28/2018 4:41:14 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-5 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000073	-0.0367	-0.0001	-0.0004	0.0001	4:42:19 PM	Yes
2	-0.000070	-0.0349	-0.0001	-0.0003	0.0001	4:43:04 PM	Yes
Mean:	-0.000072	-0.0358	-0.0001				
SD:	0.0000026	0.00132	0.0000				
%RSD:	3.70%	3.70%	16.83				

Sequence No.: 30 Autosampler Location: 68
Sample ID: 18-03-1974-F-6 Date Collected: 3/28/2018 4:43:31 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000071	-0.0357	-0.0001	-0.0003	0.0001	4:44:35 PM	Yes
2	-0.000072	-0.0359	-0.0001	-0.0002	0.0001	4:45:20 PM	Yes
Mean:	-0.000072	-0.0358	-0.0001				
SD:	0.0000003	0.00017	0.0000				
%RSD:	0.48%	0.48%	2.19				

Sequence No.: 31 Autosampler Location: 69
Sample ID: 180327-B-A3 Date Collected: 3/28/2018 4:45:47 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 180327-B-A3 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000073	-0.0363	-0.0001	-0.0002	0.0001	4:46:52 PM	Yes
2	-0.000070	-0.0350	-0.0001	-0.0001	0.0001	4:47:37 PM	Yes
Mean:	-0.000071	-0.0356	-0.0001				
SD:	0.0000018	0.00089	0.0000				
%RSD:	2.49%	2.49%	11.53				

Sequence No.: 32 Autosampler Location: 70
Sample ID: 18032%-L-A3 Date Collected: 3/28/2018 4:48:04 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18032%-L-A3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00919	4.59	0.0344	0.1410	0.0345	4:49:08 PM	Yes
2	0.00924	4.62	0.0346	0.1410	0.0347	4:49:54 PM	Yes
Mean:	0.00921	4.61	0.0345				
SD:	0.000039	0.020	0.0001				
%RSD:	0.42%	0.42%	0.42				

Sequence No.: 33 Autosampler Location: 71
Sample ID: 180327-L-A3D Date Collected: 3/28/2018 4:50:20 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18032%-L-A3D Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00927	4.63	0.0346	0.1406	0.0348	4:51:25 PM	Yes
2	0.00929	4.64	0.0347	0.1413	0.0349	4:52:10 PM	Yes
Mean:	0.00928	4.64	0.0347				
SD:	0.000016	0.008	0.0001				
%RSD:	0.17%	0.17%	0.17				

Sequence No.: 34 Autosampler Location: 72
Sample ID: 18-03-1957-F-6 Date Collected: 3/28/2018 4:52:37 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1957-F-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000049	-0.0247	0.0000	0.0002	0.0002	4:53:42 PM	Yes
2	-0.000047	-0.0234	0.0000	0.0002	0.0002	4:54:27 PM	Yes
Mean:	-0.000048	-0.0241	0.0000				
SD:	0.0000019	0.00093	0.0000				
%RSD:	3.87%	3.87%	24.11				

Sequence No.: 35 Autosampler Location: 73
Sample ID: 18-03-1676-1 Date Collected: 3/28/2018 4:54:54 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1676-1 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000088	-0.0439	-0.0001	-0.0006	0.0000	4:56:00 PM	Yes
2	-0.000082	-0.0412	-0.0001	-0.0008	0.0000	4:56:45 PM	Yes
Mean:	-0.000085	-0.0426	-0.0001				
SD:	0.0000038	0.00190	0.0000				
%RSD:	4.47%	4.47%	12.98				

==========

Sequence No.: 36 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 4:57:12 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00189	1.89	0.0143	0.0564	0.0144	4:58:17 PM	Yes
2	0.00190	1.90	0.0143	0.0567	0.0145	4:59:02 PM	Yes
Mean:	0.00190	1.90	0.0143				
SD:	0.000004	0.004	0.0000				
%RSD:	0.22%	0.22%	0.22				

QC value within limits for Hg 253.7 Recovery = 94.90%
All analyte(s) passed QC.

==========

Sequence No.: 37 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 4:59:29 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000030	-0.0303	-0.0000	-0.0001	0.0001	5:00:33 PM	Yes
2	-0.000029	-0.0292	-0.0000	0.0002	0.0001	5:01:18 PM	Yes
Mean:	-0.000030	-0.0297	-0.0000				
SD:	0.0000008	0.00079	0.0000				
%RSD:	2.67%	2.67%	43.44				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180329G1.sifx
Batch ID:
Results Data Set: 180329G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 1
Sample ID: Calib blank_868 Date Collected: 3/29/2018 10:58:13 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: Calib blank_868 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0001	0.0001	0.0001	10:59:17 AM	Yes
2		[0.00]	0.0001	-0.0001	0.0001	11:00:02 AM	Yes
Mean:		[0.00]	0.0001				
SD:		0.0000	0.0000				
%RSD:		0.00%	6.28				

Auto-zero performed.

Sequence No.: 2 Autosampler Location: 2
Sample ID: 0.025ppb 0.005x5ppb Date Collected: 3/29/2018 11:00:28 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 0.025ppb 0.005x5ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.025]	0.0002	0.0013	0.0003	11:01:32 AM	Yes
2		[0.025]	0.0001	0.0005	0.0002	11:02:17 AM	Yes
Mean:		[0.025]	0.0002				
SD:		0.00000	0.0000				
%RSD:		0.00%	12.84				

Standard number 1 applied. [0.025]
Correlation Coef.: 1.000000 Slope: 0.00642 Intercept: 0.00000

Sequence No.: 3 Autosampler Location: 3
Sample ID: 0.10ppb MS030518AAX0.0001 Date Collected: 3/29/2018 11:02:43 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 0.10ppb MS030518AAX0.0001 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.100]	0.0006	0.0022	0.0007	11:03:47 AM	Yes
2		[0.100]	0.0006	0.0020	0.0007	11:04:32 AM	Yes
Mean:		[0.100]	0.0006				
SD:		0.00000	0.0000				
%RSD:		0.00%	2.15				

Standard number 2 applied. [0.100]
Correlation Coef.: 0.999720 Slope: 0.00586 Intercept: 0.00001

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Sequence No.: 4 Autosampler Location: 4
Sample ID: 1.00ppb MS030518AAX0.0001 Date Collected: 3/29/2018 11:04:59 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 1.00ppb MS030518AAX0.0001 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.000]	0.0070	0.0282	0.0071	11:06:03 AM	Yes
2		[1.000]	0.0071	0.0282	0.0071	11:06:49 AM	Yes
Mean:		[1.000]	0.0070				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.19				

Standard number 3 applied. [1.000]
Correlation Coef.: 0.999882 Slope: 0.00708 Intercept: -0.00004

Sequence No.: 5 Autosampler Location: 5
Sample ID: 2.00ppb MS030518AAX0.002 Date Collected: 3/29/2018 11:07:15 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 2.00ppb MS030518AAX0.002 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.000]	0.0147	0.0599	0.0148	11:08:20 AM	Yes
2		[2.000]	0.0148	0.0602	0.0149	11:09:05 AM	Yes
Mean:		[2.000]	0.0147				
SD:		0.00000	0.0001				
%RSD:		0.00%	0.51				

Standard number 4 applied. [2.000]
Correlation Coef.: 0.999761 Slope: 0.00736 Intercept: -0.00009

Sequence No.: 6 Autosampler Location: 6
Sample ID: 5.00ppb MS030518AAX0.005 Date Collected: 3/29/2018 11:09:33 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 5.00ppb MS030518AAX0.005 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[5.000]	0.0357	0.1438	0.0358	11:10:36 AM	Yes
2		[5.000]	0.0356	0.1439	0.0357	11:11:21 AM	Yes
Mean:		[5.000]	0.0356				
SD:		0.00000	0.0001				
%RSD:		0.00%	0.19				

Standard number 5 applied. [5.000]
Correlation Coef.: 0.999880 Slope: 0.00716 Intercept: 0.00001

Sequence No.: 7 Autosampler Location: 7
Sample ID: 10.0ppb MS030518AAX0.01 Date Collected: 3/29/2018 11:11:46 AM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 10.0ppb MS030518AAX0.01 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

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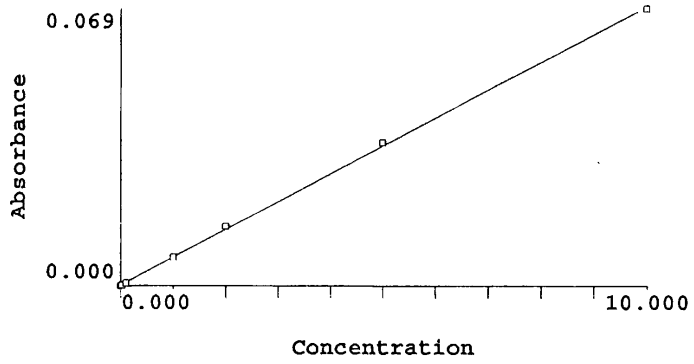
1	[10.00]	0.0689	0.2825	0.0690	11:12:50 AM	Yes
2	[10.00]	0.0693	0.2829	0.0694	11:13:35 AM	Yes
Mean:	[10.00]	0.0691				
SD:	0.0000	0.0003				
%RSD:	0.00%	0.37				

Standard number 6 applied. [10.00]
Correlation Coef.: 0.999821 Slope: 0.00694 Intercept: 0.00022



Calibration data for Hg 253.7 Equation: Linear, Calculated Intercept

ID	Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD
Calib blank_868	0.0000	0	-0.032344	0.00	6.28
0.025ppb 0.005x5ppb	0.0002	0.025	-0.009203	0.00	12.84
0.10ppb MS030518AAX0.0001	0.0006	0.100	0.052717	0.00	2.15
1.00ppb MS030518AAX0.0001	0.0070	1.000	0.983476	0.00	0.19
2.00ppb MS030518AAX0.002	0.0147	2.000	2.093573	0.00	0.51
5.00ppb MS030518AAX0.005	0.0356	5.000	5.106570	0.00	0.19
10.0ppb MS030518AAX0.01	0.0691	10.00	9.930211	0.00	0.37

Correlation Coef.: 0.999821 Slope: 0.00694 Intercept: 0.00022

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180329G1.sifx
Batch ID:
Results Data Set: 180329G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 8
Sample ID: ICV MS030518B Date Collected: 3/29/2018 11:20:46 AM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: ICV MS030518B Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00496	4.96	0.0346	0.1402	0.0347	11:21:50 AM	Yes
2	0.00492	4.92	0.0343	0.1395	0.0344	11:22:35 AM	Yes
Mean:	0.00494	4.94	0.0345				
SD:	0.000029	0.029	0.0002				
%RSD:	0.58%	0.58%	0.58				

QC value within limits for Hg 253.7 Recovery = 98.80%
All analyte(s) passed QC.

Sequence No.: 2 Autosampler Location: 1
Sample ID: ICB Date Collected: 3/29/2018 11:23:02 AM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: ICB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000038	-0.0379	-0.0000	-0.0019	0.0000	11:24:05 AM	Yes
2	-0.000032	-0.0325	-0.0000	-0.0019	0.0001	11:24:50 AM	Yes
Mean:	-0.000035	-0.0352	-0.0000				
SD:	0.0000039	0.00386	0.0000				
%RSD:	10.97%	10.97%	134.66				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 3 Autosampler Location: 9
Sample ID: CRQL 0.25 Date Collected: 3/29/2018 11:25:15 AM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: CRQL 0.25 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.000435	0.218	0.0017	0.0055	0.0018	11:26:20 AM	Yes
2	0.000441	0.220	0.0018	0.0054	0.0018	11:27:05 AM	Yes
Mean:	0.000438	0.219	0.0017				
SD:	0.0000039	0.0019	0.0000				
%RSD:	0.88%	0.88%	0.77				

Return to Contents

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Sequence No.: 20
Sample ID: 18-03-~~2422~~-1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

309
03/29/18

Autosampler Location: 126
Date Collected: 3/29/2018 1:36:42 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-~~2422~~-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000057	-0.0287	0.0000	-0.0002	0.0001	1:37:47 PM	Yes
2	-0.000060	-0.0302	0.0000	-0.0001	0.0001	1:38:33 PM	Yes
Mean:	-0.000059	-0.0294	0.0000				
SD:	0.0000021	0.00106	0.0000				
%RSD:	3.62%	3.62%	36.72				

==========

Sequence No.: 21
Sample ID: CCV 0.2x10ppb
Analyst: 868 HG-7
Initial Sample Wt:
Dilution:
Wash Time (before sample): 0

Autosampler Location: 5
Date Collected: 3/29/2018 1:39:00 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00196	1.96	0.0138	0.0574	0.0139	1:40:05 PM	Yes
2	0.00195	1.95	0.0137	0.0574	0.0138	1:40:51 PM	Yes
Mean:	0.00195	1.95	0.0138				
SD:	0.000007	0.007	0.0000				
%RSD:	0.37%	0.37%	0.36				

QC value within limits for Hg 253.7 Recovery = 97.68%
All analyte(s) passed QC.

==========

Sequence No.: 22
Sample ID: CCB
Analyst: 868 HG-7
Initial Sample Wt:
Dilution:
Wash Time (before sample): 0

Autosampler Location: 1
Date Collected: 3/29/2018 1:41:18 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000024	-0.0240	0.0001	0.0001	0.0001	1:42:21 PM	Yes
2	-0.000026	-0.0257	0.0000	-0.0002	0.0001	1:43:06 PM	Yes
Mean:	-0.000025	-0.0249	0.0001				
SD:	0.0000012	0.00120	0.0000				
%RSD:	4.84%	4.84%	16.09				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180329G1.sifx
Batch ID:
Results Data Set: 180329G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 127
Sample ID: 18-03-1798-1 Date Collected: 3/29/2018 2:20:02 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000043	-0.0214	0.0001	0.0010	0.0002	2:21:08 PM	Yes
2	-0.000043	-0.0213	0.0001	0.0011	0.0002	2:21:53 PM	Yes
Mean:	-0.000043	-0.0214	0.0001				
SD:	0.0000003	0.00013	0.0000				
%RSD:	0.60%	0.60%	1.17				

User canceled analysis.

Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180329G1.sifx
Batch ID:
Results Data Set: 180329G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 2 Autosampler Location: 128
Sample ID: 18-03-1798-2 Date Collected: 3/29/2018 2:22:25 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000059	-0.0295	0.0000	0.0006	0.0001	2:23:31 PM	Yes
2	-0.000059	-0.0293	0.0000	0.0007	0.0001	2:24:16 PM	Yes
Mean:	-0.000059	-0.0294	0.0000				
SD:	0.0000002	0.00009	0.0000				
%RSD:	0.31%	0.31%	3.12				

Sequence No.: 3 Autosampler Location: 129
Sample ID: 18-03-1798-2 MS Date Collected: 3/29/2018 2:24:43 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-2 MS Analyte: Hg 253.7

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Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00960	4.80	0.0335	0.1431	0.0336	2:25:49 PM	Yes
2	0.00955	4.78	0.0334	0.1435	0.0334	2:26:34 PM	Yes
Mean:	0.00958	4.79	0.0334				
SD:	0.000035	0.017	0.0001				
%RSD:	0.36%	0.36%	0.36				

Sequence No.: 4 Autosampler Location: 130
Sample ID: 18-03-1798-2 MSD Date Collected: 3/29/2018 2:27:02 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-2 MSD Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00932	4.66	0.0325	0.1388	0.0326	2:28:08 PM	Yes
2	0.00931	4.65	0.0325	0.1390	0.0326	2:28:53 PM	Yes
Mean:	0.00932	4.66	0.0325				
SD:	0.000010	0.005	0.0000				
%RSD:	0.10%	0.10%	0.10				

Sequence No.: 5 Autosampler Location: 131
Sample ID: 18-03-1798-3 Date Collected: 3/29/2018 2:29:21 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000025	-0.0127	0.0001	0.0008	0.0002	2:30:26 PM	Yes
2	-0.000004	-0.00204	0.0002	0.0012	0.0003	2:31:11 PM	Yes
Mean:	-0.000015	-0.00740	0.0002				
SD:	0.0000151	0.007569	0.0001				
%RSD:	102.35%	102.35%	30.34				

Sequence No.: 6 Autosampler Location: 132
Sample ID: 18-03-1798-4 Date Collected: 3/29/2018 2:31:39 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.000014	0.00717	0.0003	0.0013	0.0004	2:32:45 PM	Yes
2	0.000022	0.0108	0.0003	0.0016	0.0004	2:33:30 PM	Yes
Mean:	0.000018	0.00900	0.0003				
SD:	0.0000052	0.002591	0.0000				
%RSD:	28.80%	28.80%	6.27				

Sequence No.: 7 Autosampler Location: 133
Sample ID: 18-03-1798-5 Date Collected: 3/29/2018 2:33:57 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-5 Analyte: Hg 253.7

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Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000041	-0.0204	0.0001	0.0006	0.0002	2:35:03 PM	Yes
2	-0.000028	-0.0139	0.0001	0.0008	0.0002	2:35:48 PM	Yes
Mean:	-0.000034	-0.0171	0.0001				
SD:	0.0000092	0.00459	0.0000				
%RSD:	26.81%	26.81%	30.21				

Sequence No.: 8 Autosampler Location: 134
Sample ID: 18-03-1798-6 Date Collected: 3/29/2018 2:36:16 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000034	-0.0172	0.0001	0.0007	0.0002	2:37:22 PM	Yes
2	-0.000032	-0.0159	0.0001	0.0005	0.0002	2:38:07 PM	Yes
Mean:	-0.000033	-0.0165	0.0001				
SD:	0.0000018	0.00090	0.0000				
%RSD:	5.42%	5.42%	5.67				

Sequence No.: 9 Autosampler Location: 135
Sample ID: 18-03-1798-7 Date Collected: 3/29/2018 2:38:34 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-7 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000086	-0.0428	-0.0001	-0.0003	0.0000	2:39:40 PM	Yes
2	-0.000082	-0.0408	-0.0001	-0.0003	0.0000	2:40:25 PM	Yes
Mean:	-0.000084	-0.0418	-0.0001				
SD:	0.0000027	0.00137	0.0000				
%RSD:	3.27%	3.27%	14.44				

Sequence No.: 10 Autosampler Location: 136
Sample ID: 18-03-1798-F-1 Date Collected: 3/29/2018 2:40:53 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000065	-0.0325	-0.0000	-0.0000	0.0001	2:41:59 PM	Yes
2	-0.000067	-0.0334	-0.0000	0.0001	0.0001	2:42:44 PM	Yes
Mean:	-0.000066	-0.0329	-0.0000				
SD:	0.0000013	0.00064	0.0000				
%RSD:	1.94%	1.94%	112.72				

Sequence No.: 11 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/29/2018 2:43:11 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

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Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00196	1.96	0.0138	0.0577	0.0139	2:44:17 PM	Yes
2	0.00197	1.97	0.0139	0.0579	0.0140	2:45:02 PM	Yes
Mean:	0.00196	1.96	0.0138				
SD:	0.000008	0.008	0.0001				
%RSD:	0.41%	0.41%	0.40				

QC value within limits for Hg 253.7 Recovery = 98.23%
All analyte(s) passed QC.

Sequence No.: 12 **Autosampler Location: 1**
Sample ID: CCB **Date Collected: 3/29/2018 2:45:29 PM**
Analyst: 868 HG-7 **Data Type: Original**
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**
Wash Time (before sample): 0 **Auto Dilution Factor: 1.0000**

Replicate Data: CCB **Analyte: Hg 253.7**

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000011	-0.0114	0.0001	0.0008	0.0002	2:46:33 PM	Yes
2	-0.000019	-0.0188	0.0001	0.0006	0.0002	2:47:18 PM	Yes
Mean:	-0.000015	-0.0151	0.0001				
SD:	0.0000052	0.00521	0.0000				
%RSD:	34.44%	34.44%	30.27				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 13 **Autosampler Location: 137**
Sample ID: 18-03-1798-F-1 MS **Date Collected: 3/29/2018 2:47:43 PM**
Analyst: 868 HG-7 **Data Type: Original**
Initial Sample Wt: **Initial Sample Vol:**
Dilution: 2X **Sample Prep Vol:**
Wash Time (before sample): 0 **Auto Dilution Factor: 1**

Replicate Data: 18-03-1798-F-1 MS **Analyte: Hg 253.7**

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00977	4.88	0.0341	0.1455	0.0342	2:48:49 PM	Yes
2	0.00985	4.93	0.0344	0.1474	0.0345	2:49:34 PM	Yes
Mean:	0.00981	4.91	0.0342				
SD:	0.000060	0.030	0.0002				
%RSD:	0.61%	0.61%	0.61				

Sequence No.: 14 **Autosampler Location: 138**
Sample ID: 18-03-1798-F-1 MSD **Date Collected: 3/29/2018 2:50:02 PM**
Analyst: 868 HG-7 **Data Type: Original**
Initial Sample Wt: **Initial Sample Vol:**
Dilution: 2X **Sample Prep Vol:**
Wash Time (before sample): 0 **Auto Dilution Factor: 1**

Replicate Data: 18-03-1798-F-1 MSD **Analyte: Hg 253.7**

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00950	4.75	0.0332	0.1412	0.0332	2:51:08 PM	Yes
2	0.00943	4.72	0.0329	0.1411	0.0330	2:51:53 PM	Yes
Mean:	0.00947	4.73	0.0330				
SD:	0.000046	0.023	0.0002				
%RSD:	0.48%	0.48%	0.48				

Sequence No.: 15 **Autosampler Location: 139**
Sample ID: 18-03-1798-F-2 **Date Collected: 3/29/2018 2:52:21 PM**
Analyst: 868 HG-7 **Data Type: Original**
Initial Sample Wt: **Initial Sample Vol:**
Dilution: 2X **Sample Prep Vol:**

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Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.000055	0.0273	0.0004	0.0020	0.0005	2:53:26 PM	Yes
2	-0.000001	-0.000634	0.0002	0.0016	0.0003	2:54:12 PM	Yes
Mean:	0.000027	0.0133	0.0003				
SD:	0.0000395	0.01976	0.0001				
%RSD:	148.14%	148.14%	43.26				

==========

Sequence No.: 16 Autosampler Location: 140
Sample ID: 18-03-1798-F-3 Date Collected: 3/29/2018 2:54:39 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000054	-0.0268	0.0000	0.0006	0.0001	2:55:45 PM	Yes
2	-0.000051	-0.0253	0.0000	0.0004	0.0001	2:56:30 PM	Yes
Mean:	-0.000052	-0.0261	0.0000				
SD:	0.0000021	0.00107	0.0000				
%RSD:	4.10%	4.10%	16.97				

==========

Sequence No.: 17 Autosampler Location: 141
Sample ID: 18-03-1798-F-4 Date Collected: 3/29/2018 2:56:58 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000063	-0.0316	0.0000	0.0002	0.0001	2:58:04 PM	Yes
2	-0.000056	-0.0281	0.0000	0.0006	0.0001	2:58:49 PM	Yes
Mean:	-0.000060	-0.0299	0.0000				
SD:	0.0000050	0.00249	0.0000				
%RSD:	8.32%	8.32%	101.09				

==========

Sequence No.: 18 Autosampler Location: 142
Sample ID: 18-03-1798-F-5 Date Collected: 3/29/2018 2:59:16 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-5 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000062	-0.0311	0.0000	-0.0001	0.0001	3:00:22 PM	Yes
2	-0.000067	-0.0335	-0.0000	-0.0004	0.0001	3:01:07 PM	Yes
Mean:	-0.000065	-0.0323	0.0000				
SD:	0.0000033	0.00167	0.0000				
%RSD:	5.16%	5.16%	>999.9%				

==========

Sequence No.: 19 Autosampler Location: 143
Sample ID: 18-03-1798-F-6 Date Collected: 3/29/2018 3:01:35 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:

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Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1798-F-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000066	-0.0328	-0.0000	-0.0004	0.0001	3:02:41 PM	Yes
2	-0.000064	-0.0322	0.0000	-0.0003	0.0001	3:03:26 PM	Yes
Mean:	-0.000065	-0.0325	-0.0000				
SD:	0.0000008	0.00041	0.0000				
%RSD:	1.25%	1.25%	224.80				

==========

Sequence No.: 20 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/29/2018 3:03:53 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00194	1.94	0.0137	0.0564	0.0138	3:04:59 PM	Yes
2	0.00198	1.98	0.0140	0.0571	0.0141	3:05:44 PM	Yes
Mean:	0.00196	1.96	0.0138				
SD:	0.000027	0.027	0.0002				
%RSD:	1.38%	1.38%	1.36				

QC value within limits for Hg 253.7 Recovery = 98.20%
All analyte(s) passed QC.

==========

Sequence No.: 21 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/29/2018 3:06:11 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000009	-0.00938	0.0002	0.0002	0.0002	3:07:14 PM	Yes
2	-0.000024	-0.0241	0.0001	-0.0003	0.0001	3:08:00 PM	Yes
Mean:	-0.000017	-0.0167	0.0001				
SD:	0.0000104	0.01040	0.0001				
%RSD:	62.12%	62.12%	66.62				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

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EPA 245.1 Mercury

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180328G1

Carrier solution R06141703 **Reducing Agent R06141702**

Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
Calib blank_868	868 HG-7		Hg 253.7	3/28/2018	11:55:24 AM		ug/L		mg/L	
0.025ppb 0.005x5ppb	868 HG-7		Hg 253.7	3/28/2018	11:57:37 AM		ug/L		mg/L	
0.10ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/28/2018	11:59:51 AM		ug/L		mg/L	
1.00ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/28/2018	12:02:07 PM		ug/L		mg/L	
2.00ppb MS030518AAX0.002	868 HG-7		Hg 253.7	3/28/2018	12:04:22 PM		ug/L		mg/L	
5.00ppb MS030518AAX0.005	868 HG-7		Hg 253.7	3/28/2018	12:06:37 PM		ug/L		mg/L	
10.0ppb MS030518AAX0.01	868 HG-7		Hg 253.7	3/28/2018	12:08:50 PM		ug/L		mg/L	
ICV MS030518B } *	868 HG-7		Hg 253.7	3/28/2018	12:47:40 PM	0.172897	ug/L	0.000173	mg/L	0.999893
ICV MS030518B }	868 HG-7		Hg 253.7	3/28/2018	1:10:03 PM	4.729983	ug/L	0.00473	mg/L	0.999893
ICB	868 HG-7		Hg 253.7	3/28/2018	1:12:18 PM	-0.02982	ug/L	-2.98E-05	mg/L	0.999893
CRQL 0.25	868 HG-7		Hg 253.7	3/28/2018	1:14:33 PM	0.233944	ug/L	0.000468	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	1:16:50 PM	1.963562	ug/L	0.001964	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	1:19:06 PM	-0.03086	ug/L	-3.09E-05	mg/L	0.999893
CCV 0.2x10ppb **	868 HG-7		Hg 253.7	3/28/2018	3:39:27 PM	1.955477	ug/L	0.001955	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	3:41:43 PM	-0.02323	ug/L	-2.32E-05	mg/L	0.999893
180328-B-A1	868 HG-7		Hg 253.7	3/28/2018	3:43:58 PM	-0.02813	ug/L	-5.63E-05	mg/L	0.999893
180328-L-A1	868 HG-7		Hg 253.7	3/28/2018	3:46:14 PM	4.731277	ug/L	0.009463	mg/L	0.999893
18-03-1974-5	868 HG-7		Hg 253.7	3/28/2018	3:48:30 PM	-0.02283	ug/L	-4.57E-05	mg/L	0.999893
18-03-1974-5 MS	868 HG-7		Hg 253.7	3/28/2018	3:50:47 PM	4.3281	ug/L	0.008656	mg/L	0.999893
18-03-1974-5 MSD	868 HG-7		Hg 253.7	3/28/2018	3:53:04 PM	4.532539	ug/L	0.009065	mg/L	0.999893
18-03-1974-1	868 HG-7		Hg 253.7	3/28/2018	3:55:21 PM	-0.02264	ug/L	-4.53E-05	mg/L	0.999893
18-03-1974-2	868 HG-7		Hg 253.7	3/28/2018	3:57:38 PM	-0.033	ug/L	-6.60E-05	mg/L	0.999893
18-03-1974-3	868 HG-7		Hg 253.7	3/28/2018	3:59:54 PM	-0.01424	ug/L	-2.85E-05	mg/L	0.999893
18-03-1974-4	868 HG-7		Hg 253.7	3/28/2018	4:02:10 PM	-0.03487	ug/L	-6.97E-05	mg/L	0.999893
18-03-1974-6	868 HG-7		Hg 253.7	3/28/2018	4:04:26 PM	-0.03171	ug/L	-6.34E-05	mg/L	0.999893

* failed, reran - passed
** time gap

Reviewed/Assign to Logbook Date: 03-28-18
Analysis Hg Checklist ID: 309
Logbook Page: 32 Instrument ID: Hg-7

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Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:06:43 PM	1.947275	ug/L	0.001947	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	4:08:59 PM	-0.02994	ug/L	-2.99E-05	mg/L	0.999893
18-03-1974-7	868 HG-7		Hg 253.7	3/28/2018	4:11:14 PM	-0.04095	ug/L	-8.19E-05	mg/L	0.999893
18-03-1968-4	868 HG-7		Hg 253.7	3/28/2018	4:13:30 PM	-0.02165	ug/L	-4.33E-05	mg/L	0.999893
180328-B-A2	868 HG-7		Hg 253.7	3/28/2018	4:15:46 PM	-0.03684	ug/L	-7.37E-05	mg/L	0.999893
180328-L-A2	868 HG-7		Hg 253.7	3/28/2018	4:18:02 PM	4.751384	ug/L	0.009503	mg/L	0.999893
18-03-1723-F-1	868 HG-7		Hg 253.7	3/28/2018	4:20:18 PM	-0.03202	ug/L	-6.40E-05	mg/L	0.999893
18-03-1723-F-1 MS	868 HG-7		Hg 253.7	3/28/2018	4:22:35 PM	4.58476	ug/L	0.00917	mg/L	0.999893
18-03-1723-F-1 MSD	868 HG-7		Hg 253.7	3/28/2018	4:24:53 PM	4.55445	ug/L	0.009109	mg/L	0.999893
18-03-1723-F-2	868 HG-7		Hg 253.7	3/28/2018	4:27:10 PM	-0.03334	ug/L	-6.67E-05	mg/L	0.999893
18-03-1974-F-1	868 HG-7		Hg 253.7	3/28/2018	4:29:26 PM	-0.03496	ug/L	-6.99E-05	mg/L	0.999893
18-03-1974-F-2	868 HG-7		Hg 253.7	3/28/2018	4:31:43 PM	-0.03681	ug/L	-7.36E-05	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:34:00 PM	1.947802	ug/L	0.001948	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	4:36:16 PM	-0.03001	ug/L	-3.00E-05	mg/L	0.999893
18-03-1974-F-3	868 HG-7		Hg 253.7	3/28/2018	4:38:31 PM	-0.02392	ug/L	-4.78E-05	mg/L	0.999893
18-03-1974-F-4	868 HG-7		Hg 253.7	3/28/2018	4:40:48 PM	-0.03727	ug/L	-7.45E-05	mg/L	0.999893
18-03-1974-F-5	868 HG-7		Hg 253.7	3/28/2018	4:43:04 PM	-0.03579	ug/L	-7.16E-05	mg/L	0.999893
18-03-1974-F-6	868 HG-7		Hg 253.7	3/28/2018	4:45:20 PM	-0.0358	ug/L	-7.16E-05	mg/L	0.999893
180328-B-A3	868 HG-7		Hg 253.7	3/28/2018	4:47:37 PM	-0.03563	ug/L	-7.13E-05	mg/L	0.999893
180328-L-A3	868 HG-7		Hg 253.7	3/28/2018	4:49:54 PM	4.607026	ug/L	0.009214	mg/L	0.999893
180328-L-A3D	868 HG-7		Hg 253.7	3/28/2018	4:52:10 PM	4.638428	ug/L	0.009277	mg/L	0.999893
18-03-1957-F-6	868 HG-7		Hg 253.7	3/28/2018	4:54:27 PM	-0.02406	ug/L	-4.81E-05	mg/L	0.999893
18-03-1676-1	868 HG-7		Hg 253.7	3/28/2018	4:56:45 PM	-0.04256	ug/L	-8.51E-05	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:59:02 PM	1.897963	ug/L	0.001898	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	5:01:18 PM	-0.02975	ug/L	-2.97E-05	mg/L	0.999893
CCV 0.2x10ppb *	868 HG-7		Hg 253.7	3/28/2018	7:02:56 PM	1.880503	ug/L	0.001881	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	7:05:12 PM	-0.02506	ug/L	-2.51E-05	mg/L	0.999893
18-03-1116-1	868 HG-7		Hg 253.7	3/28/2018	7:07:29 PM	-0.0214	ug/L	-4.28E-05	mg/L	0.999893
18-03-1894-2 PDS	868 HG-7		Hg 253.7	3/28/2018	7:09:47 PM	4.718692	ug/L	0.009437	mg/L	0.999893

* time gap

Reviewed/Assign to Logbook Date: 03-28-18
Analysis Hg Chemist ID: 309
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Carrier solution R06141703 **Reducing Agent R06141702**

Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
Calib blank_868	868 HG-7		Hg 253.7	3/29/2018	11:00:02 AM		ug/L		mg/L	
0.025ppb 0.005x5ppb	868 HG-7		Hg 253.7	3/29/2018	11:02:17 AM		ug/L		mg/L	
0.10ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/29/2018	11:04:32 AM		ug/L		mg/L	
1.00ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/29/2018	11:06:49 AM		ug/L		mg/L	
2.00ppb MS030518AAX0.002	868 HG-7		Hg 253.7	3/29/2018	11:09:05 AM		ug/L		mg/L	
5.00ppb MS030518AAX0.005	868 HG-7		Hg 253.7	3/29/2018	11:11:21 AM		ug/L		mg/L	
10.0ppb MS030518AAX0.01	868 HG-7		Hg 253.7	3/29/2018	11:13:35 AM		ug/L		mg/L	
ICV MS030518B	868 HG-7		Hg 253.7	3/29/2018	11:22:35 AM	4.939883	ug/L	0.00494	mg/L	0.999821
ICB	868 HG-7		Hg 253.7	3/29/2018	11:24:50 AM	-0.03521	ug/L	-3.52E-05	mg/L	0.999821
CRQL 0.25	868 HG-7		Hg 253.7	3/29/2018	11:27:05 AM	0.219097	ug/L	0.000438	mg/L	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	11:29:22 AM	2.075333	ug/L	0.002075	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	11:31:37 AM	-0.03018	ug/L	-3.02E-05	mg/L	0.999821
180329-B-A1	868 HG-7		Hg 253.7	3/29/2018	12:54:53 PM	-0.04138	ug/L	-8.28E-05	mg/L	0.999821
180329-L-A1	868 HG-7		Hg 253.7	3/29/2018	12:57:10 PM	4.469033	ug/L	0.008938	mg/L	0.999821
18-03-2193-TC-2	868 HG-7		Hg 253.7	3/29/2018	12:59:29 PM	-0.01408	ug/L	-2.82E-05	mg/L	0.999821
18-03-2193-TC-2 MS	868 HG-7		Hg 253.7	3/29/2018	1:01:47 PM	4.245198	ug/L	0.00849	mg/L	0.999821
18-03-2193-TC-2 MSD	868 HG-7		Hg 253.7	3/29/2018	1:04:05 PM	4.229803	ug/L	0.00846	mg/L	0.999821
180329-B-A2	868 HG-7		Hg 253.7	3/29/2018	1:06:23 PM	-0.02598	ug/L	-5.20E-05	mg/L	0.999821
180329-L-A2	868 HG-7		Hg 253.7	3/29/2018	1:08:41 PM	4.558496	ug/L	0.009117	mg/L	0.999821
18-03-1467-1	868 HG-7		Hg 253.7	3/29/2018	1:10:59 PM	-0.02931	ug/L	-5.86E-05	mg/L	0.999821
18-03-1467-1 MS	868 HG-7		Hg 253.7	3/29/2018	1:13:17 PM	4.254392	ug/L	0.008509	mg/L	0.999821
18-03-1467-1 MSD	868 HG-7		Hg 253.7	3/29/2018	1:15:35 PM	3.864069	ug/L	0.007728	mg/L	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	1:17:52 PM	1.976634	ug/L	0.001977	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	1:20:09 PM	-0.02529	ug/L	-2.53E-05	mg/L	0.999821
18-03-1467-F-1	868 HG-7		Hg 253.7	3/29/2018	1:22:24 PM	-0.04163	ug/L	-8.33E-05	mg/L	0.999821

Reviewed/Assign to Logbook Date: 03-29-18
Analysis Hg Chemist ID: 309
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Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
18-03-1466-1	868 HG-7		Hg 253.7	3/29/2018	1:24:42 PM	-0.04149	ug/L	-8.30E-05	mg/L	0.999821
18-03-1466-F-1	868 HG-7		Hg 253.7	3/29/2018	1:27:00 PM	-0.04316	ug/L	-8.63E-05	mg/L	0.999821
18-03-1468-1	868 HG-7		Hg 253.7	3/29/2018	1:29:19 PM	-0.03078	ug/L	-6.16E-05	mg/L	0.999821
18-03-1468-2	868 HG-7		Hg 253.7	3/29/2018	1:31:37 PM	-0.03616	ug/L	-7.23E-05	mg/L	0.999821
18-03-1468-F-1	868 HG-7		Hg 253.7	3/29/2018	1:33:55 PM	-0.02659	ug/L	-5.32E-05	mg/L	0.999821
18-03-1468-F-2	868 HG-7		Hg 253.7	3/29/2018	1:36:14 PM	-0.03243	ug/L	-6.49E-05	mg/L	0.999821
18-03-2442-1	868 HG-7		Hg 253.7	3/29/2018	1:38:33 PM	-0.02944	ug/L	-5.89E-05	mg/L	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	1:40:51 PM	1.953618	ug/L	0.001954	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	1:43:06 PM	-0.02486	ug/L	-2.49E-05	mg/L	0.999821
18-03-1798-1	868 HG-7		Hg 253.7	3/29/2018	2:21:53 PM	-0.02135	ug/L	-4.27E-05	mg/L	0.999821
18-03-1798-2	868 HG-7		Hg 253.7	3/29/2018	2:24:16 PM	-0.02941	ug/L	-5.88E-05	mg/L	0.999821
18-03-1798-2 MS	868 HG-7		Hg 253.7	3/29/2018	2:26:34 PM	4.789736	ug/L	0.009579	mg/L	0.999821
18-03-1798-2 MSD	868 HG-7		Hg 253.7	3/29/2018	2:28:53 PM	4.657792	ug/L	0.009316	mg/L	0.999821
18-03-1798-3	868 HG-7		Hg 253.7	3/29/2018	2:31:11 PM	-0.0074	ug/L	-1.48E-05	mg/L	0.999821
18-03-1798-4	868 HG-7		Hg 253.7	3/29/2018	2:33:30 PM	0.008999	ug/L	1.80E-05	mg/L	0.999821
18-03-1798-5	868 HG-7		Hg 253.7	3/29/2018	2:35:48 PM	-0.01714	ug/L	-3.43E-05	mg/L	0.999821
18-03-1798-6	868 HG-7		Hg 253.7	3/29/2018	2:38:07 PM	-0.01654	ug/L	-3.31E-05	mg/L	0.999821
18-03-1798-7	868 HG-7		Hg 253.7	3/29/2018	2:40:25 PM	-0.04181	ug/L	-8.36E-05	mg/L	0.999821
18-03-1798-F-1	868 HG-7		Hg 253.7	3/29/2018	2:42:44 PM	-0.03291	ug/L	-6.58E-05	mg/L	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	2:45:02 PM	1.964682	ug/L	0.001965	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	2:47:18 PM	-0.01513	ug/L	-1.51E-05	mg/L	0.999821
18-03-1798-F-1 MS	868 HG-7		Hg 253.7	3/29/2018	2:49:34 PM	4.905035	ug/L	0.00981	mg/L	0.999821
18-03-1798-F-1 MSD	868 HG-7		Hg 253.7	3/29/2018	2:51:53 PM	4.732684	ug/L	0.009465	mg/L	0.999821
18-03-1798-F-2	868 HG-7		Hg 253.7	3/29/2018	2:54:12 PM	0.013341	ug/L	2.67E-05	mg/L	0.999821
18-03-1798-F-3	868 HG-7		Hg 253.7	3/29/2018	2:56:30 PM	-0.02605	ug/L	-5.21E-05	mg/L	0.999821
18-03-1798-F-4	868 HG-7		Hg 253.7	3/29/2018	2:58:49 PM	-0.02988	ug/L	-5.98E-05	mg/L	0.999821
18-03-1798-F-5	868 HG-7		Hg 253.7	3/29/2018	3:01:07 PM	-0.03228	ug/L	-6.46E-05	mg/L	0.999821
18-03-1798-F-6	868 HG-7		Hg 253.7	3/29/2018	3:03:26 PM	-0.03252	ug/L	-6.50E-05	mg/L	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	3:05:44 PM	1.963955	ug/L	0.001964	mg/L	0.999821

Reviewed/Assign to Logbook Date: 03-29-18
Analysis: Hg Chemist ID: 309
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Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
CCB	868 HG-7		Hg 253.7	3/29/2018	3:08:00 PM	-0.01674	ug/L	-1.67E-05	mg/L	0.999821
180329-B-03	868 HG-7	0.59	Hg 253.7	3/29/2018	3:13:01 PM	-0.04247	ug/L	-0.0072	mg/kg	0.999821
180329-L-03	868 HG-7	0.61	Hg 253.7	3/29/2018	3:15:17 PM	4.401595	ug/L	0.721573	mg/kg	0.999821
18-03-1304-1	868 HG-7	0.59	Hg 253.7	3/29/2018	3:17:34 PM	0.232528	ug/L	0.039412	mg/kg	0.999821
18-03-1304-1 MS	868 HG-7	0.63	Hg 253.7	3/29/2018	3:21:52 PM	4.581207	ug/L	0.727176	mg/kg	0.999821
18-03-1304-1 MSD	868 HG-7	0.63	Hg 253.7	3/29/2018	3:24:07 PM	4.765152	ug/L	0.756373	mg/kg	0.999821
18-03-1304-2	868 HG-7	0.59	Hg 253.7	3/29/2018	3:26:22 PM	0.2684	ug/L	0.045492	mg/kg	0.999821
18-03-1304-3	868 HG-7	0.63	Hg 253.7	3/29/2018	3:28:36 PM	0.287145	ug/L	0.045579	mg/kg	0.999821
18-03-1304-4	868 HG-7	0.62	Hg 253.7	3/29/2018	3:30:51 PM	0.302738	ug/L	0.048829	mg/kg	0.999821
18-03-1304-5	868 HG-7	0.6	Hg 253.7	3/29/2018	3:33:05 PM	0.161892	ug/L	0.026982	mg/kg	0.999821
18-03-1304-6	868 HG-7	0.63	Hg 253.7	3/29/2018	3:35:20 PM	0.134976	ug/L	0.021425	mg/kg	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	3:37:37 PM	1.856315	ug/L	0.001856	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	3:39:53 PM	-0.0145	ug/L	-1.45E-05	mg/L	0.999821
18-03-1993-1	868 HG-7	0.6	Hg 253.7	3/29/2018	3:42:08 PM	1.567103	ug/L	0.261184	mg/kg	0.999821
18-03-1993-2	868 HG-7	0.61	Hg 253.7	3/29/2018	3:44:24 PM	3.1008	ug/L	0.508328	mg/kg	0.999821
18-03-1962-1	868 HG-7	0.6	Hg 253.7	3/29/2018	3:46:40 PM	0.005038	ug/L	0.00084	mg/kg	0.999821
18-03-1865-1	868 HG-7	0.63	Hg 253.7	3/29/2018	3:48:56 PM	1.809847	ug/L	0.287277	mg/kg	0.999821
18-03-1823-1	868 HG-7	0.6	Hg 253.7	3/29/2018	3:51:13 PM	0.275075	ug/L	0.045846	mg/kg	0.999821
18-03-1640-3	868 HG-7	0.64	Hg 253.7	3/29/2018	3:53:30 PM	0.062654	ug/L	0.00979	mg/kg	0.999821
18-03-1926-1	868 HG-7	0.57	Hg 253.7	3/29/2018	3:55:47 PM	0.006068	ug/L	0.001065	mg/kg	0.999821
18-03-1926-2	868 HG-7	0.61	Hg 253.7	3/29/2018	3:58:02 PM	0.014718	ug/L	0.002413	mg/kg	0.999821
18-03-1926-3	868 HG-7	0.59	Hg 253.7	3/29/2018	4:00:17 PM	-0.0278	ug/L	-0.00471	mg/kg	0.999821
18-03-1926-4	868 HG-7	0.57	Hg 253.7	3/29/2018	4:02:32 PM	0.158084	ug/L	0.027734	mg/kg	0.999821
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/29/2018	4:04:48 PM	2.043615	ug/L	0.002044	mg/L	0.999821
CCB	868 HG-7		Hg 253.7	3/29/2018	4:07:04 PM	-0.01217	ug/L	-1.22E-05	mg/L	0.999821
18-03-1926-5	868 HG-7	0.6	Hg 253.7	3/29/2018	4:09:19 PM	0.016241	ug/L	0.002707	mg/kg	0.999821
18-03-1925-1	868 HG-7	0.58	Hg 253.7	3/29/2018	4:11:34 PM	-0.03383	ug/L	-0.00583	mg/kg	0.999821
18-03-1925-2	868 HG-7	0.61	Hg 253.7	3/29/2018	4:13:49 PM	-0.03517	ug/L	-0.00577	mg/kg	0.999821
18-03-1925-3	868 HG-7	0.59	Hg 253.7	3/29/2018	4:16:05 PM	-0.03783	ug/L	-0.00641	mg/kg	0.999821

Date: 03-29-18
309
Hg - 7
Hg
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EPA 245.1 Mercury

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Preparation Log

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Mercury Sample Preparation Logbook (Aqueous)

METHOD	MATRIX	EQUIPMENT ID #	REAGENT ID #	REAGENT / STANDARD ID #
☐ EPA 7470A ☒ EPA 245.1	Aqueous	Thermometer 171114994S (CF: 1.0 °C) Block Digester 5 Pipetter / Dispenser D-611	HNO_3 M006-45-08 1.25 mL H_2SO_4 M006-45-10 2.5 mL 5% $KMnO_4$ HR0112185	5% $K_2S_2O_8$ HR0908171A 4 mL NaCl-H_3NO-HCl HR0112185 5 mL Spike MS030518AA

BATCH NUMBER	SUPPLY LOT #	ACID PRESERVATION AND FILTRATION	STANDARD ID #
MS/MSD 180328-SA2 (Specify)	Digestion Tube 170164 Filter	☐ None ☒ Lab Filtered ☐ Lab Preserved Book # 22 Page # 16/17	IC MS030518AA ICV ✓ B

DIGESTION									SAMPLE			
	START			END							5%	SPIKE OR
DATE	TIME	TEMP W/O CF (°C)	PREP TECH ID #	TIME	TEMP W/O CF (°C)	PREP TECH ID #	INITIAL pH	ECI ID #	INITIAL (mL)	FINAL (mL)	$KMNO_4$ V (mL)	IC/ICV V (µL)
3/28/18	12:00	95	865	14:00	95	865	72	MS 18-03-1773-1M	50	100	1.5	500
							72	MSD 1				1
								LCS 180328-1A2				
								LCSD / MB 180328-BA2				
							72	18-03-1773-1M				
							72	1 2M				
							72	18-03-1974-1C				
							72	2				
							72	3				
							72	4				
							72	5				
							72	6				
	14:00			16:00			72	18-03-1798-1C				
							72	2				
							72	3				
							72	4				
							72	5				
							72	6				
							72	MS 1				500
							72	MSD 1				1
								IC				
								ICV				
								CB				

COMMENTS: D-648 / D-647 / D-658 / D-673 / D-683

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Acid Preservation and Filtration Logbook

CEL ID #	SAMPLING DATE	INITIAL pH < 2	FILTER AND DIGEST *	FILTER AND PRESERVE **	PRESERVE ONLY	SAMPLE FILTRATION (IF ANY) DATE	SAMPLE FILTRATION (IF ANY) LOT # a) FILTER b) DIGESTION TUBE	ACID PRESERVATION (1) 1:1 HNO_3; (2) 5-mL/L BrCl; (3) 12-N HCl D = DATE T = TIME	ACID PRESERVATION N = NAME L = LOT #	AMOUNT	DIGESTATE FILTRATION (IF ANY) DATE	DIGESTATE FILTRATION (IF ANY) FILTER LOT #	ANALYST	COMMENTS
18-03-1704-1G	03/19/18	Y (N)		X		03/21/18	a) F7G190840 b) 160613	D) 03/22/18 T) 18:00	N) (1) 2 3 L) MR-110177A	1ML			KBS	
2G		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
3G		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
5G		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
6G		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
7G		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-1763-1F	03/20/18	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-1797-1I	03/21/18	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
2I		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
1803-1784-4A	03/19/18	Y (N)			X		a) b)	D) 03/22/18 T) 16:05	N) (1) 2 3 L) MR110177A	1ML			KBS	
14A		Y (N)			X		a) b)	D) T)	N) 1 2 3 L)					
18-03-1798-1C	03/21/18	Y (N)		X		03/22/18	a) F7G190840 b) 160613	D) 03/22/18 T) 13:00	N) (1) 2 3 L) MR-110177A	1ML			KBS	
2C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
3C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
4C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
5C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
6C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-1845-1-10A	03/21/18	Y (N)		X		03/22/18	a) b)	D) T)	N) 1 2 3 L)					
18-03-1942-1-4C	03/22/18	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-1793-1-3I7	03/21/18	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					

* FILTER AND DIGEST: If the sample was filtered in the lab and digested immediately, mark x in the cell.

** FILTER AND PRESERVE: If the sample was filtered in the lab and preserved prior to digestion, mark x in the cell.

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EPA 245.1 Mercury

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Standards Preparation Logs

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Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	030918	C	org Pb	P-115 / P-015	MS121417A	0.04 mL	MR121417D	20 mL	2 ppm	3/10/18	1080
MS	"	D	"	"	"	0.02	"	"	1	"	"
MS	"	E	"	"	"	0.1 conf	"	"	0.2	"	"
MS	"	F	"	"	MS012418A	0.1	"	"	5	"	"
MS	030518A	A	Hg	MP-060	M006-18-04	1 mL	M006-43-06 5 mL	100 mL	1 ppb	4/5/18	826
MS	"	B	"	"	M006-43-01	"	M006-43-08 5 mL	"	"	"	"
MS											
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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
4/27/17	M042717A	6010/200.7	Na [10,000 PPM]	M006-123-23	1 ml	See SOP Appx C	200 ml	See SOP Appx C	12 ml HNO_3 10 ml HCl	M006-041-22 ~~M006-042-23~~	~~4/27/18~~ 12/13/17	935	
			Sn [10,000 PPM]	↓ -16	0.05 ml					M006-041-24 4/28/17			
			Si [1,000 PPM]	840-23 ~~M006-039-12~~ 935 4/27/17	1.77 ml								
4/27/17	M042717 B	1640	100 ppm Se	M006-42 -11	0.254 g	pour	1 L	100 ppm	H_2O	N/A	4/27/18	100	
4/28/17	M042717C	60W/w.y	Internal std Conc.										
			Sc	M006-042-04	10 mL	1000 ppm	500 mL	2 ppm	5 mL HNO_3	M006-41-22	3 yr	87	05/2021
			Li-6	M006-042-03	50 mL			100 ppm					11/2021
			Ga	M006-042-05	50 mL			/					11/2020
			In	M006-042-04	10 mL			2 ppm					03/2018
			Ho	M006-042-07	10 mL								04/2021
			Tb	M006-042-06	10 mL								04/2021
			Bi	M006-042-08	10 mL								04/2021
	M041717D		Internal std	M041717C	5 mL	2 ppm	1 L X3	0.1-1 ppm	10 mL HNO_3				
4/5/17	M050317A	Hg	100 ppm Hg	M006-36-15	10 mL	1000 ppm	100 mL	100 ppm	5 mL HNO_3	M006-41-22	12/20/17	868	
	M050317B		1 ppm STD	M050317A	1 mL	100 ppm	100 mL	1 ppm	5 mL HNO_3	M006-41-22	6/3/17	868	

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Reagent Preparation Logbook

PREP DATE	NEW REAGENT ID #	TEST METHOD	REAGENT DESCRIPTION	SOURCE CHEMICAL(S) NAME	SOURCE CHEMICAL(S) ID #	SOURCE CHEMICAL(S) INITIAL AMOUNT	SOLVENT NAME	SOLVENT ID #	FINAL VOLUME	EXPIR. DATE	PREP BY	COMMENTS
04/25/17	R0425170?	org. Pb	10% 336/MIBK	Aliquat 336	M006-35-24	20 mL	MIBK	M006-32-?	200 mL	4/25/20	SJr	
|	R0425?703	|	1% 336/MIBK	10% 336	R0425?702	20 mL	MIBK	M006-32-?	200 mL	|	SJ	
04/27/17	R0427?701	Gold/? 8	3% HNO3	HNO3	M006-041-22	150 mL	DI water	~~00??~~ 71701	4L X 5	4/27/17	SJr	
04/28/17	R0428170?	Hg	Aqua Regia 1:1	HCl HNO3	M006-041-~~22~~ 24 M006-041-22	300 mL 100 mL	DI H_2O	N/A	800 mL	~~4/28~~ 4/28/18	868	Daily
04/28/17	R0428?702	Hg	5% KMnO4	KMnO4 ~~M006-3?-01~~ SKS 4/28/17	M006-37-01	500 g	DI H_2O	NA	10 L	4/28/18	868	
06/08/17	R0608?701	Hg	12% $NH_2OH\cdot Cl$	$NH_2OH\cdot Cl$ NaCl	M006-36-02 M006-~~?~~ SKS 6/8/17 42-20	1.2 kg |	DI H_2O	NA	10 L	6/08/18	868	
06/09/17	R0609?701	org. Pb	Blank	Xylene	M006-042-14	200 mL	NA	NA	~~?~~ XY	7/?/17	SJr	
|		|	|	MIBK	M006-03?-02	250 mL	|	|	|	|	|	
|		|	|	1% 336	R0609?703	50 mL	|	|	|	|	|	
|		|		3% I_2	R0609?704	1 mL	|	|	|	|	|	
|	R0609?7?2	|	10% .336/MIBK	Aliquat 336	M006-35-24	20 mL	MIBK	M006-03?-??	200 mL	|	|	
|	R0609?703	|	1% .336/MIBK	10% .336/MIBK	R0609?702	20 mL	MIBK	|	200 mL	|	|	
|	R0609?704	|	I_2 3%	Iodine	G007-04-19	6 g	Benzene	M006-0?-0?	200 mL	|	|	2/2 3/25
6/14/17	R0614?701	Hg	? Aqua Regia	HCl HNO3	M006-041-24 M006-41-22	3?0 mL 1?0 mL	DI H_2O	NA	800 mL	~~6/14~~ 6/14/17	868	Daily
|	R0614?7?2	|	$SnCl_2\cdot 2H_2O$ Reducing agent	HCl $SnCl_2\cdot 2H_2O$	M006-42-22 M006-42-12	60 mL 22 g	~~DI H_2O 60 mL HCl~~ DI H_2O 868 06/14/17	~~M006-42-22~~ NA	2L x 2	6/14/18	868	✓ Daily
|	R0614?703	|	3% HCl carrier solution	HCl	M006-42-22	60 mL	DI H_2O	NA	2 L x 2	6/14/18	|	|
6/20/17	R0620?701	metals	1:1 HNO3	HNO3	M006-042-2?	1.25 x 30	DI H_2O	NA	2.5 x 30	06/20/18	710.	
06/27/17	R0627?7??	1631	$NH_2OH\cdot HCl$	$NH_2OH\cdot HCl$	M006-34-24	60 g	DI H_2O	NA	200 mL	10/8/17	1030	
06/28/17	R0628?701	metals	1:1 HNO3	HNO_3	M006-041-11	500 mL	DI H_2O	NA	1000 mL	6/28/19	1080	
06/28/17	R0628?7~~0?~~ A	|	1:2 HCl	HCl	M006-042-2?	~~?~~ ?	DI H_2O	NA	2000 mL x 20	6/28/18	2??	

Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	081717	A	metals		HNO3 MCC6-043-08	500mL	Nano Pure Type 1 grade water reagent	1000mL	1:1 HNO3	08/17/18	1080
MR	083117	A	200.7 metals		~~5/31/17 1080 HNO3 HCl M006-044-06~~	500mL	Type 1 grade water	2000mL	1:4 HCl	08/31/18	1080
MR					M006-042-22						
MR	09/08/17	A	Hg	Balance 59	M006-41-09	500g	~~Nano~~ DI H_2O	1000mL	5% $K_2S_2O_3$	9/8/18	808
MR	091917	A	metals		M006-042-15	833mL	Type 1 grade water	2.5L	1:2 HCl	9/19/18	1080
MR	092717	A	metals		~~M006-44-06~~	1.25L	DI H_2O Type 1	2.50L	1:1 HNO3 ~~HCl~~	~~09/27/18~~	710
MR	10/10/17-01	A	TCLP		NAOH M006-34-15	160gram	DI+20	4.0L x8	1N	10/09/18	805
MR	10/10/17-04	A	STLC		NAOH M006-34-15	640gram	DI+20	4.0L x8	4N	10/09/18	805
MR	101117	A	1631	Balance 64	M006-043-12	60g	DI-H_2O	200mL	$NH_2OH \cdot HCl$	10/11/18	996
MR	102817	A	metals		M006-44-07	833mL	Type 1 grade water	2.5L	1:2 HCl	10/28/18	1080
MR	110117	A	Metals	D-044	M006-44-17	250mL	DI-H_2O	500mL	1:1 HNO_3	11/01/18	1058
MR	110117	B	1	F002	M006-41-23	250mL	DI-H_2O	500mL	1:1 HCl	11/01/18	1058
MR	~~110417~~	~~A~~	~~1631~~		~~M006-043-12~~	~~60g~~	200mL DI-H_2O	~~200mL~~	~~11/4/17 1080~~		
MR	110917	A	1631	Balance 64	M006-032-04 M6007-016-19	2.16g 3.04g	M006-036-24 HCl	200mL	BrCl	11/3/18	1080
MR	111617	A	METALS	D-044	M006-045-02	100mL	DI-H_2O	2L	5% HNO_3	11/16/18	STK
MR	112717	A	TCLP		M006-44-07	8.33x(4)	DI+20	100x4 = 400mL	1N	11/26/18	805
MR	11/21/17	A	METALS	D-044 F-002	M006-045-01 M006-45-01	120mL 320mL	DI-H_2O	2L	6% HNO_3 16% HCl	11/21/18	STK
MR	12/1/17	A	Hg	Balance 59	M006-42-20 M006-45-05	1.2kg 1.2kg	DI-H_2O	10L	12% NaCl-NH_4OH	12/1/18	808

Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	120717	A	metals		M006-045-01	833mL	Di-H2O	2.5L	1:2 HCl	12/7/18	1080
MR	121117	A	6010/200.7	D044 / F002	M006-045-02 M006-045-01	60mL 50 mL	Di-H2O	1LX2	6%HNO3 5%HCl	12/11/18	935
MR	↓	B	↓	↓	↓	↓	↓	↓	↓	↓	↓
MR	↓	C	↓	↓	↓	100mL 100mL	↓	1L x4	10% HNO3 10% HCl	↓	↓
MR	↓	D	↓	↓	↓	↓	↓	1L X2	↓	↓	↓
MR	121217	A	SPLP		M006-44-21 H2SO4 M006-45-02 HNO3	60ml 40ml >100ml	DI-H2O	100 ml	60% H2SO4 40% HNO3	12/11/18	805
MR	121417	A	Org. Pb	Pipette 04072016 MIBK D-054	Aliquot 336 M006-35-24	20mL	M006-039-02 MIBK 180mL	200mL	10% :336/MIBK	6/14/18	1080
MR	121417	B	Org. Pb	Pipette 04072016 MIBK D-054	10% -336/MIBK MR121417A	20mL	M006-039-02 MIBK 180mL	200mL	1% :336/MIBK	6/14/18	1080
MR	121417	C	Org. Pb	Balance 61 pipette 04072016	Iodine G007-04-19	6g	M006-09-09 Benzene	200mL	I_2 3%	6/14/18	1080
MR	121417	D	Org. Pb	D-054/D-055/pipette 04072016	Xylene M006-044-14	200mL			BLANKS	6/14/18	1080
MR	↓	↓	↓	↓	MIBK M006-039-02	250mL	↓	↓	↓	↓	↓
MR	↓	↓	↓	↓	1% -336 MR121417B	50mL	↓	↓	↓	↓	↓
MR	↓	↓	↓	↓	3% I_2	1mL	↓	↓	↓	↓	↓
MR	121617	A	metals		M006-045-02	1.25L	Di-H2O	2.50L	1:1 HNO3	12/16/18	1080
MR	011218	A	Hg	Bal #59	M006-43-01	~~50~~ 1000g	DI-H2O	20L	5% KMnO4	1/12/19	868
MR	011218	B	Hg	Bal #59	M006-43-025 M006-42-20	1.2kg 1.2kg	DI-H2O	10L	12% NaCl·NH2OH	1/12/19	868
MR	013018	A	METALS		M006-045-09	4X ~~1.25L~~ 500 ml	DI-H2O	4X 1000 mL	1:1 HNO3	01/30/19	710
MR	013118 ~~013018~~	A	metals		M006-042-22	833mL	Di-H2O	2.5L	1:2 HCl	1/31/19 ~~18~~ 1/4/18 1080	1080

Book Number: 5

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Nitric Acid	EMD	NX0407/4	52088	8/31/15	2.5L x2	G	8/31/12	469	8/31/12	469	
2	Hydrochloric Acid	EMD	HX0607/4	51122	8/31/15	2.5L x2	G	8/31/12	469	8/31/12	469	
3	↓	EMD	HX0607/4	51258	↓	2.5L x2	G	8/31/12	↓	↓	↓	
4	Instrument Calibration STD #3	SPEX	CL-6AC-3	CL43-8443	08/30/13	125mL x2	P	09/06/12	JSF	09/06/12	JSF	
5	Instrument Calibration STD #2	SPEX	CL-CAL-2	CL5-1684P	08/30/13	1LT mL	P	09/06/12	JSF	09/06/12	JSF	
6	HCL Acid	EMD	HX0607/4	51258	09/07/15	2.5L x7	G	09/07/12	JDS	09/07/12	JDS	
7	↓	↓	HX0607/4	51122	↓	2.5L x3	G	↓	↓	↓	↓	
8	↓	↓	HX0607/4	51181	↓	2.5L x1	G	↓	↓	↓	↓	
9	Nitric Acid	EMD	NX0407/4	52012	09/06/15	2.5L x10	G	09/07/12	JDS	09/07/12	JDS	
10	↓	↓	↓	52088	↓	2.5L x1	G	↓	↓	↓	↓	
11	HCL Acid	EMD	HX0607/4	51258	09/13/15	2.5L x8	G	09/14/12	JDS	09/14/12	JDS	
12	Nitric Acid	EMD	NX0407/4	52012	09/13/15	2.5L x8	G	09/14/12	JDS	09/14/12	↓	
13	Stannous Chloride	VWR	BDH0304-500g	13196 3	NA	500g x5	P	9/17/12	769	9/17/12	769	
14	Potassium Permanganate	Fisher	P279-212	116168	9/18/17	2.5kg x4	G	9/18/12	769	9/18/12	769	
15	Acetic Acid, Glacial	Amresco	0714-2.5L	2372c462	02/30/13	2.5L x4	G	09/18/12	JDS	09/18/12	JDS	CTF: 3 p8-28
16	Hydrogen Peroxide	EMD	HX0635-2	51283217	10/31/13	1L x6	P	9/26/12	769	9/26/12	769	
17	Nitric Acid	EMD	NX0407/1	52012	9/27/15	500mL	G	9/27/12	JSF	9/27/12	JSF	
18	|	|	|	51331		500mL x8	|	|	|	|	|	
19	Nitric Acid	Fisher	A467-2	121020	2/23/15	2L x2	T	10/3/12	776	10/3/12	776	
20	Acetic Acid	Fisher	A507-P212	611007	6/2014	2.5L x2	P	10/3/12	776	10/3/12	776	
21	Potassium Persulfate	Fisher	P281-500	120909	10/5/17	500g x12	P	10/5/12	769	10/5/12	769	
22	Hydroxylamine Hydrochloride	Acros	41205000	A0315671	10/5/17	500g x6	|	|	|	|	|	
23	Nitric Acid	EMD	NX0407/4	52012	10/08/15	2.5L x5	G	10/08/12	JDS	10/08/12	JDS	
24	Hydroxylamine Hydro	ALDRICH	431362-50G	MKBL3454V	10/8/17	50g	P	10/8/12	776	10/8/12	776	
25	Stannous Chloride Dihydrate	Fisher	T163-500	122973	10/9/17	500g x6	P	10/9/12	776	10/9/12	776	

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1	Zinc Standard	Accu Trace	ICP-MS-70N-0.1X-1	2140415001	4/2019	100 ml	P	4/8/14	769	4/8/14	769	
2	Iron standard		ICP-MS-27N-0.1X-1	2130151021	1/2018	100 ml						
3	Chromium Standard		ICP-MS-53N-0.1X-1	2130255146	3/2018	100 ml						
4	Mercury standard		ICP-MS-54N-0.1X-1	2131150S0	7/2018	100 ml						
5	Nitric Acid	EMD	NX0407-2	53358	4-10-17	2.5Lx5	G	4-11-14	879	4-11-14	879	
6	Hydrochloric Acid	EMD	HX0607-2	54028	4-10-17	2.5Lx5	G	4-11-14	879	4-11-14	879	
7	Hydrochloric Acid	EMD	HX0607-2	53010	4-14-17	2.5Lx8	G	4-15-14	879			Lot # verified
8	Nitric Acid	EMD	NX-0407-2	53358	4-20-17	2.5Lx5	G	4-21-14	879	4-21-14	879	Lot # verified
9	Hydrochloric Acid	EMD	HX0607-2	54028	4-20-17	2.5Lx5	G	4-21-14	879	4-21-14	879	Lot # verified
10	Hydrogen peroxide	Fisher	H325-500	140441	4/17/2	500ml	P	4/21/14	110	4/21/14	110	
11	Hydrogen Peroxide	EMD	HX-0635-2	54044409	8/28/16	1Lx10	P	4/24/14	879	~~4-24-14~~	~~879~~	Lot # verified
12	Hydroxylamine Hydrochloride	Reagent world	5470-11-1	FZ0661	4/25/17	500gx1	O	4/25/14	769	4/25/14	769	
13	Hydrochloric Acid	EMD	HX067-2	54028	4/29/17	2.5Lx5	G	4/29/14	914	4/29/14	914	
14	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	4/29/14	914	4/29/14	914	
15	Ammonium Hydroxide	BDH	87003-214	7214010	3/04/17	2x500ml	P	4/30/14	110	4/30/14	110	
16	Hydrochloric Acid	EMD	HX0607-4	52310	4/30/17	2.5x5	G	4/30/14	914	4/30/14	914	
17	Hydrochloric Acid	EMD	HX0607-4	54028	4/30/17	2.5Lx5	G	5/5/14	879	6/9/14	915	Lot # verified
18	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/5/14	879	5/5/14	879	Lot # verified
19	Nitric Acid	EMD	NX0407-2	53157	05/21/17	2.5Lx2	G	05/22/14	805	05/22/14	805	
20	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/22/14	879	5/22/14	879	Lot # verified
21	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/23/14	879	5/27/14	879	Lot verified
22	Hydrochloric Acid	EMD	~~HX0607-4~~	54028	4/30/17	2.5Lx5	G	5/23/14	879	6/2/14	915	HX0607-2
23	Sulfuric Acid 93-98%	~~EMD~~ Omni Trace	SX-1247-2	53123	3/24/17	2.5L	G	5/30/14	915	5/30/14	915	
24	KMnO4	Fisher	0279 212	136746	5/30/14	2.5Kgx2	G	5/30/14	915	6/11/14	915	
25	Nitric Acid	Fisher	A467-2	121311 O	11/24/16	2Lx2	T	6/4/14	RA	[illegible]	RA	

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1	Potassium Permanganate	EMD	PX1550-5	16BIL0662	7/27/18	2.5x5	P	7/22/16	BUS	7/27/16	SKB	
2	ICV IDX - Solution - A	High Purity	SM-2011-003 S.A	1619011	7/18/17	250 ml	P	7/27/16	BUS	7/27/16	BUS	
3	- B		-B	1619013								
4	- C		-C	1619013								
5	- D		-D	1619014								
6	Spike #1		SM-2011-004	1619015		1 L						
7	Spike #2		SM-2011-001	1619010								
8	HNO_3	EMD	NX0418-2	56020	08/03/19	18x 2.5L	G	08/04/16	1030	08/04/16	1030	
9	Hydrogen Peroxide	Fisher	H325-500	162633	08/04/19	500 mL	P	08/04/16	776	08/04/16	776	
10	HCL	EMD	HX0607-2	55320	08/04/19	2.5L	G	08/04/16	1030	08/04/16	1030	
11	TETRAETHYL LEAD	SPEX	SVO-CSEL-8-500	EN1605180001	8/18/17	500mL	G	8/19/16	SKB	8/19/16	SKB	
12	Hydrogen peroxid	EMD	500/HX0635-2	56039624	8/22/19	1L	P	8/24/16	710	8/24/16	710	710 8/24/16
13	HNO_3	EMD	NX0407-2	553-23	9/1/19	2.5Lx20	G	9/1/16	SKB	9/1/16	SKB	
14	Citric Acid Anhydrous	Fisher	A940-1	160994	09/01/21	1 Kg X8	P	09/01/16	1030	09/01/16	1030	
15	HCL	EMD	HX-0607-2	56027	09/26/19	2.5LX10	G	09/26/16	1030	09/26/16	1030	
16	HNO_3	EMD	HX-0407-2	56020	09/26/19	2.5LX18	G	09/26/16	1030	09/26/16	1030	
17	TUNE	SPEX	CL-TUNE-1	CCI-16MAR16	03/30/17	09/22/16 125mL	P	09/30/16	SKB	09/30/16	SKB	
18	Cal Std #3		CL-CAL-3	CCI-36MAR16		125mL						
19	Interferents A		CL-INT-A1	CCI-123MAR16		125mLx2						
20	Analytes B		CL-INT-B1	CCI-50MAR16		125mL						
21	Nitric Acid	Fisher	A467-2	1216050	05/31/19	2L x2	P	10/03/16	776	10/03/16	776	
22	Hydrochloric Acid	Fisher	A508-P212	141160410	05/13/19	2.5L x4	P					
23	Zr	Accustandard	ICP-MS-71N-0.1X-1	21404503-02	06/2021	100mL	P	10/13/16	SKB	10/13/16	SKB	
24	Li^6		ICP MS-IS-L16-10X-1	216025072	02/15/204	100mL	P	10/14/16	SKB	10/14/16	SKB	
25	Hydrogen peroxide	EMD	HX0635-2	56039624	10/9/19	1L	P	10/14/16	710	10/14/16	710	

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1	HCl	EMD	HX0607-2	55320	05/26/17	2.5L x 26	G	05/26/16	1030	05/26/16	1030	710 5/26/16
2	Hydroxylamine. Hydrochloride	Fisher	H330-500	149336A	06/30/21	500g x 12	P	5/26/16	868	5/31/16	868	
3	Nitric Acid	Fisher	UN2031	1216010	08/26/19	2L x 2	P	06/08/16	110			
4	$SnCl_2 \cdot 2H_2O$	Fisher	UN3260	158453	06/08/21	500g x 6	P	06/08/16	110			
5	Soda Lime.	Teledyne LABS (Tekmar)	PN#[illegible]	8006-28-8	06/09/2021	200g x 1	P	06/09/16	110	06/09/16	110	
6	$H_3NO \cdot HCl$	Fisher	H330-500	156156	06/20/21	500g x 6	P	06/20/16	868	6/20/16	710	
7	Instrument Cal. Std #2	SPEX	CL-CAL-2	CL1-119MK8F	6/30/17	125 mL	P	6/20/16	592	6/20/16	592	
8	#3		CL-CAL-3	CL1-36MK8F	6/30/17							
9	Mercury		PLHG2-1Y	21-44HGF	6/30/17							
10	Lithium		PLLI2-2F	21-57LIF	6/30/17							
11	$SnCl_2$	Fisher	T142-500	138452	6/21/19	500g x 12	P	6/21/16	776	6/21/16	776	
12	Hydrogen Peroxide	EMD	HX0635-2	55314605	11/30/17	12 x 18	P	06/23/16	1030	06/23/16	1030	
13	HNO_3	~~Fisher~~ EMD	NX0407-2	55323	04/13/17	2.5L x 10	G	06/23/16	1030	06/23/16	1030	
14	HCl	EMD	HX0607-2	56027	06/23/19	2.5L x 15	G	06/23/16	1030	06/23/16	1030	
15	Mercury	High-Purity	100033-2	1604607	12/20/17	100 mL	P	06/29/16	776	06/29/16	776	
16	Terbium		10M57-1	1608537	12/20/17							
17	Spike 1		SM-2011-004	1616806	06/20/17	250 mL						
18	Spike 2		SM-2011-001	1616805								
19	Buffer pH 4.0 Solution (STD)	Fisher	SB101-500	1601779	01/31/18	500mL x 2	P	06/29/16	805	06/29/16	805	CTF: #3. p28-B
20	Buffer pH 7.0 Solution (STD)	Fisher	SB107-500	162805	04/30/18	500mL x 2	P	06/29/16	805	06/29/16	805	CTF: #3. p28-A
21	Buffer pH 10.0 Solution (STD)	Fisher	SB115-500	162803	04/30/18	500mL x 2	P	06/29/16	805	06/29/16	805	CTF: #3 p28-C
22	Buffer pH 7.00 Solution (ICV)	Fisher	SB108-500	158639	12/31/17	500mL x 2	P	06/29/16	805	06/29/16	805	CTF: #3 p28-D
23	Isopropyl Alcohol	Fisher	A451-4	157378	07/05/19	4L x 2	G	07/06/16	805	07/06/16	805	CTF:
24	Hydrochloric Acid	Fisher	A508-P212	4111020	03/17/19	2.5L x 2	P	07/21/16	776	07/21/16	776	
25	Acetic Acid	EMD	AX0078-6	55223	07/21/19	1L x 3	P	07/21/16	776	07/21/16	776	

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1	Calcium	Ultra	ICP-120	CP-4462	9/30/23	125-mL	P	12/20/16	SH	12/21/16	SH	
2	Barium	"	ICP-158	CM-6544	1/31/23	"	"	"	"	"	"	
3	Silicon	"	ICP-114	CP-1238	4/30/23	"	"	"	"	"	"	
4	Nitric Acid	EMD	NX0407-2	56048	12/30/16	2.5x30	G	12/30/16	710	12/30/16	710	
5	Hydrochloric Acid	EMD	HX0607-2	58208	12/30/19	2.5x20	G	12/30/16	710	12/30/16	710	
6	H_2SO_4	EMD	SX1247-2	55329	01/09/20	2.5L	G	01/09/17	996	01/09/17	996	
7	HNO_3	EMD	NX0407-2	56020	01/11/20	2.5L x 24	G	01/11/17	1058	01/11/17	1058	
8	HNO_3	EMD	NX0407-2	56018	01/11/20	2.5x2	G	01/11/17	1058	01/11/17	1058	
9	Phosphorus 10,000 mg/mL	High Purity	10M39-1	1630829	7/10/18	125ml	P	1/11/17	935	1/11/17	935	
10	PH Tape	Micro Essential	#140	216814	06/15/17	4 Rolls	P	01/16/17	1058	01/16/17	1058	
11	HNO_3	Fisher	A509-P212 ~~UN2031~~ 710 01/23/17	1116080	08/26/2018	2.5L x 18	P	01/23/17	710	01/23/17	710	
12	HCl	↓	A508-P212 ~~UN1789~~ 710 01/23/17	4116060	07/26/19	2.5L x 14	P	01/23/17	710	01/23/17	710	
13	H_2O_2	EMD	HX0638-2	56258639	~~09/30/18~~ 11/06/18	2.5L x 20	P	02/06/17	710	2/06/17	710	4 710 2/6/17
14	AL Standard	Ultra	ICP-113	CP-3976	9/30/2023	125mL	P	02/06/17	1030	02/06/17	1030	
15	Boron	Ultra	ICP-105	K00924A	11/31/21	125mL	P	02/06/17	1030	02/06/17	1030	
16	Hydrogen peroxide	Fisher	H325-500	165728	2/10/2020	500ml x 2	P	2/10/17	110			
17	Nitric Acid	Fisher	A467-2	1216080	09/07/2019	2L x 2	P	2/10/17	110			Clean room for metals DPD
18	Nitric Acid	Fisher	A509-P212	1116100	11/10/2018	2.5x20	P	2/13/17	710	02/13/17	710	
19	Silver	Ultra	ICP-047	CP-4409	09/20/23	125mL	P	2/20/17	1030	02/20/17	1030	
20	Silver	Ultra	ICP-147	CP-4495	09/30/23	125ml	P					
21	Chromium		ICP-124	CP-1768	05/31/23							
22	Cobalt		ICP-127	CP-2011								
23	Nickel		ICP-128	CP-0006	02/28/23							
24	Sulfur		ICP-116	CM-5373	11/30/22							
25	Vanadium		ICP-123	CP-3591	08/31/23							

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1	Sodium	Ultra	ICP-111	CP-3948	9/30/23	125 mL	P	2/20/17	1030	2/20/17	1030	
2	Phosphorus		ICP-115	CP-4381								
3	Potasium		ICP-119	CP-0352	2/28/23							
4	Lithium		ICP-103	T30356	5/31/21							
5	Cadmium		ICP-148	CP-0156	2/28/23							
6	Molybdenum		ICP-142	CL-2860	08/31/21							
7	Bismuth		ICP-183	CP-2124	6/30/23							
8	Sulfuric Acid.	EMD	SX1247-2	~~SX1247-2~~ 53329	2/20/20	2.5L	G	2/20/17	848	2/20/17		
9	Potassium Persulfate	Acros Organics	424185000	A0371062	2/11/19	500g x12	P	2/27/17	848	2/27/17		
10	Sodium Chloride	APA	10562	25752	2/17/20	25x20	P	2/17/17	KO	2/27/17	KO	
11	HNO3	Fisher	A509-P212	1116100	11/10/18	2.5L x10	P	2/28/17	1058	2/28/17	1058	
12	HCL	Fisher	A508-P212	4116090	10/19/19	2.5L x20	P	2/28/17	1058	2/28/17	1058	
13	Instrument Calibration Standard 2	SPEX	CL-CAL2	CL1-179MKBY	2/24/18	125mL x2	P	3/10/17	53	3/10/17		
14	3	SPEX	CL-CAL3	CL2-117MEBY	2/24/18	125mL x4	P					
15	ICP Multielement Calibration Std-10	High Purity	ICP-MCS-10	1515415	2/21/18	250mL	P	3/22/17	935	3/22/17	935	
16	-8		ICP-MCS-8	1637121		500mL X2						
17	-1		ICP-MCS-1	1515602		500mL						
18	-7		ICP-MCS-7	1705326	2/24/18	500mL						
19	-11		ICP-~~MCS~~-AM11 (935 3/22/17)	1705327		125 mL						
20	Acetic Acid, Glacial	Fisher	A38C-212 (2.5L)	Lot# 166899	04/03/20	2.5L X4	G	04/04/17	805	04/04/17	805	
21	Nitric Acid	Fisher	A509-P212	1116080	08/26/2018	2.5 X1	P	04/06/17	710	04/06/17	710	
22				1116100	11/10/2018	2.5 X18	P					
23				1116080	11/30/2018	2.5 X8	P					
24	HCl	Fisher	A508-P212	4116090	11/19/2019	2.5X20	P					
25	Sodium borohydride	Fisher	S678-25	161168	4/10/2022	2X25g	P	4/10/17	110	4/10/17	110	

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1	Sodium Selenate decahydrate	Aldrich	450294-5G	MKCB477V	4/UL	5g	G	4/10/17	110	4/13/17	110	
2	Ammonium Hydroxide	Fisher	A572-P500	#711090	10/16/2018	500mLx6	P	04/17/17	805	04/19/17	805	
3	Ci-6	AccuStd	ICP-MS-IS-C16-10X-1	216115021	11/2021	100mL	P	04/20/17	53r	04/20/17	53r	
4	Sc		ICP-MS-SCN-0.1X-1	216055006	05/2021	100mL	P					
5	Ga		ICP-MS-GaN-0.1X-1	215110067	11/2020	100mL	P					
6	Tb		ICP-MS-TbN-0.1X-1	213125126-01	02/2021	100mL	P					
7	Ho		ICP-MS-HoN-0.1X-1	217045020	04/2022	100mL	P					
8	Bi		ICP-MS-BiN-0.1X-1	217045044	04/2022	100mL	P					
9	Stannous Chloride Dihydrate	Fisher	T163-500	163999	04/2022	500g X6	P	04/25/17	1030	04/25/17	1030	
10	Hydro Chloric Acid	Anachem Ultra	87003-216	4216110	01/2020	500mL	P					
11	Na_2SeO_4	Alfa Aesar	13613	71408-04	04/2022	50g	G	04/25/17				
12	$SnCl_2$	Fisher	T1-141-500	145293A	4/2020	500g x 12	P	4/25/17	848	4/26/17	848	
13	~~BOILING STONES~~	Saint-Gobain	D1069103	Lot# T714-TC002	04/2022	450g X 8	P	04/27/17	805	04/27/17	805	CTF: #3 P30-24 P30-25
14	XYLENE	Fisher	X5-4	168622	4/28/20	4L X 4	G	4/28/17	53r	4/-/17	53r	
15	HCl.	Fisher	A508-P212	4116090	~~4/28~~ 10/9/19	2.5X 20.	P	4/28/17	710	4/28/17	710	710 4/28/19
16	HNO3	Fisher	A509-P212	111610	11/30/18	2.5 X 20	P	4/28/17	710	4/28/17	710	
17	Sodium [10,000 µg/mL]	Ultra	ICP-111	CP-3978	9/30/23	1L	P	5/2/17	935	5/2/17	935	
18	Potassium [10,000 µg/mL]		ICP-119	CR-0917	4/30/24	1L	P	5/2/17	935	5/2/17	935	
19	Hydrogen Peroxide	EMD	HX0635-2	56258639	09/30/18	1L	P	05/05/17	710	5/5/17	710.	
20	Sodium Chloride	Fisher.	S271-10	161535	05/15/22	10kg	P	5/15/17	848	5/15/17	848	
21	Nitric Acid	Fisher	A509-P212	1117010	~~5/23/17~~ [illegible]	2.5x20	P	5/23/17	710	5/23/17	710	#710 5/23/17
22	HCl	Fisher	A508-P212	4116090	10/9/19	2.5X20	P	5/23/17	710	5/23/17	710	
23	Hydrogen peroxide	EMD	HX0635-2	56273642	10/31/18	1LX5	P	5/26/17	710	5/26/17	710	
24	Lead II Chloride	Alfa Aesar	12345	M22B018	5/27/23	50g	P	6/3/17	12r	5/3/17	12r	
25	Buffer pH7.200 Solution (STD)	Fisher	SB56-500	171346	03/31/2019 ~~06/06/19~~ 805 06/06/19	500mL X 1	P	06/06/17	805	06/06/17	805	CTF: #3. P31-33

COMMENTS:

05/22/12 Revision

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Potassium Permanganate	VWR	~~2 31 100~~ 97065-626	3166C309	7/15/16		P	7/18/16	868	6/13/17	868	* Purge! [illegible]
2	PH TAPE	Micro Essential Lab	~~216715~~ 140 1058 06/13/17	216315	06/15/18	10 rolls	P	06/07/17	1058	06/07/17	1058	
3	ADPC	Sigma	287675-10G	0CBG64HV	6/18/22	100g	G	6/11/17	53r	6/13/17	53r	
4	H_2SO_4	Fisher	~~211 5080~~ UN1830 1030 06/27/17	3115080	11/25/18	2.5 L	P	06/22/17	1030	06/27/17	1030	
5	Nitric Acid	Fisher	A467-2	1216120	01/04/20	2.5 L X2	T	6/28/17	53r	6/28/17	53r	
6	Acetic Acid.	|	A8007-6	56120	6/28/20	1L X 2	T	|	53r	|	53r	
7	100 μg/mL Hg	SPEX	PLHG2-1Y	22-93HGY	6/30/18	125 mL	P	6/29/17	868	6/29/17	868	
8	HNO3	Fisher	A509-P212	1116120	~~7/14/17~~ * 12/16/2018	2/X 2.5 L	P	7/14/17	710	~~7/14/17~~	710	* 710 7/14/17
9	Nitric Acid	Fisher	A467-2	1217010	01/3/20	2L X 2	T	7/27/17	53r	7/27/17	53r	
10	Sodium Chloride	Alfa Aesar	10862	25313	7/31/22	500g	P	7/31/17	53r	7/31/17	53r	
11	Sodium Chloride	|	|	25152	8/2/22	25g	|	|	|	|	|	
12	Hydroxylamine Hydrochloride	Fisher	H330-500	163471	~~[illegible]~~ 868 8/2/17	500g X 6	P	7/24/17	868	8/2/17	868	
13	|	|	|	164543	8/2/22	500g X 6	P	|	|	|		
14	Sulfuric Acid	Fisher		3116090	11/2/19	2.5 L	~~G~~ P	8/7/17	868	8/7/17	868	
15	Tetraethyl Lead	SPEX	SVG-CSEL-8-500	TS170731012	8/2/18	500mL	G	8/8/17	1080	8/8/17	1080	
16	Gold III Chloride	Acros	43708	A0366219	8/11/22	5g	G	8/4/17	110	8/4/17	110	
17	ICP-MS-QC2-1	AccuStandard	ICP-MS-QC2-1	215075097-02	06/30/19	100mL	P	08/11/17	53r	08/11/17	53r	
18	Beryllium ICP-MS-05N-0.01X-1	|	ICP-MS-05N-0.01X-1	217015012	01/09/22	100mL	P	|	|	|	|	
19	Manganese ICP-MS-33N-0.01X-1	|	ICP-MS-33N-0.01X-1	217035131	03/28/22	100mL	P	|	|	|	|	
20	Aluminum ICP-MS-01N-0.1X-1	|	ICP-MS-01N-0.1X-1	217045036	04/14/22	100mL	P	|	|	|	|	
21	Zinc ICP-MS-70N-0.1X-1	|	ICP-MS-70N-0.1X-1	216035086	03/23/21	100mL	P	|	|	|	|	
22	Iron ICP-MS-27N-0.1X-1	|	ICP-MS-27N-0.1X-1	216015101	02/17/21	100mL	P	|	|	|	|	
23	Chromium ICP-MS-13N-0.1X-1	|	ICP-MS-13N-0.1X-1	216055077	05/25/21	100mL	P	|	|	|	|	
24	Interferents A	SPEX	CL-INT-A1	CL3-158MKBY	08/30/18	125 mL	P	08/11/17	996	08/11/17	996	
25	Analytes B	SPEX	CL-INT-B1	CL3-14MKBY	08/30/18	125 mL	P	08/11/17	996	08/11/17	996	

COMMENTS: /

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Tuning Solution 1	SPEX	CL-TUNE-1	CL3-79MKBY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	
2	Sodium	SPEX	PLNA2-3Y	A017-4NAY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	
3	Ultrapure Sodium Chloride	ESI	seaBlank-0500	170341	08/14/20	500mL x3	P	08/14/17	SR	08/14/17	SR	
4	Nitric Acid	Fisher	A467-2	1217010	08/16/20	2L x2	T	8/16/20	SR	8/16/20	SR	
5	Nitric Acid	Fisher	A467-2	1116120	12/16/2018	2.5L x5	P	08/23/17	1030	08/23/17	1030	
6	Nitric Acid	Fisher	A509-P212	1116111	03/15/19	2.5L x19	P	08/23/17	1030	08/23/17	1030	
7	HCL	Fisher	A508-P212	4116090	10/19/19	2.5L x20	P	08/23/17	1030	08/23/17	1030	
8	Sodium Selenate decahydrate	Aldrich	450294-5G	MKBN4778V	09/15/20	1	G	09/15/17	1030	09/15/17	1030	
9	Hydrogen Peroxide	EMD	HX0635-2	56273642	10/31/18	1L x6	P	9/15/17	1080	09/15/17	1080	
10	Nitric Acid	Fisher	A467-2	1217020	02/22/20	2L x4	T	09/18/17	SR	09/18/17	SR	
11	Ultrapure Sodium Chloride	ESI	seaBlank-0500	170610	09/20/20	500mL x2	P	9/20/17	SR	9/20/17	SR	
12	Hydrogen Peroxide	EMD	HX0635-2	56321712	11/30/18	1L x14	P	9/27/17	1080	9/27/17	1080	
13	Puradisc 25mm 1.0μM	Whatman	6780-2510	9818517	02/2022	2 Box x50	P	09/27/17	1058	09/27/17	1058	
14	Xylenes	Fisher	XS-4	173323	9/29/20	4L x4	G	9/29/17	1080	9/29/17	1080	
15	Ultra Pure Sodium Chloride	ESI	seaBlank-0500	170603	10/02/20	500 x3	P	10/2/17	SR	10/2/17	SR	
16	PTFE BOILING STONES-450GRAMS	chemware	D1069103	22569094	~~10/06/17~~ NA	(450gm) 16OZ x2	P	10/06/17	710	10/06/17	710	710 10/06/17
17	Nitric Acid	Fisher	A509-P212	1117040	04/05/2019	2.5L x18	P	10/06/17	710	10/06/17	710	
18	Sodium borohydride	ACROS ORGANICS	200050250	AC353486	10/06/22	25g x4	G	10/09/17	SR	10/09/17	SR	
19	Iron Standard	ULTRA	ICP-126-L	CR-3137	08/31/24	1L	P	10/10/17	776	10/10/17	776	
20	Soda Lime	Teledyne Leeman Labs	606-00015	E006-28-8	N/A	200g x2	P	10/18/17	1080	10/18/17	1080	
21	Sulfuric Acid	Omni Trace	SX1247-2	56175	10/25/18	2.5L	G	10/25/17	868	10/25/17	868	
22	ICP Analytical Mixture 11	High Purity	ICP-AM-11	1705327	10/18	125mL	P	10/30/17	935	10/30/17	935	
23	ICP Multi-element Cal. Standard 8	↓	ICP-MCS-8	1635121	↓	500mL x2	↓	↓	↓	↓	↓	
24	Potassium (10,000 μg/mL)	↓	10M41-1	1723447	4/19	125mL	↓	↓	↓	↓	↓	
25	APDC	SIGMA	P8765-100G	BCBR8189V	10/31/22	100g	G	10/31/17	776	10/31/17	776	

COMMENTS:

Book Number: 6

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	HCl	Fisher	A508-P212	4117010	03/02/20	2.5x20	P	11-09-17	710	11-09-17	710	
2	(HNO3) Nitric Acid	↓	A509-P212	1117042	05/05/19	2.5x12	P	↓	↓	↓	↓	
3	Buffer pH 4.0 Solution (I.C.V.)	VWR	E452-500mL	1257C3/2	11/15/18	500ml x 1	P	11/16/17	805	11/16/17	805	For: pH #5 REF: pH #c Logbook p.97
4	M.I.B.K	Fisher	M213-4	171549	11/21/20	4L x 4	G	11/21/17	935	11/21/17	935	
5	P Hydroxylamine Hydrochloride	Fisher	H330-500	172066	12/1/22	500g x 12	P		848	12/1/17	848	
6	Zirconium	BICCA	MSZRIKN...	4711426	4/2019	100mL	P	12/06/17	JR	12/06/17	JR	
7	Buffer pH 4.0 Solution (Standard)	Fisher	SB101-500	173445	04/30/19	500ml x 2	P	12/12/17	805	12/12/17	805	REF: pH Log book #10 p.60
8	Buffer pH 7.0 Solution (I.C.V.)	Fisher	SB108-500	170679	01/31/19	500ml x 2	P	12/12/17	805	12/12/17	805	REF: pH Log book # p.60
9	Nitric Acid	Fisher	A509-212	1117060	05/15/19	2.5x20	P	11/17/17	710	11/17/17	710	
10	Interferents A	SPEX	CL-INT-A1	CL3-157MLBY	12/30/18	125mL	P	12/13/17	JR	12/13/17	JR	
11	Terbium 10,000 µg/mL	High Purity	10M57-1	1716539	6/2019	125ml	P	12/19/17	935	12/19/17	935	
12	0.45 PVDF Filters (For STLC)	MILLEX	SLHV033NK	R7CA9840	01/08/21	NA	P	01/09/18	805	01/09/18	805	REF: CTF #3 p.31-18
13	EPA Method 200.7 Int. Check STD #1	Ultra	ICM-221	R01207A	3/31/21	50ml	P	1/10/17	935	1/10/18	935	
14	EPA Method 6010A Mixed STD. Sol. V	↓	ICM-605	CR-3299	8/31/20	125ml	↓	1/10/17	935	1/10/18	935	
15	Hg Mercury 1000µg/mL 2% HCl	High purity standards	100033-2	1723615	7/1/19	250mL	P	1/11/17	1080	1/11/17	1080	
16	Calcium	Ultra	ICP-120-L	CR-3808	9/30/24	1L	Y	1/11/18	JR	1/15/18	JR	
17	Magnesium	|	ICP-112-L	CP-0878	9/30/23	1L	b	|	|	|	|	
18	Lead(II) Chloride	ALDRICH	203572-10G	MKCC3373	1/22/2023	10g	P	1/22/18	710	—		
19	Sodium hydroxide monohydrate	Alfa Aesar	41290	61701011	1/22/23	25g	P	1/22/18	JR	1/22/18	JR	
20	Sulfuric Acid	Fisher	A510-P212	3116493	5/4/20	7.5L	P	1/31/18	848	1/31/18	848	
21	Instrument Calibration Standard 2	SPEX	CL-CAL-2	CL4-41MLBY	01/30/19	125mL	P	1/31/18	JR	1/31/18	JR	
22	Instrument Calibration Standard 3	|	CL-CAL-3	CL4-01MLBY	01/30/19	125mL x 4	(	|	)	)	)	
23	Glass Microfiber TCLP filter	Whatman	1810-090	9691301	NA	4	NA	04/25/17	805	04/25/17	805	REF: CTF #3 p.30-18
24	Hydrogen Peroxide (H2O2)	EMD	~~HX~~ HX0635-2 (2-2-18 710)	56273642	10/31/18	12x10	P	02/02/18	710	02/02/18	710	
25	HNO3	Fisher	A509-P212	1117062	07/12/19	2.5x15	P	02/02/18	710	02/02/18	710	

COMMENTS: L

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ASTM D-4464 (M)

Particle Size Laser

RAW DATA

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,106
INSTRUMENT:	LPSA 1	D/T ANALYZED:	2018-03-26 18:07
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:		D/T REVIEWED:	

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1798\18-03-1798-1-F_26 Mar 20

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0009S006**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
UNITS:	%	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	6.07	1.00	6.07	0.0100	
Silt (0.00391 to 0.0625mm)	50.3	1.00	50.3	0.01000	
Total Silt and Clay (0 to 0.0625mm)	56.4	1.00	56.4	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	19.0	1.00	19.0	0.01000	
Fine Sand (0.125 to 0.25mm)	16.4	1.00	16.4	0.01000	
Medium Sand (0.25 to 0.5mm)	7.39	1.00	7.39	0.0100	
Coarse Sand (0.5 to 1mm)	0.903	1.00	0.903	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

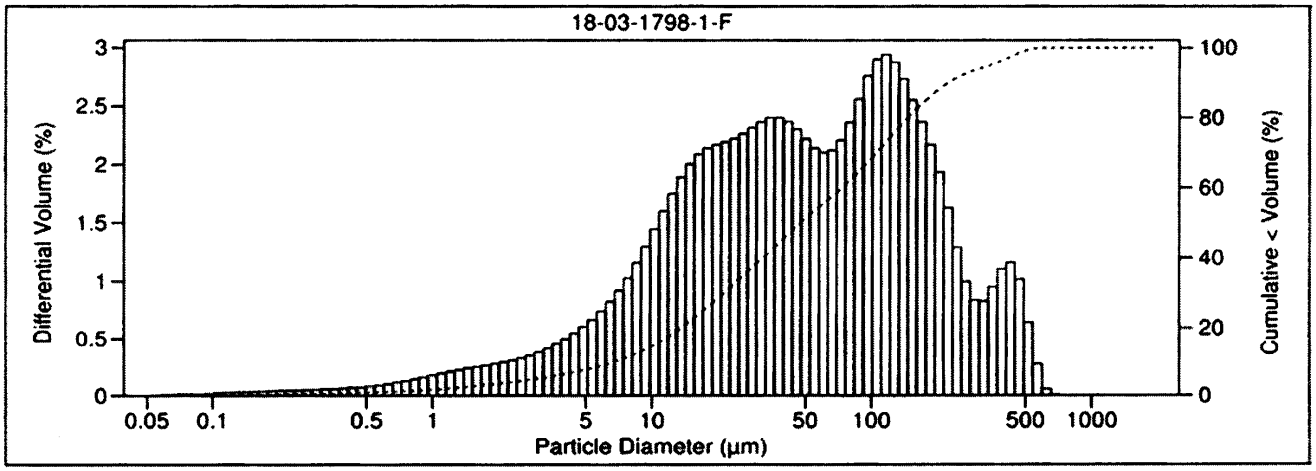
CH2M HILL - Gainesville BOEING

Date Sampled:	03/21/18
Date Received:	03/21/18
Work Order No:	18-03-1798
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

Sample ID	Depth ft	Description	Mean Grain Size mm
A2BMP0009S006		Very Fine Sand	0.090

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.00	0.90	7.39	16.39	18.95	50.30	6.07	56.37



V 3.0

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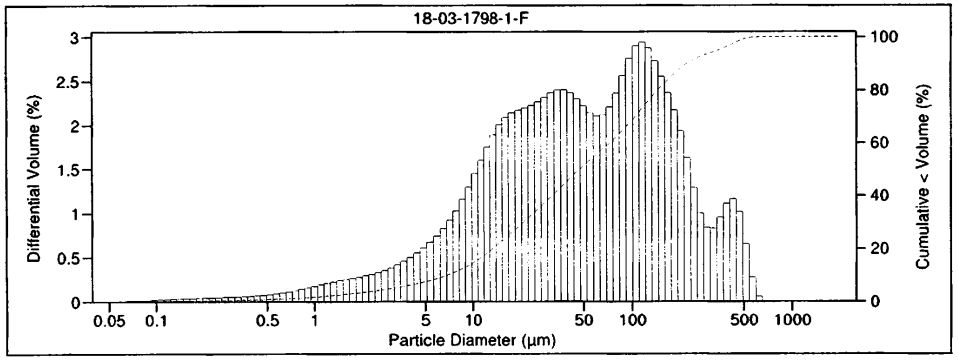
File name:	C:\LS13320\18-03-1798-1-F_26 Mar 2018_18.08.21.$ls 18-03-1798-1-F_26 Mar 2018_18.08.21.$ls		
File ID:	18-03-1798-1-F		
Sample ID:	18-03-1798-1-F		
Operator:	1106		
Run number:	2		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	0.64%		
LS 13 320	Aqueous Liquid Module		
Start time:	18:07 26 Mar 2018	Run length:	51 seconds
Pump speed:	49		
Obscuration:	2%	PIDS Obscur:	18%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1798-1-F_26 Mar 2018_18.08.21.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	90.48 µm	S.D.:	108.4 µm
Median:	47.49 µm	Variance:	11749 µm^2
Mean/Median ratio:	1.905	Skewness:	2.028 Right skewed
Mode:	116.3 µm	Kurtosis:	4.238 Leptokurtic

d_{10}: 6.826 µm d_{50}: 47.49 µm d_{90}: 223.7 µm

Folk and Ward Statistics (Phi)

Mean:	4.49	Median:	4.40	Deviation:	2.02		
Skewness:	0.11	Kurtosis:	0.98				

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
3.104 µm	10.94 µm	17.11 µm	32.05 µm	47.49 µm	123.7 µm	169.8 µm	347.8 µm

Particle Diameter µm	18-03-1798 -1-F_26 Mar 2018 _18.08.21 .$ls Volume
0.04	0.68
0.4	2.70
1.95	2.69
3.91	50.3
62.5	19.0
125	16.4
250	7.39
500	0.90
1000	0
2000	

18-03-1798-1-F_26 Mar 2018_18.08.21.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00039	2.660	0.35	176.9	2.17
0.044	0.00054	2.920	0.38	194.2	1.94
0.048	0.00091	3.206	0.42	213.2	1.63
0.053	0.0019	3.519	0.46	234.1	1.29
0.058	0.0039	3.863	0.50	256.9	1.00
0.064	0.0070	4.241	0.55	282.1	0.84
0.070	0.010	4.656	0.61	309.6	0.83
0.077	0.014	5.111	0.67	339.9	0.95
0.084	0.017	5.611	0.74	373.1	1.11
0.093	0.020	6.159	0.82	409.6	1.16
0.102	0.023	6.761	0.92	449.7	1.02
0.112	0.026	7.422	1.03	493.6	0.65
0.123	0.029	8.148	1.16	541.9	0.28
0.134	0.032	8.944	1.30	594.9	0.056
0.148	0.034	9.819	1.45	653.0	0.0046
0.162	0.037	10.78	1.60	716.9	0
0.178	0.039	11.83	1.75	786.9	0
0.195	0.042	12.99	1.89	863.9	0
0.214	0.044	14.26	2.01	948.3	0
0.235	0.047	15.65	2.09	1041	0
0.258	0.049	17.18	2.14	1143	0
0.284	0.052	18.86	2.17	1255	0
0.311	0.055	20.71	2.19	1377	0
0.342	0.058	22.73	2.22	1512	0
0.375	0.062	24.95	2.26	1660	0
0.412	0.067	27.39	2.32	1822	0
0.452	0.073	30.07	2.37	2000	
0.496	0.080	33.01	2.40		
0.545	0.089	36.24	2.40		
0.598	0.100	39.78	2.37		
0.657	0.11	43.67	2.30		
0.721	0.13	47.94	2.22		
0.791	0.14	52.63	2.14		
0.869	0.16	57.77	2.10		
0.954	0.18	63.42	2.12		
1.047	0.19	69.62	2.21		
1.149	0.21	76.43	2.36		
1.261	0.22	83.90	2.56		
1.385	0.24	92.10	2.76		
1.520	0.25	101.1	2.90		
1.669	0.26	111.0	2.94		
1.832	0.28	121.8	2.87		
2.011	0.29	133.7	2.73		
2.208	0.31	146.8	2.55		
2.423	0.33	161.2	2.37		

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER: **18-03-1798**
INSTRUMENT: LPSA 1
EXTRACTION : N/A
D/T EXTRACTED:

ANALYZED BY: 1,106
D/T ANALYZED: 2018-03-26 18:14
REVIEWED BY:
D/T REVIEWED:

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1798\18-03-1798-2-F_26 Mar 20

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0011S008**

LCS/MB BATCH:
MS/MSD BATCH:
UNITS: %

SAMPLE VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
FINAL VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
ADJUSTMENT RATIO TO PF: 1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	9.41	1.00	9.41	0.0100	
Silt (0.00391 to 0.0625mm)	56.7	1.00	56.7	0.01000	
Total Silt and Clay (0 to 0.0625mm)	66.1	1.00	66.1	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	24.2	1.00	24.2	0.01000	
Fine Sand (0.125 to 0.25mm)	9.09	1.00	9.09	0.0100	
Medium Sand (0.25 to 0.5mm)	0.547	1.00	0.547	0.010	
Coarse Sand (0.5 to 1mm)	0.000	1.00	ND	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

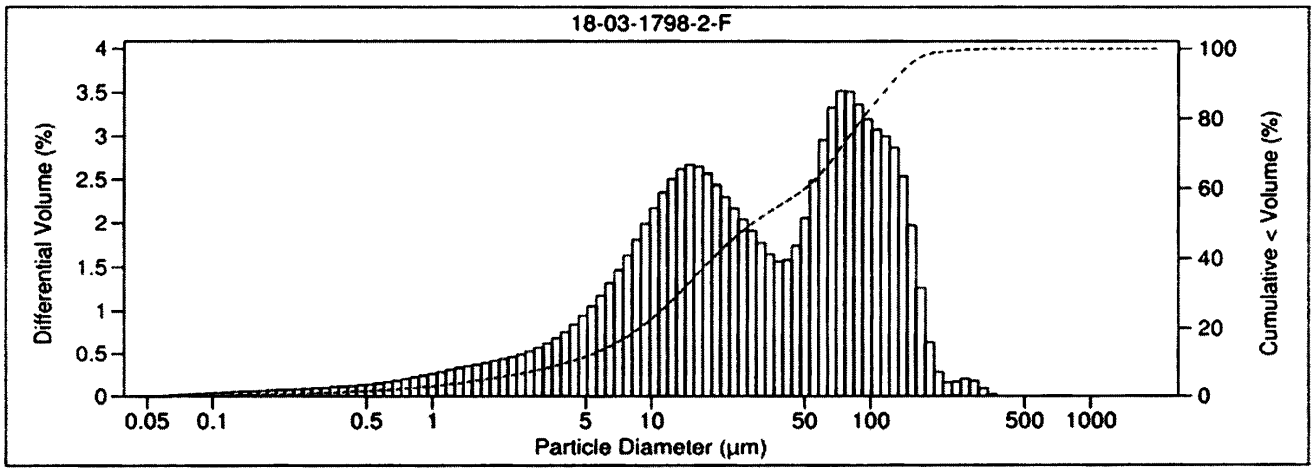
CH2M HILL - Gainesville BOEING

Date Sampled:	03/21/18
Date Received:	03/21/18
Work Order No:	18-03-1798
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

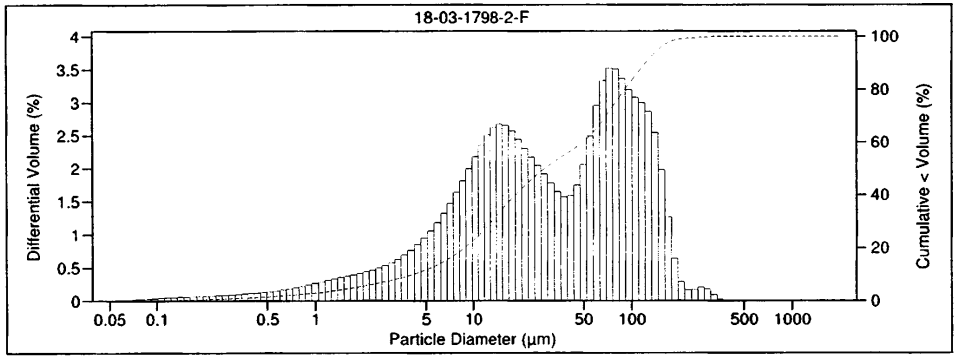
Sample ID	Depth ft	Description	Mean Grain Size mm
A2BMP0011S008		Silt	0.050

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.00	0.00	0.55	9.09	24.23	56.73	9.41	66.13



V 3.0

File name:	C:\LS13320\18-03-1798-2-F_26 Mar 2018_18.15.14.$ls 18-03-1798-2-F_26 Mar 2018_18.15.14.$ls		
File ID:	18-03-1798-2-F		
Sample ID:	18-03-1798-2-F		
Operator:	1106		
Run number:	3		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	0.44%		
LS 13 320	Aqueous Liquid Module		
Start time:	18:14 26 Mar 2018	Run length:	51 seconds
Pump speed:	49		
Obscuration:	5%	PIDS Obscur:	32%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1798-2-F_26 Mar 2018_18.15.14.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	50.24 µm	S.D.:	50.50 µm
Median:	28.98 µm	Variance:	2550 µm^2
Mean/Median ratio:	1.734	Skewness:	1.424 Right skewed
Mode:	72.94 µm	Kurtosis:	2.531 Leptokurtic

d_{10}: 4.202 µm d_{50}: 28.98 µm d_{90}: 123.5 µm

Folk and Ward Statistics (Phi)

Mean:	5.18	Median:	5.11	Deviation:	1.93		
Skewness:	0.16	Kurtosis:	0.91				

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
1.794 µm	7.018 µm	10.99 µm	18.93 µm	28.98 µm	79.69 µm	102.6 µm	146.8 µm

Particle Diameter µm	18-03-1798-2-F_26 Mar 2018_18.15.14.$ls Volume
0.04	1.21
0.4	4.15
1.95	4.05
3.91	56.7
62.5	24.2
125	9.09
250	0.55
500	0
1000	0
2000	

18-03-1798-2-F_26 Mar 2018_18.15.14.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00075	2.660	0.53	176.9	0.64
0.044	0.0010	2.920	0.57	194.2	0.28
0.048	0.0017	3.206	0.63	213.2	0.16
0.053	0.0034	3.519	0.69	234.1	0.17
0.058	0.0071	3.863	0.76	256.9	0.20
0.064	0.013	4.241	0.85	282.1	0.18
0.070	0.019	4.656	0.95	309.6	0.092
0.077	0.025	5.111	1.06	339.9	0.021
0.084	0.031	5.611	1.18	373.1	0.0020
0.093	0.036	6.159	1.32	409.6	0
0.102	0.042	6.761	1.47	449.7	0
0.112	0.047	7.422	1.64	493.6	0
0.123	0.051	8.148	1.81	541.9	0
0.134	0.056	8.944	2.00	594.9	0
0.148	0.060	9.819	2.18	653.0	0
0.162	0.064	10.78	2.35	716.9	0
0.178	0.068	11.83	2.51	786.9	0
0.195	0.072	12.99	2.62	863.9	0
0.214	0.076	14.26	2.68	948.3	0
0.235	0.081	15.65	2.65	1041	0
0.258	0.087	17.18	2.57	1143	0
0.284	0.092	18.86	2.44	1255	0
0.311	0.098	20.71	2.30	1377	0
0.342	0.10	22.73	2.17	1512	0
0.375	0.11	24.95	2.05	1660	0
0.412	0.12	27.39	1.92	1822	0
0.452	0.13	30.07	1.78	2000	
0.496	0.14	33.01	1.65		
0.545	0.15	36.24	1.57		
0.598	0.16	39.78	1.59		
0.657	0.18	43.67	1.75		
0.721	0.20	47.94	2.06		
0.791	0.22	52.63	2.49		
0.869	0.24	57.77	2.96		
0.954	0.26	63.42	3.33		
1.047	0.29	69.62	3.52		
1.149	0.31	76.43	3.51		
1.261	0.33	83.90	3.36		
1.385	0.35	92.10	3.19		
1.520	0.37	101.1	3.07		
1.669	0.39	111.0	3.00		
1.832	0.41	121.8	2.87		
2.011	0.44	133.7	2.54		
2.208	0.46	146.8	1.98		
2.423	0.49	161.2	1.27		

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,106
INSTRUMENT:	LPSA 1	D/T ANALYZED:	2018-03-26 18:22
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:		D/T REVIEWED:	

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1798\18-03-1798-3-F_26 Mar 20

 # 3 **CLIENT SAMPLE NUMBER: CABMP0001S001**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
UNITS:	%	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	30.5	1.00	30.5	0.01000	
Silt (0.00391 to 0.0625mm)	44.5	1.00	44.5	0.01000	
Total Silt and Clay (0 to 0.0625mm)	75.0	1.00	75.0	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	18.2	1.00	18.2	0.01000	
Fine Sand (0.125 to 0.25mm)	6.62	1.00	6.62	0.0100	
Medium Sand (0.25 to 0.5mm)	0.131	1.00	0.131	0.010	
Coarse Sand (0.5 to 1mm)	0.000	1.00	ND	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

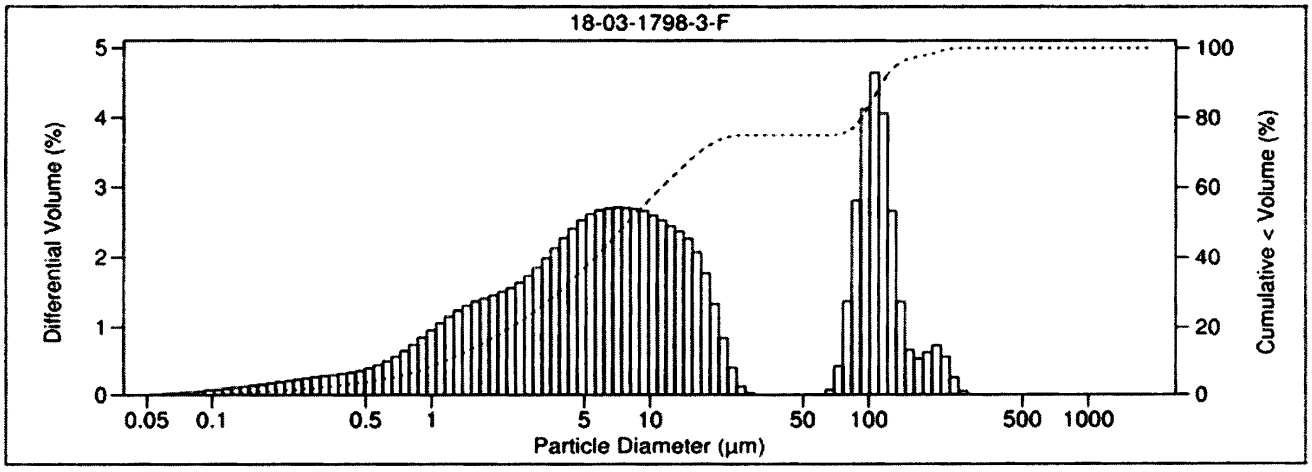
CH2M HILL - Gainesville BOEING

Date Sampled:	03/21/18
Date Received:	03/21/18
Work Order No:	18-03-1798
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

Sample ID	Depth ft	Description	Mean Grain Size mm
CABMP0001S001		Silt	0.034

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.00	0.00	0.13	6.62	18.21	44.49	30.54	75.03



V 3.0

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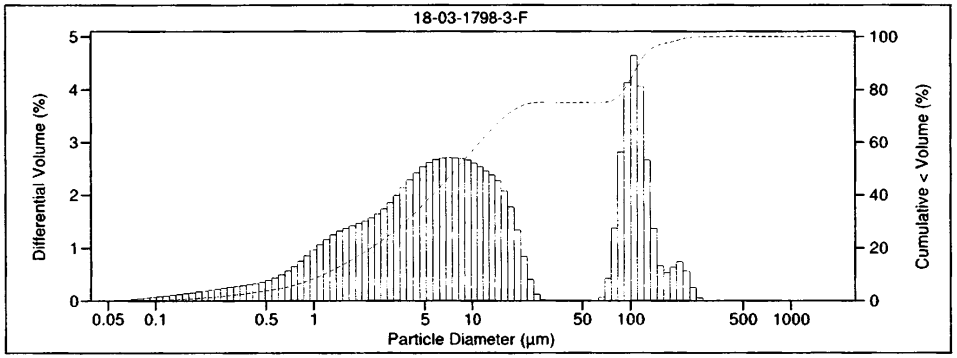
File name:	C:\LS13320\18-03-1798-3-F_26 Mar 2018_18.23.22.$ls 18-03-1798-3-F_26 Mar 2018_18.23.22.$ls		
File ID:	18-03-1798-3-F		
Sample ID:	18-03-1798-3-F		
Operator:	1106		
Run number:	4		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	1.16%		
LS 13 320	Aqueous Liquid Module		
Start time:	18:22 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	1%	PIDS Obscur:	42%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1798-3-F_26 Mar 2018_18.23.22.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	34.45 µm	S.D.:	51.56 µm
Median:	7.910 µm	Variance:	2659 µm^2
Mean/Median ratio:	4.355	Skewness:	1.640 Right skewed
Mode:	105.9 µm	Kurtosis:	1.867 Leptokurtic

d_{10}: 1.162 µm d_{50}: 7.910 µm d_{90}: 115.0 µm

Folk and Ward Statistics (Phi)

Mean:	6.47	Median:	6.98	Deviation:	2.62		
Skewness:	-0.16	Kurtosis:	0.99				
<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
0.652 µm	1.789 µm	3.031 µm	5.591 µm	7.910 µm	27.18 µm	101.5 µm	132.9 µm

Particle Diameter µm	18-03-1798 -3-F_26 Mar 2018 _18.23.22 .$ls Volume
0.04	2.95
0.4	14.4
1.95	13.2
3.91	44.5
62.5	18.2
125	6.62
250	0.13
500	0
1000	0
2000	

18-03-1798-3-F_26 Mar 2018_18.23.22.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.0011	2.660	1.74	176.9	0.63
0.044	0.0015	2.920	1.85	194.2	0.74
0.048	0.0025	3.206	1.99	213.2	0.56
0.053	0.0051	3.519	2.13	234.1	0.25
0.058	0.011	3.863	2.28	256.9	0.052
0.064	0.020	4.241	2.41	282.1	0.0038
0.070	0.030	4.656	2.53	309.6	0
0.077	0.041	5.111	2.62	339.9	0
0.084	0.052	5.611	2.67	373.1	0
0.093	0.065	6.159	2.70	409.6	0
0.102	0.079	6.761	2.71	449.7	0
0.112	0.092	7.422	2.71	493.6	0
0.123	0.11	8.148	2.69	541.9	0
0.134	0.12	8.944	2.66	594.9	0
0.148	0.14	9.819	2.60	653.0	0
0.162	0.15	10.78	2.53	716.9	0
0.178	0.17	11.83	2.45	786.9	0
0.195	0.19	12.99	2.37	863.9	0
0.214	0.20	14.26	2.27	948.3	0
0.235	0.22	15.65	2.08	1041	0
0.258	0.24	17.18	1.77	1143	0
0.284	0.26	18.86	1.34	1255	0
0.311	0.27	20.71	0.84	1377	0
0.342	0.29	22.73	0.40	1512	0
0.375	0.30	24.95	0.12	1660	0
0.412	0.32	27.39	0.018	1822	0
0.452	0.35	30.07	0.00082	2000	
0.496	0.39	33.01	0		
0.545	0.43	36.24	0		
0.598	0.49	39.78	0		
0.657	0.56	43.67	0		
0.721	0.65	47.94	0		
0.791	0.75	52.63	0		
0.869	0.85	57.77	0.0034		
0.954	0.96	63.42	0.066		
1.047	1.06	69.62	0.42		
1.149	1.16	76.43	1.37		
1.261	1.24	83.90	2.81		
1.385	1.31	92.10	4.13		
1.520	1.37	101.1	4.64		
1.669	1.42	111.0	4.06		
1.832	1.46	121.8	2.66		
2.011	1.51	133.7	1.37		
2.208	1.57	146.8	0.66		
2.423	1.64	161.2	0.53		

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,106
INSTRUMENT:	LPSA 1	D/T ANALYZED:	2018-03-26 18:28
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:		D/T REVIEWED:	

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1798\18-03-1798-4-F_26 Mar 20

 # 4 **CLIENT SAMPLE NUMBER: CABMP0002S001**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
UNITS:	%	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	31.4	1.00	31.4	0.01000	
Silt (0.00391 to 0.0625mm)	47.1	1.00	47.1	0.01000	
Total Silt and Clay (0 to 0.0625mm)	78.5	1.00	78.5	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	11.3	1.00	11.3	0.01000	
Fine Sand (0.125 to 0.25mm)	10.2	1.00	10.2	0.01000	
Medium Sand (0.25 to 0.5mm)	0.0130	1.00	0.0130	0.010	
Coarse Sand (0.5 to 1mm)	0.000	1.00	ND	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

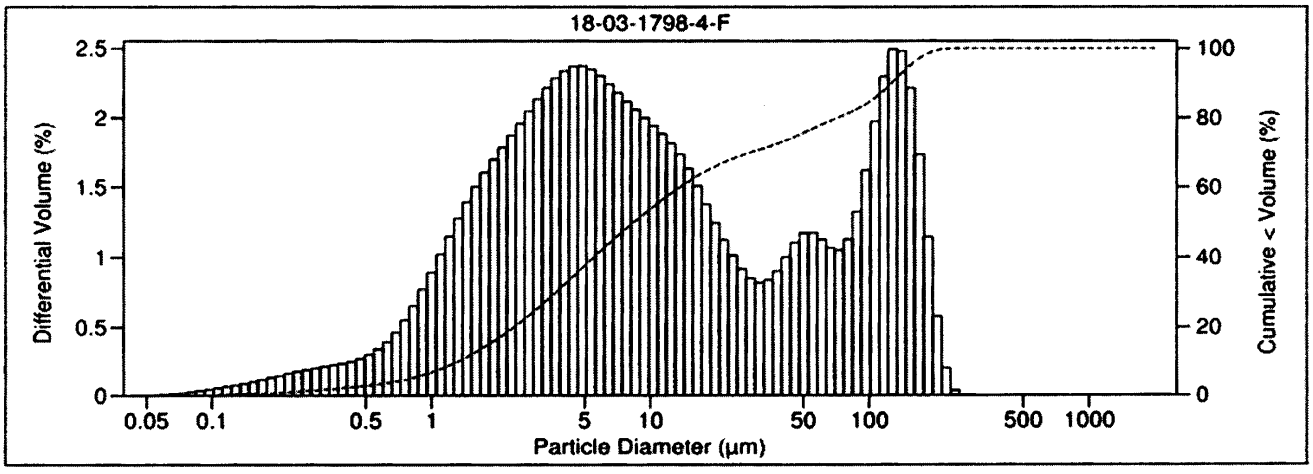
CH2M HILL - Gainesville BOEING

Date Sampled:	03/21/18
Date Received:	03/21/18
Work Order No:	18-03-1798
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

Sample ID	Depth ft	Description	Mean Grain Size mm
CABMP0002S001		Silt	0.035

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.00	0.00	0.01	10.21	11.31	47.05	31.42	78.47



V 3.0

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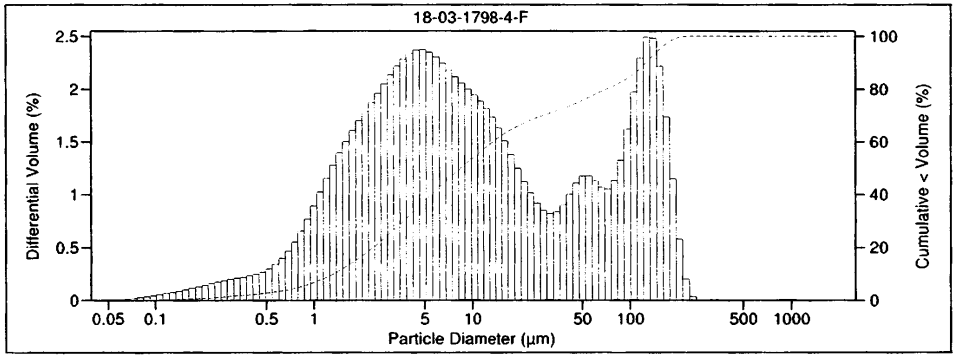
File name:	C:\LS13320\18-03-1798-4-F_26 Mar 2018_18.29.47.$ls 18-03-1798-4-F_26 Mar 2018_18.29.47.$ls		
File ID:	18-03-1798-4-F		
Sample ID:	18-03-1798-4-F		
Operator:	1106		
Run number:	5		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	0.65%		
LS 13 320	Aqueous Liquid Module		
Start time:	18:28 26 Mar 2018	Run length:	51 seconds
Pump speed:	49		
Obscuration:	4%	PIDS Obscur:	48%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1798-4-F_26 Mar 2018_18.29.47.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	35.27 µm	S.D.:	51.24 µm
Median:	8.380 µm	Variance:	2626 µm^2
Mean/Median ratio:	4.209	Skewness:	1.623 Right skewed
Mode:	127.7 µm	Kurtosis:	1.482 Leptokurtic

d_{10}: 1.325 µm d_{50}: 8.380 µm d_{90}: 126.1 µm

Folk and Ward Statistics (Phi)

Mean:	6.43	Median:	6.90	Deviation:	2.56
Skewness:	-0.18	Kurtosis:	0.78		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
0.809 µm	1.924 µm	2.988 µm	5.492 µm	8.380 µm	47.27 µm	96.40 µm	152.7 µm

Particle Diameter µm	18-03-1798-4-F_26 Mar 2018_18.29.47.$ls Volume
0.04	2.21
0.4	14.0
1.95	15.2
3.91	47.1
62.5	11.3
125	10.2
250	0.013
500	0
1000	0
2000	

18-03-1798-4-F_26 Mar 2018_18.29.47.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00068	2.660	2.05	176.9	1.15
0.044	0.00092	2.920	2.13	194.2	0.58
0.048	0.0015	3.206	2.21	213.2	0.20
0.053	0.0031	3.519	2.28	234.1	0.035
0.058	0.0064	3.863	2.34	256.9	0.0024
0.064	0.012	4.241	2.37	282.1	0
0.070	0.019	4.656	2.37	309.6	0
0.077	0.026	5.111	2.35	339.9	0
0.084	0.034	5.611	2.30	373.1	0
0.093	0.043	6.159	2.24	409.6	0
0.102	0.053	6.761	2.18	449.7	0
0.112	0.064	7.422	2.12	493.6	0
0.123	0.075	8.148	2.06	541.9	0
0.134	0.087	8.944	2.00	594.9	0
0.148	0.100	9.819	1.94	653.0	0
0.162	0.11	10.78	1.88	716.9	0
0.178	0.13	11.83	1.82	786.9	0
0.195	0.14	12.99	1.74	863.9	0
0.214	0.16	14.26	1.63	948.3	0
0.235	0.17	15.65	1.51	1041	0
0.258	0.19	17.18	1.38	1143	0
0.284	0.20	18.86	1.25	1255	0
0.311	0.21	20.71	1.12	1377	0
0.342	0.22	22.73	1.01	1512	0
0.375	0.23	24.95	0.92	1660	0
0.412	0.25	27.39	0.85	1822	0
0.452	0.27	30.07	0.82	2000	
0.496	0.30	33.01	0.84		
0.545	0.34	36.24	0.90		
0.598	0.40	39.78	1.00		
0.657	0.47	43.67	1.11		
0.721	0.55	47.94	1.17		
0.791	0.65	52.63	1.18		
0.869	0.77	57.77	1.13		
0.954	0.89	63.42	1.07		
1.047	1.02	69.62	1.05		
1.149	1.15	76.43	1.13		
1.261	1.28	83.90	1.32		
1.385	1.40	92.10	1.62		
1.520	1.51	101.1	1.97		
1.669	1.61	111.0	2.30		
1.832	1.70	121.8	2.49		
2.011	1.79	133.7	2.48		
2.208	1.87	146.8	2.21		
2.423	1.96	161.2	1.73		

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER:	**18-03-1798**	ANALYZED BY:	1,106
INSTRUMENT:	LPSA 1	D/T ANALYZED:	2018-03-26 18:37
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:		D/T REVIEWED:	

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1798\18-03-1798-5-F_26 Mar 20

 # 5 **CLIENT SAMPLE NUMBER: CABMP0003S001**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
UNITS:	%	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	14.8	1.00	14.8	0.01000	
Silt (0.00391 to 0.0625mm)	56.2	1.00	56.2	0.01000	
Total Silt and Clay (0 to 0.0625mm)	71.0	1.00	71.0	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	14.8	1.00	14.8	0.01000	
Fine Sand (0.125 to 0.25mm)	14.2	1.00	14.2	0.01000	
Medium Sand (0.25 to 0.5mm)	0.00209	1.00	ND	0.010	
Coarse Sand (0.5 to 1mm)	0.000	1.00	ND	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

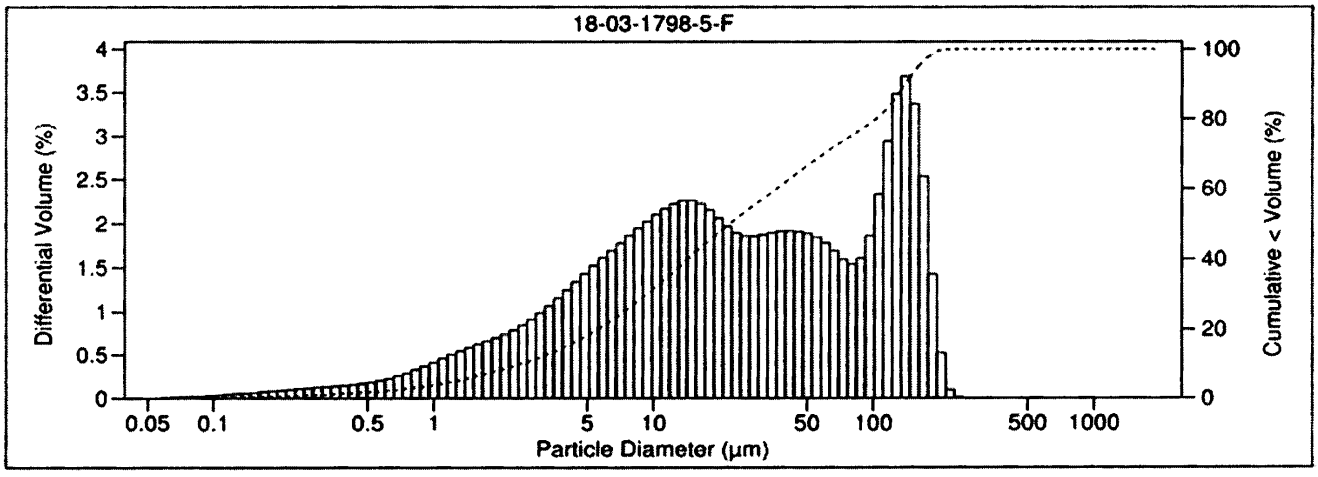
CH2M HILL - Gainesville BOEING

Date Sampled:	03/21/18
Date Received:	03/21/18
Work Order No:	18-03-1798
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

Sample ID	Depth ft	Description	Mean Grain Size mm
CABMP0003S001		Silt	0.048

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.00	0.00	0.00	14.22	14.81	56.16	14.80	70.96



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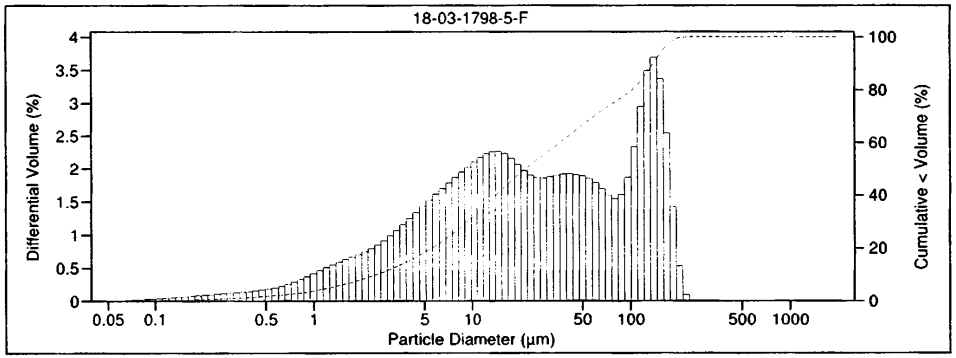
File name:	C:\LS13320\18-03-1798-5-F_26 Mar 2018_18.38.10.$ls 18-03-1798-5-F_26 Mar 2018_18.38.10.$ls		
File ID:	18-03-1798-5-F		
Sample ID:	18-03-1798-5-F		
Operator:	1106		
Run number:	6		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	0.61%		
LS 13 320	Aqueous Liquid Module		
Start time:	18:37 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	3%	PIDS Obscur:	45%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1798-5-F_26 Mar 2018_18.38.10.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	48.22 µm	S.D.:	53.64 µm
Median:	22.14 µm	Variance:	2877 µm^2
Mean/Median ratio:	2.178	Skewness:	1.142 Right skewed
Mode:	140.1 µm	Kurtosis:	0.050 Leptokurtic

d_{10}: 2.512 µm d_{50}: 22.14 µm d_{90}: 139.6 µm

Folk and Ward Statistics (Phi)

Mean:	5.48	Median:	5.50	Deviation:	2.26		
Skewness:	0.09	Kurtosis:	0.84				

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
1.263 µm	4.274 µm	7.318 µm	14.33 µm	22.14 µm	78.61 µm	118.7 µm	159.5 µm

Particle Diameter µm	18-03-1798 -5-F_26 Mar 2018 _18.38.10 .$ls Volume
0.04	1.41
0.4	6.49
1.95	6.91
3.91	56.2
62.5	14.8
125	14.2
250	0.0021
500	0
1000	0
2000	

18-03-1798-5-F_26 Mar 2018_18.38.10.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00050	2.660	0.91	176.9	1.43
0.044	0.00068	2.920	0.98	194.2	0.53
0.048	0.0011	3.206	1.07	213.2	0.097
0.053	0.0023	3.519	1.15	234.1	0.0069
0.058	0.0047	3.863	1.25	256.9	0
0.064	0.0087	4.241	1.34	282.1	0
0.070	0.014	4.656	1.43	309.6	0
0.077	0.019	5.111	1.52	339.9	0
0.084	0.024	5.611	1.61	373.1	0
0.093	0.030	6.159	1.70	409.6	0
0.102	0.037	6.761	1.78	449.7	0
0.112	0.043	7.422	1.87	493.6	0
0.123	0.050	8.148	1.95	541.9	0
0.134	0.057	8.944	2.03	594.9	0
0.148	0.065	9.819	2.10	653.0	0
0.162	0.073	10.78	2.17	716.9	0
0.178	0.081	11.83	2.23	786.9	0
0.195	0.089	12.99	2.26	863.9	0
0.214	0.098	14.26	2.27	948.3	0
0.235	0.11	15.65	2.23	1041	0
0.258	0.12	17.18	2.16	1143	0
0.284	0.12	18.86	2.06	1255	0
0.311	0.13	20.71	1.97	1377	0
0.342	0.14	22.73	1.90	1512	0
0.375	0.15	24.95	1.86	1660	0
0.412	0.15	27.39	1.86	1822	0
0.452	0.17	30.07	1.88	2000	
0.496	0.18	33.01	1.90		
0.545	0.20	36.24	1.92		
0.598	0.22	39.78	1.92		
0.657	0.25	43.67	1.91		
0.721	0.29	47.94	1.89		
0.791	0.33	52.63	1.85		
0.869	0.37	57.77	1.79		
0.954	0.41	63.42	1.70		
1.047	0.46	69.62	1.60		
1.149	0.50	76.43	1.54		
1.261	0.55	83.90	1.61		
1.385	0.59	92.10	1.87		
1.520	0.63	101.1	2.34		
1.669	0.67	111.0	2.94		
1.832	0.71	121.8	3.49		
2.011	0.75	133.7	3.69		
2.208	0.80	146.8	3.37		
2.423	0.85	161.2	2.54		

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER: **18-03-1798**
INSTRUMENT: LPSA 1
EXTRACTION : N/A
D/T EXTRACTED:

ANALYZED BY: 1,106
D/T ANALYZED: 2018-03-26 18:48
REVIEWED BY:
D/T REVIEWED:

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1798\18-03-1798-6-F_26 Mar 20

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0003S022**

LCS/MB BATCH:
MS/MSD BATCH:
UNITS: %

SAMPLE VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
FINAL VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
ADJUSTMENT RATIO TO PF: 1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	4.17	1.00	4.17	0.0100	
Silt (0.00391 to 0.0625mm)	28.5	1.00	28.5	0.01000	
Total Silt and Clay (0 to 0.0625mm)	32.6	1.00	32.6	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	42.4	1.00	42.4	0.01000	
Fine Sand (0.125 to 0.25mm)	17.0	1.00	17.0	0.01000	
Medium Sand (0.25 to 0.5mm)	0.470	1.00	0.470	0.010	
Coarse Sand (0.5 to 1mm)	7.32	1.00	7.32	0.0100	
Very Coarse Sand (1 to 2mm)	0.144	1.00	0.144	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

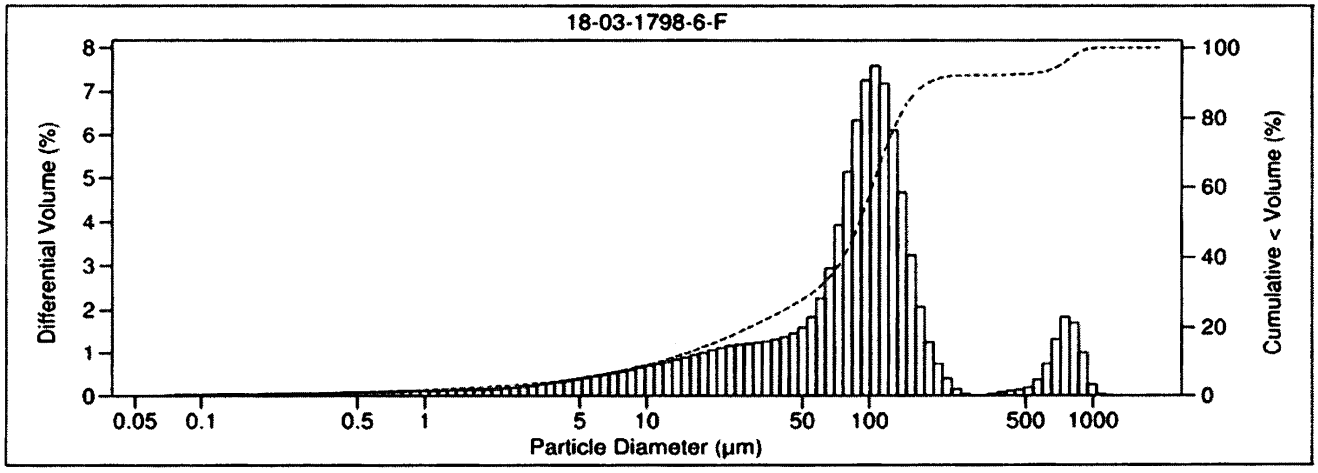
CH2M HILL - Gainesville BOEING

Date Sampled:	03/21/18
Date Received:	03/21/18
Work Order No:	18-03-1798
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

Sample ID	Depth ft	Description	Mean Grain Size mm
EVBMP0003S022		Fine Sand	0.133

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.14	7.32	0.47	17.02	42.42	28.46	4.17	32.63



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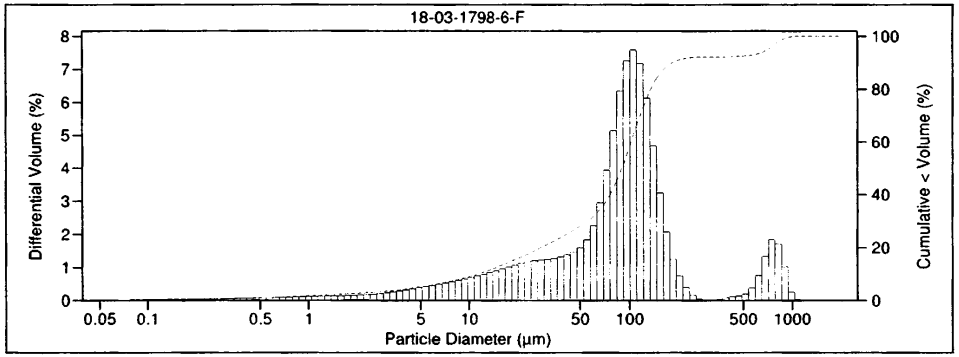
File name:	C:\LS13320\18-03-1798-6-F_26 Mar 2018_18.49.20.$ls 18-03-1798-6-F_26 Mar 2018_18.49.20.$ls		
File ID:	18-03-1798-6-F		
Sample ID:	18-03-1798-6-F		
Operator:	1106		
Run number:	7		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	1.18%		
LS 13 320	Aqueous Liquid Module		
Start time:	18:48 26 Mar 2018	Run length:	51 seconds
Pump speed:	49		
Obscuration:	5%	PIDS Obscur:	39%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1798-6-F_26 Mar 2018_18.49.20.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	132.8 µm	S.D.:	188.1 µm
Median:	90.30 µm	Variance:	35373 µm^2
Mean/Median ratio:	1.471	Skewness:	2.964 Right skewed
Mode:	105.9 µm	Kurtosis:	8.013 Leptokurtic

d_{10}: 11.36 µm d_{50}: 90.30 µm d_{90}: 183.1 µm

Folk and Ward Statistics (Phi)

Mean:	3.94	Median:	3.47	Deviation:	1.79		
Skewness:	0.34	Kurtosis:	1.84				
<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
4.898 µm	20.90 µm	41.36 µm	76.57 µm	90.30 µm	124.9 µm	146.2 µm	709.5 µm

Particle Diameter µm	18-03-1798-6-F_26 Mar 2018_18.49.20.$ls Volume
0.04	0.78
0.4	1.82
1.95	1.57
3.91	28.5
62.5	42.4
125	17.0
250	0.47
500	7.32
1000	0.14
2000	

18-03-1798-6-F_26 Mar 2018_18.49.20.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00050	2.660	0.20	176.9	1.26
0.044	0.00067	2.920	0.23	194.2	0.75
0.048	0.0011	3.206	0.25	213.2	0.40
0.053	0.0022	3.519	0.28	234.1	0.16
0.058	0.0046	3.863	0.31	256.9	0.034
0.064	0.0084	4.241	0.35	282.1	0.0048
0.070	0.013	4.656	0.38	309.6	0.0053
0.077	0.017	5.111	0.42	339.9	0.029
0.084	0.020	5.611	0.45	373.1	0.075
0.093	0.024	6.159	0.49	409.6	0.11
0.102	0.028	6.761	0.53	449.7	0.14
0.112	0.031	7.422	0.57	493.6	0.20
0.123	0.034	8.148	0.61	541.9	0.37
0.134	0.037	8.944	0.65	594.9	0.75
0.148	0.040	9.819	0.70	653.0	1.32
0.162	0.042	10.78	0.74	716.9	1.84
0.178	0.044	11.83	0.79	786.9	1.71
0.195	0.047	12.99	0.84	863.9	1.01
0.214	0.049	14.26	0.90	948.3	0.26
0.235	0.052	15.65	0.95	1041	0.029
0.258	0.055	17.18	1.01	1143	0
0.284	0.058	18.86	1.07	1255	0
0.311	0.061	20.71	1.12	1377	0
0.342	0.064	22.73	1.17	1512	0
0.375	0.068	24.95	1.20	1660	0
0.412	0.071	27.39	1.22	1822	0
0.452	0.075	30.07	1.24	2000	
0.496	0.080	33.01	1.27		
0.545	0.085	36.24	1.32		
0.598	0.090	39.78	1.38		
0.657	0.095	43.67	1.47		
0.721	0.100	47.94	1.60		
0.791	0.11	52.63	1.84		
0.869	0.11	57.77	2.27		
0.954	0.11	63.42	2.96		
1.047	0.12	69.62	3.94		
1.149	0.12	76.43	5.14		
1.261	0.13	83.90	6.35		
1.385	0.13	92.10	7.26		
1.520	0.14	101.1	7.59		
1.669	0.14	111.0	7.18		
1.832	0.15	121.8	6.12		
2.011	0.16	133.7	4.69		
2.208	0.17	146.8	3.25		
2.423	0.19	161.2	2.07		

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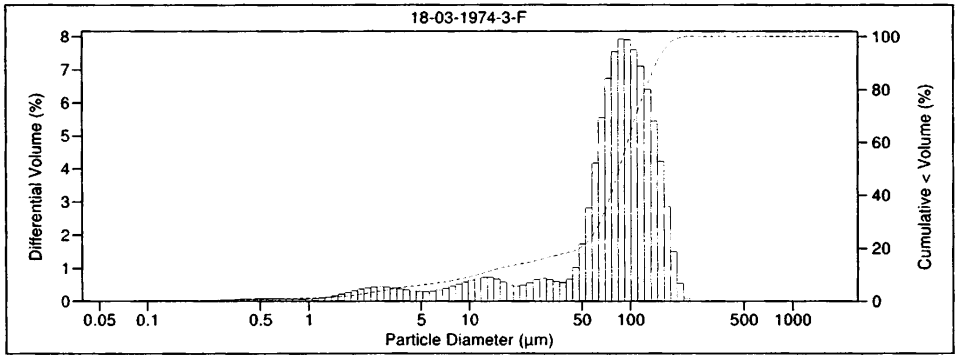
File name:	C:\LS13320\18-03-1974-3-F_26 Mar 2018_19.23.30.$ls 18-03-1974-3-F_26 Mar 2018_19.23.30.$ls		
File ID:	18-03-1974-3-F		
Sample ID:	18-03-1974-3-F		
Operator:	1106		
Run number:	10		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	1.48%		
LS 13 320	Aqueous Liquid Module		
Start time:	19:22 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	8%	PIDS Obscur:	14%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1974-3-F_26 Mar 2018_19.23.30.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	84.75 µm	S.D.:	46.38 µm
Median:	85.54 µm	Variance:	2151 µm^2
Mean/Median ratio:	0.991	Skewness:	-0.0055 Left skewed
Mode:	87.90 µm	Kurtosis:	-0.425 Platykurtic

d_{10}: 11.21 µm d_{50}: 85.54 µm d_{90}: 145.0 µm

Folk and Ward Statistics (Phi)

Mean:	3.87	Median:	3.55	Deviation:	1.38		
Skewness:	0.55	Kurtosis:	2.28				

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
3.606 µm	28.54 µm	58.55 µm	75.55 µm	85.54 µm	115.8 µm	131.3 µm	161.2 µm

Particle Diameter µm	18-03-1974 -3-F_26 Mar 2018 _19.23.30 .$ls Volume
0.04	0.52
0.4	1.85
1.95	2.95
3.91	22.6
62.5	52.7
125	19.4
250	0.0024
500	0
1000	0
2000	

18-03-1974-3-F_26 Mar 2018_19.23.30.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00036	2.660	0.43	176.9	1.50
0.044	0.00049	2.920	0.42	194.2	0.55
0.048	0.00083	3.206	0.40	213.2	0.10
0.053	0.0017	3.519	0.37	234.1	0.0079
0.058	0.0036	3.863	0.34	256.9	0
0.064	0.0063	4.241	0.31	282.1	0
0.070	0.0090	4.656	0.29	309.6	0
0.077	0.011	5.111	0.29	339.9	0
0.084	0.013	5.611	0.31	373.1	0
0.093	0.015	6.159	0.34	409.6	0
0.102	0.017	6.761	0.39	449.7	0
0.112	0.018	7.422	0.45	493.6	0
0.123	0.018	8.148	0.51	541.9	0
0.134	0.019	8.944	0.58	594.9	0
0.148	0.020	9.819	0.63	653.0	0
0.162	0.021	10.78	0.68	716.9	0
0.178	0.022	11.83	0.72	786.9	0
0.195	0.025	12.99	0.71	863.9	0
0.214	0.028	14.26	0.66	948.3	0
0.235	0.032	15.65	0.58	1041	0
0.258	0.037	17.18	0.50	1143	0
0.284	0.044	18.86	0.46	1255	0
0.311	0.051	20.71	0.48	1377	0
0.342	0.059	22.73	0.55	1512	0
0.375	0.066	24.95	0.65	1660	0
0.412	0.072	27.39	0.69	1822	0
0.452	0.076	30.07	0.66	2000	
0.496	0.079	33.01	0.59		
0.545	0.079	36.24	0.56		
0.598	0.077	39.78	0.66		
0.657	0.074	43.67	1.02		
0.721	0.069	47.94	1.73		
0.791	0.064	52.63	2.81		
0.869	0.062	57.77	4.16		
0.954	0.064	63.42	5.55		
1.047	0.074	69.62	6.73		
1.149	0.093	76.43	7.55		
1.261	0.12	83.90	7.92		
1.385	0.16	92.10	7.90		
1.520	0.21	101.1	7.59		
1.669	0.26	111.0	7.10		
1.832	0.31	121.8	6.40		
2.011	0.36	133.7	5.45		
2.208	0.40	146.8	4.23		
2.423	0.42	161.2	2.85		

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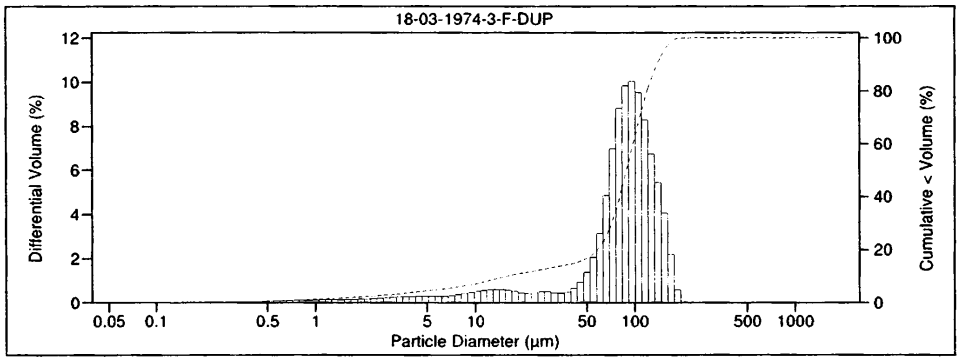
File ID:	18-03-1974-3-F-DUP		
Sample ID:	18-03-1974-3-F-DUP		
Operator:	1106		
Run number:	16		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	1.21%		
LS 13 320	Aqueous Liquid Module		
Start time:	20:52 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	4%	PIDS Obscur:	17%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1974-3-F-DUP_26 Mar 2018_20.53.26.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	86.95 µm	S.D.:	41.41 µm
Median:	89.48 µm	Variance:	1715 µm²
Mean/Median ratio:	0.972	Skewness:	-0.297 Left skewed
Mode:	96.50 µm	Kurtosis:	-0.231 Platykurtic

d_{10}: 16.07 µm d_{50}: 89.48 µm d_{90}: 139.2 µm

Folk and Ward Statistics (Phi)

Mean:	3.62	Median:	3.48	Deviation:	1.07
Skewness:	0.48	Kurtosis:	2.48		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
5.795 µm	47.43 µm	66.41 µm	81.10 µm	89.48 µm	114.0 µm	127.2 µm	153.4 µm

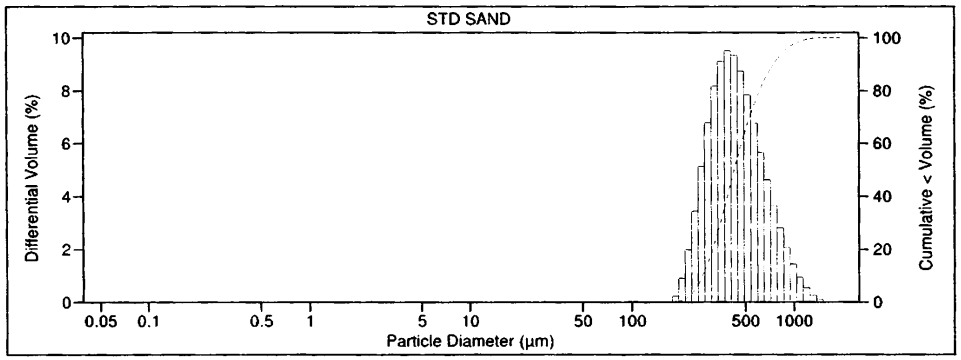
Particle Diameter µm	18-03-1974 -3-F-DUP _26 Mar 2018_20.53 ... Volume
0.04	0.43
0.4	1.77
1.95	1.62
3.91	18.3
62.5	60.6
125	17.2
250	0
500	0
1000	0
2000	

18-03-1974-3-F-DUP_26 Mar 2018_20.53...

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00020	2.660	0.22	176.9	0.58
0.044	0.00034	2.920	0.24	194.2	0.036
0.048	0.0010	3.206	0.25	213.2	0
0.053	0.0026	3.519	0.27	234.1	0
0.058	0.0043	3.863	0.28	256.9	0
0.064	0.0060	4.241	0.28	282.1	0
0.070	0.0076	4.656	0.28	309.6	0
0.077	0.0094	5.111	0.28	339.9	0
0.084	0.011	5.611	0.28	373.1	0
0.093	0.013	6.159	0.29	409.6	0
0.102	0.015	6.761	0.32	449.7	0
0.112	0.017	7.422	0.36	493.6	0
0.123	0.018	8.148	0.41	541.9	0
0.134	0.019	8.944	0.46	594.9	0
0.148	0.020	9.819	0.51	653.0	0
0.162	0.021	10.78	0.55	716.9	0
0.178	0.022	11.83	0.58	786.9	0
0.195	0.023	12.99	0.60	863.9	0
0.214	0.025	14.26	0.60	948.3	0
0.235	0.026	15.65	0.56	1041	0
0.258	0.028	17.18	0.50	1143	0
0.284	0.031	18.86	0.43	1255	0
0.311	0.035	20.71	0.41	1377	0
0.342	0.039	22.73	0.45	1512	0
0.375	0.045	24.95	0.49	1660	0
0.412	0.051	27.39	0.49	1822	0
0.452	0.058	30.07	0.44	2000	
0.496	0.066	33.01	0.43		
0.545	0.075	36.24	0.49		
0.598	0.083	39.78	0.64		
0.657	0.091	43.67	0.92		
0.721	0.098	47.94	1.37		
0.791	0.10	52.63	2.04		
0.869	0.11	57.77	3.14		
0.954	0.12	63.42	4.86		
1.047	0.12	69.62	6.97		
1.149	0.12	76.43	8.81		
1.261	0.13	83.90	9.84		
1.385	0.14	92.10	10.0		
1.520	0.14	101.1	9.52		
1.669	0.15	111.0	8.28		
1.832	0.16	121.8	6.73		
2.011	0.17	133.7	5.44		
2.208	0.18	146.8	4.05		
2.423	0.20	161.2	2.18		

Return to Contents

File name:	C:\LS13320\STD SAND_26 Mar 2018_17.59.35.$ls STD SAND_26 Mar 2018_17.59.35.$ls		
File ID:	STD SAND		
Sample ID:	STD SAND		
Operator:	1106		
Run number:	1 Control Sample		
Comment 1:	ASTM D4464M , LPSA 1		
Comment 2:	F120117B, BATCH#023B		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	0.72%		
LS 13 320	Aqueous Liquid Module		
Start time:	17:58 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	5%	PIDS Obscur:	48%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) STD SAND_26 Mar 2018_17.59.35.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	477.4 µm	S.D.:	198.6 µm
Median:	430.0 µm	Variance:	39454 µm^2
Mean/Median ratio:	1.110	Skewness:	1.345 Right skewed
Mode:	391.0 µm	Kurtosis:	2.180 Leptokurtic

d_{10}: 273.9 µm d_{50}: 430.0 µm d_{90}: 751.5 µm

Folk and Ward Statistics (Phi)

Mean:	1.19	Median:	1.22	Deviation:	0.56
Skewness:	-0.10	Kurtosis:	0.97		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
246.6 µm	299.7 µm	333.9 µm	389.5 µm	430.0 µm	572.1 µm	659.0 µm	877.9 µm

Particle Diameter µm	STD SAND _26 Mar 2018_17.59 .35.$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	0
125	5.51
250	58.8
500	33.2
1000	2.48
2000	

STD SAND_26 Mar 2018_17.59.35.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0	2.660	0	176.9	0.22
0.044	0	2.920	0	194.2	0.89
0.048	0	3.206	0	213.2	1.98
0.053	0	3.519	0	234.1	3.44
0.058	0	3.863	0	256.9	5.12
0.064	0	4.241	0	282.1	6.77
0.070	0	4.656	0	309.6	8.17
0.077	0	5.111	0	339.9	9.12
0.084	0	5.611	0	373.1	9.50
0.093	0	6.159	0	409.6	9.34
0.102	0	6.761	0	449.7	8.73
0.112	0	7.422	0	493.6	7.83
0.123	0	8.148	0	541.9	6.76
0.134	0	8.944	0	594.9	5.67
0.148	0	9.819	0	653.0	4.62
0.162	0	10.78	0	716.9	3.66
0.178	0	11.83	0	786.9	2.81
0.195	0	12.99	0	863.9	2.07
0.214	0	14.26	0	948.3	1.44
0.235	0	15.65	0	1041	0.93
0.258	0	17.18	0	1143	0.54
0.284	0	18.86	0	1255	0.27
0.311	0	20.71	0	1377	0.095
0.342	0	22.73	0	1512	0.016
0.375	0	24.95	0	1660	0.00052
0.412	0	27.39	0	1822	0
0.452	0	30.07	0	2000	
0.496	0	33.01	0		
0.545	0	36.24	0		
0.598	0	39.78	0		
0.657	0	43.67	0		
0.721	0	47.94	0		
0.791	0	52.63	0		
0.869	0	57.77	0		
0.954	0	63.42	0		
1.047	0	69.62	0		
1.149	0	76.43	0		
1.261	0	83.90	0		
1.385	0	92.10	0		
1.520	0	101.1	0		
1.669	0	111.0	0		
1.832	0	121.8	0		
2.011	0	133.7	0		
2.208	0	146.8	0		
2.423	0	161.2	0.013		

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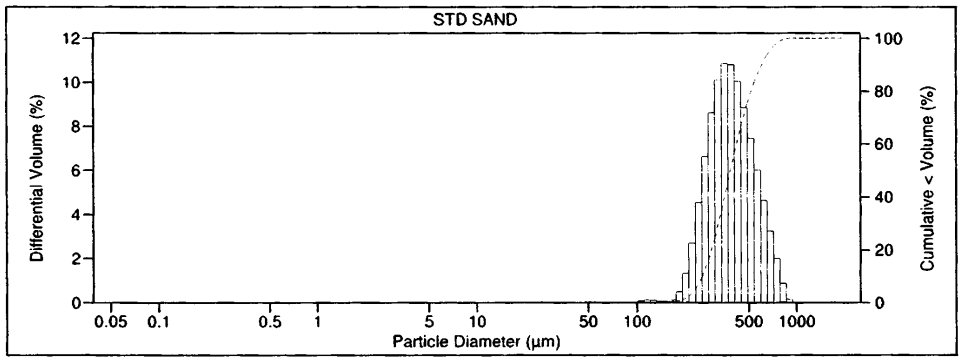
File name:	C:\LS13320\STD SAND_26 Mar 2018_19.54.09.$ls		
	STD SAND_26 Mar 2018_19.54.09.$ls		
File ID:	STD SAND		
Sample ID:	STD SAND		
Operator:	1106		
Run number:	12		
	Control Sample		
Comment 1:	ASTM D4464M , LPSA 1		
Comment 2:	F120117B, BATCH#023B		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	9.28%		
LS 13 320	Aqueous Liquid Module		
Start time:	19:53 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	10%	PIDS Obscur:	40%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) STD SAND_26 Mar 2018_19.54.09.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	411.3 µm	S.D.:	136.0 µm
Median:	387.1 µm	Variance:	18505 µm^2
Mean/Median ratio:	1.062	Skewness:	0.780 Right skewed
Mode:	356.1 µm	Kurtosis:	0.320 Leptokurtic

d_{10}: 258.3 µm d_{50}: 387.1 µm d_{90}: 606.8 µm

Folk and Ward Statistics (Phi)

Mean:	1.35	Median:	1.37	Deviation:	0.48
Skewness:	-0.05	Kurtosis:	0.95		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
233.4 µm	281.1 µm	310.0 µm	355.2 µm	387.1 µm	490.8 µm	550.4 µm	679.0 µm

Particle Diameter µm	STD SAND _26 Mar 2018_19.54 .09.$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	0.25
125	8.01
250	68.3
500	23.4
1000	0.0024
2000	

STD SAND_26 Mar 2018_19.54.09.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0	2.660	0	176.9	0.50
0.044	0	2.920	0	194.2	1.33
0.048	0	3.206	0	213.2	2.70
0.053	0	3.519	0	234.1	4.54
0.058	0	3.863	0	256.9	6.63
0.064	0	4.241	0	282.1	8.61
0.070	0	4.656	0	309.6	10.1
0.077	0	5.111	0	339.9	10.9
0.084	0	5.611	0	373.1	10.8
0.093	0	6.159	0	409.6	10.1
0.102	0	6.761	0	449.7	8.85
0.112	0	7.422	0	493.6	7.45
0.123	0	8.148	0	541.9	6.02
0.134	0	8.944	0	594.9	4.62
0.148	0	9.819	0	653.0	3.26
0.162	0	10.78	0	716.9	2.02
0.178	0	11.83	0	786.9	0.88
0.195	0	12.99	0	863.9	0.16
0.214	0	14.26	0	948.3	0.0055
0.235	0	15.65	0	1041	0
0.258	0	17.18	0	1143	0
0.284	0	18.86	0	1255	0
0.311	0	20.71	0	1377	0
0.342	0	22.73	0	1512	0
0.375	0	24.95	0	1660	0
0.412	0	27.39	0	1822	0
0.452	0	30.07	0	2000	
0.496	0	33.01	0		
0.545	0	36.24	0		
0.598	0	39.78	0		
0.657	0	43.67	0		
0.721	0	47.94	0		
0.791	0	52.63	0		
0.869	0	57.77	0		
0.954	0	63.42	0		
1.047	0	69.62	0		
1.149	0	76.43	0		
1.261	0	83.90	0		
1.385	0	92.10	0.0070		
1.520	0	101.1	0.072		
1.669	0	111.0	0.14		
1.832	0	121.8	0.12		
2.011	0	133.7	0.063		
2.208	0	146.8	0.038		
2.423	0	161.2	0.12		

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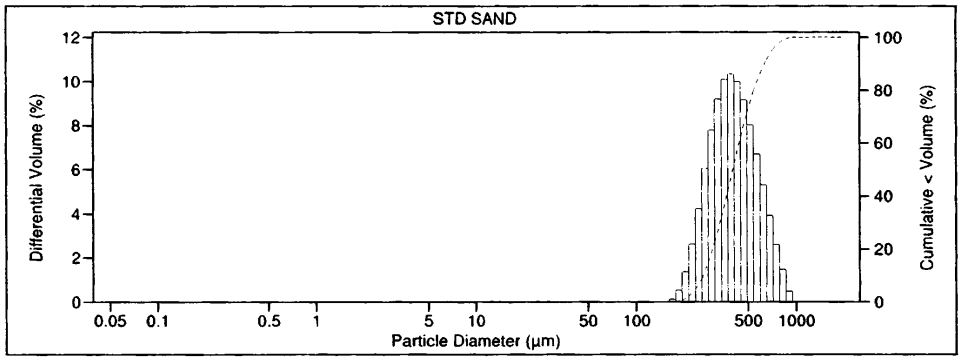
File name:	C:\LS13320\STD SAND_26 Mar 2018_20.43.04.$ls		
	STD SAND_26 Mar 2018_20.43.04.$ls		
File ID:	STD SAND		
Sample ID:	STD SAND		
Operator:	1106		
Run number:	15		
	Control Sample		
Comment 1:	ASTM D4464M , LPSA 1		
Comment 2:	F120117B, BATCH#023B		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	9.82%		
LS 13 320	Aqueous Liquid Module		
Start time:	20:42 26 Mar 2018	Run length:	51 seconds
Pump speed:	49		
Obscuration:	7%	PIDS Obscur:	45%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) STD SAND_26 Mar 2018_20.43.04.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	427.5 µm	S.D.:	145.2 µm
Median:	401.5 µm	Variance:	21071 µm^2
Mean/Median ratio:	1.065	Skewness:	0.790 Right skewed
Mode:	391.0 µm	Kurtosis:	0.249 Leptokurtic

d_{10}: 261.7 µm d_{50}: 401.5 µm d_{90}: 636.6 µm

Folk and Ward Statistics (Phi)

Mean:	1.30	Median:	1.32	Deviation:	0.49
Skewness:	-0.04	Kurtosis:	0.93		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
236.1 µm	286.0 µm	317.3 µm	366.6 µm	401.5 µm	514.9 µm	577.6 µm	710.1 µm

Particle Diameter µm	STD SAND _26 Mar 2018_20.43 .04.$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	0
125	7.56
250	65.0
500	27.5
1000	0.017
2000	

STD SAND_26 Mar 2018_20.43.04.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0	2.660	0	176.9	0.53
0.044	0	2.920	0	194.2	1.35
0.048	0	3.206	0	213.2	2.61
0.053	0	3.519	0	234.1	4.23
0.058	0	3.863	0	256.9	6.04
0.064	0	4.241	0	282.1	7.79
0.070	0	4.656	0	309.6	9.21
0.077	0	5.111	0	339.9	10.1
0.084	0	5.611	0	373.1	10.3
0.093	0	6.159	0	409.6	9.99
0.102	0	6.761	0	449.7	9.16
0.112	0	7.422	0	493.6	8.02
0.123	0	8.148	0	541.9	6.70
0.134	0	8.944	0	594.9	5.31
0.148	0	9.819	0	653.0	3.92
0.162	0	10.78	0	716.9	2.60
0.178	0	11.83	0	786.9	1.46
0.195	0	12.99	0	863.9	0.48
0.214	0	14.26	0	948.3	0.038
0.235	0	15.65	0	1041	0
0.258	0	17.18	0	1143	0
0.284	0	18.86	0	1255	0
0.311	0	20.71	0	1377	0
0.342	0	22.73	0	1512	0
0.375	0	24.95	0	1660	0
0.412	0	27.39	0	1822	0
0.452	0	30.07	0	2000	
0.496	0	33.01	0		
0.545	0	36.24	0		
0.598	0	39.78	0		
0.657	0	43.67	0		
0.721	0	47.94	0		
0.791	0	52.63	0		
0.869	0	57.77	0		
0.954	0	63.42	0		
1.047	0	69.62	0		
1.149	0	76.43	0		
1.261	0	83.90	0		
1.385	0	92.10	0		
1.520	0	101.1	0		
1.669	0	111.0	0		
1.832	0	121.8	0		
2.011	0	133.7	0		
2.208	0	146.8	0.0065		
2.423	0	161.2	0.12		

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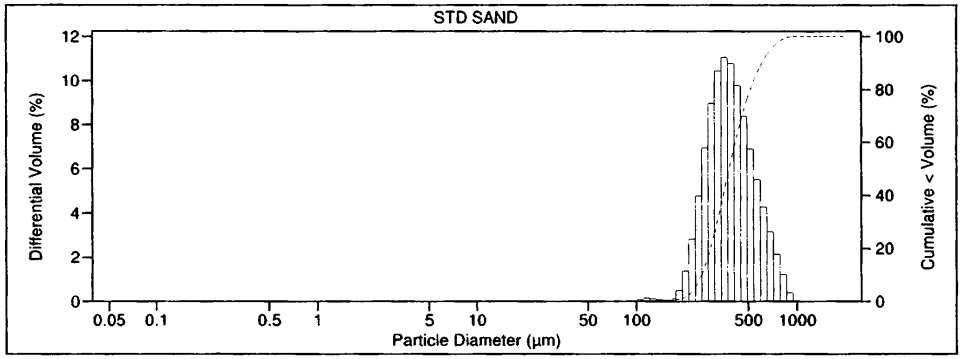
File name:	C:\LS13320\STD SAND_26 Mar 2018_21.02.57.$ls STD SAND_26 Mar 2018_21.02.57.$ls		
File ID:	STD SAND		
Sample ID:	STD SAND		
Operator:	1106		
Run number:	17 Control Sample		
Comment 1:	ASTM D4464M , LPSA 1		
Comment 2:	F120117B, BATCH#023B		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	8.98%		
LS 13 320	Aqueous Liquid Module		
Start time:	21:01 26 Mar 2018	Run length:	51 seconds
Pump speed:	49		
Obscuration:	11%	PIDS Obscur:	49%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) STD SAND_26 Mar 2018_21.02.57.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	409.6 µm	S.D.:	140.3 µm
Median:	381.7 µm	Variance:	19674 µm^2
Mean/Median ratio:	1.073	Skewness:	0.918 Right skewed
Mode:	356.1 µm	Kurtosis:	0.658 Leptokurtic

d_{10}: 256.8 µm d_{50}: 381.7 µm d_{90}: 611.2 µm

Folk and Ward Statistics (Phi)

Mean:	1.37	Median:	1.39	Deviation:	0.48
Skewness:	-0.08	Kurtosis:	0.97		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
232.1 µm	278.5 µm	306.7 µm	350.7 µm	381.7 µm	486.3 µm	548.6 µm	691.9 µm

Particle Diameter µm	STD SAND _26 Mar 2018_21.02 .57.$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	0.26
125	8.33
250	68.7
500	22.7
1000	0.012
2000	

STD SAND_26 Mar 2018_21.02.57.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0	2.660	0	176.9	0.50
0.044	0	2.920	0	194.2	1.37
0.048	0	3.206	0	213.2	2.82
0.053	0	3.519	0	234.1	4.77
0.058	0	3.863	0	256.9	6.95
0.064	0	4.241	0	282.1	8.98
0.070	0	4.656	0	309.6	10.4
0.077	0	5.111	0	339.9	11.1
0.084	0	5.611	0	373.1	10.8
0.093	0	6.159	0	409.6	9.78
0.102	0	6.761	0	449.7	8.38
0.112	0	7.422	0	493.6	6.90
0.123	0	8.148	0	541.9	5.51
0.134	0	8.944	0	594.9	4.27
0.148	0	9.819	0	653.0	3.16
0.162	0	10.78	0	716.9	2.15
0.178	0	11.83	0	786.9	1.21
0.195	0	12.99	0	863.9	0.38
0.214	0	14.26	0	948.3	0.028
0.235	0	15.65	0	1041	0
0.258	0	17.18	0	1143	0
0.284	0	18.86	0	1255	0
0.311	0	20.71	0	1377	0
0.342	0	22.73	0	1512	0
0.375	0	24.95	0	1660	0
0.412	0	27.39	0	1822	0
0.452	0	30.07	0	2000	
0.496	0	33.01	0		
0.545	0	36.24	0		
0.598	0	39.78	0		
0.657	0	43.67	0		
0.721	0	47.94	0		
0.791	0	52.63	0		
0.869	0	57.77	0		
0.954	0	63.42	0		
1.047	0	69.62	0		
1.149	0	76.43	0		
1.261	0	83.90	0		
1.385	0	92.10	0.0072		
1.520	0	101.1	0.075		
1.669	0	111.0	0.15		
1.832	0	121.8	0.13		
2.011	0	133.7	0.070		
2.208	0	146.8	0.039		
2.423	0	161.2	0.12		

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ASTM D4464-10(M) Raw Data Logbook

METHOD	MATRIX	DATE	ANALYST(S)	INSTRUMENT / EQUIPMENT ID #	BATCH NUMBER	COMMENTS
ASTM D4464-10(M)	☑ Aqueous ☐ Solid	Preparation: 3/26/18 Analysis: 3/26/18	1106 1106	Instrument: LPSA 1 Balance: — Sieve (if used): —	180326B01	

DATA FILENAME	RUN #	ECI ID #	MASS (g) SAMPLE	MASS (g) GRAVEL	STANDARD SAND ID #	COMMENTS
STD SAND_DT	1	STD SAND			F120117B	
18-03-1798-1-F_DT	2	18-03-1798-1-F			—	Low PIDS (18%)
2	3	2				Low PIDS (32%)
3	4	3				
4	5	4				
5	6	5				
6	7	6				
18-03-1974-1-F_DT	8	18-03-1974-1-F				Low PIDS (11%)
2	9	2				Low PIDS (11%)
3	10	3				Low PIDS (14%)
4	11	4				Low PIDS (12%)
STD SAND_DT	12	STD SAND			F120117B	
18-03-1974-5-F_DT	13	18-03-1974-5-F			—	Low PIDS (38%)
18-03-1974-6-F	14	18-03-1974-6-F			—	
STD SAND_DT	15	STD SAND			F120117B	
18-03-1974-3-F-DUP_DT	16	18-03-1974-3-F-DUP			—	Low PIDS (17%)
STD SAND_DT	17	STD SAND			F120117B	

COMMENTS:

Instrument QC: Analyze one DPV control sample daily prior to sample analysis, after every batch of 10 samples or portion thereof within a 24-hour shift, and at the end of sequence. Record the standard sand ID number.

Sample Batch QC: Prepare one Sample Duplicate for every batch of 20 field samples per matrix or portion thereof, and analyze immediately following a DPV control sample. Record the batch number.

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Supplemental Report 3

Subcontract analyses are reported as a stand-alone report. Level IV has been added.

WORK ORDER NUMBER: 18-03-1798

The difference is service

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Analytical Report For

Client: CH2M HILL - Gainesville

Client Project Name: SSFL CH661 / 692670.61.SW

Attention: Randy Dean
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Approved for release on 04/18/2018 by:
Virendra Patel
Project Manager

ResultLink

Email your PM

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Contents

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1798

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Work Order Narrative

Work Order: 18-03-1798 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 03/21/18. They were assigned to Work Order 18-03-1798.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

DoD Projects:

The test results contained in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation ADE-1864.

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Virendra Patel

From: Fesler, Mark/RDD <Mark.Fesler@CH2M.com>
Sent: Thursday, March 22, 2018 11:19 AM
To: Virendra Patel; Dean, Randy/SFL
Cc: Erick Ovalle
Subject: RE: SRC for SSFL CH661 / 692670.61.SW -- ECI WO #18-03-1798 <RESPONSE REQUESTED ASAP>

EXTERNAL EMAIL*

Virendra:

Have the sub lab combine the two bottles to get 400mL final sample volume, add 600mL DI water to get a final, total volume of 1L, and analyze the 1L of total sample.

Thanks

Mark Fesler
Environmental Scientist/Talent Supervisor
ATEN Global Environmental Solutions
D 1 530 229 3273
C 1 530 524 8041

CH2M (is now Jacobs)
2525 Airpark Dr
Redding CA 96001
mark.fesler@ch2m.com

The above step was take care of by Eurofins Calscience on 03/22/2018 prior to shipping the samples to Cape Fear Analytical.

- Virendra Patel

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From: Virendra Patel [mailto:VirendraPatel@eurofinsUS.com]
Sent: Thursday, March 22, 2018 9:51 AM
To: Fesler, Mark/RDD <Mark.Fesler@CH2M.com>; Dean, Randy/SFL <Randy.Dean@CH2M.com>
Cc: Erick Ovalle <ErickOvalle@eurofinsUS.com>
Subject: SRC for SSFL CH661 / 692670.61.SW -- ECI WO #18-03-1798 <RESPONSE REQUESTED ASAP> [EXTERNAL]
Importance: High

Sample receipt confirmation attached.

Please review and advise if we are to subcontract sample FBQW1852Q001 for Dioxins/Furans – we have limited volume received.

(-7) Received 2x unpreserved 1L amber glass bottles w/ approx. 150mL & 250mL. for Dioxins.

Please call with any questions or concerns.

Best Regards,

Virendra Patel
Project Manager

Eurofins Calscience
7440 Lincoln Way
Garden Grove, CA 92841
USA
P: +1 714 895 5494
F: +1 714 894 7501

Email: virendrapatel@eurofinsUS.com
Website: http://secure-web.cisco.com/1H3xBrX4TDiXwC34DqGOtLV8lUVYUppa7qLccVVLrgcHpuYJX_y0oUYmDgwAO-51Kgr58cpdiaXz-0Ggo88PcdWhA1rITo-WD2ZHE8ikYg_1sjOL3jjqhLjjJpWCZ7xi7f2wiASdSxOBzQDE1bmlIlQHLbb6vnScP7gOcOUq6CPE15hAmVWTCa6o8RYOO8bsQmUK-HjYwawBW1iPMUsWpbrGp2M-LN-1jm3NFVhy4Oi7w_rPyjvCuUhwitwHlpPemm1F73Teh2_Nv1eh3qzSAy-y7ZW81LanJK7Sitn9ItSbfQtHUpf7N2JDhpNiZEpaf9u8OPcx0q5eWRTdr9imf2JHUGRQSHes7dKk3EDzSUN6WobpGywMfyCBM8gs2nYwWIjvoZT3vnTZNfIKte8iD5oTMmBSI3ke3DrdSka28nepaLyK9LROplZFOatb4_3wnKoS9ZEGNIdIh7xmalqIZpoYD55Z2aj00hBrFm0zz8D0/http%3A%2F%2Fwww.eurofinsUS.com%2FCalscience

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Chain of Custody Record

COC Number: CALS03211801 JACOBS ch2m 3/21/2018 1:04:00 PM

Project Name SSFL **Location** Santa Susana Field Lab
Project CH661 PO 100067108373
Project Number 692670.61.SW **Task Order** 661
Project Manager Randy Dean
Sample Manager Jamie Beckett 530 570 5084
Turnaround Time 10 Days
PO Number 100067108373

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
(1) **A2BMP0009S006**	21-Mar-18 10:35	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		**8**						
(2) **A2BMP0011S008**	21-Mar-18 11:00	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		**8**						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by		3/21/18
Relinquished by		3/21/18 1400
Received by	E.C	3/21/18 1400
Relinquished by		3/21/18 1755
Received by		3/21/18 1755

Shipping Details
Shipment Method: FedEx
Airbill No:
Lab Name: CalScience
Lab Phone: (949) 870-8766
On Ice: yes / no **Cooler Temp** _____

ATTN:
Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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Chain of Custody Record

COC Number: CALS03211801

JACOBS ch2m

3/21/2018 1:04:01 PM

Project Name SSFL **Location** Santa Susana Field Lab
Project CH661 PO 100067108373
Project Number 692670.61.SW **Task Order** 661
Project Manager Randy Dean
Sample Manager Jamie Beckett 530 570 5084
Turnaround Time 10 Days
PO Number 100067108373

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
(3) **CABMP0001S001**	21-Mar-18 8:00	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		8						
(4) **CABMP0002S001**	21-Mar-18 8:45	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		8						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by		3/21/18
Relinquished by		3/21/18 1400
Received by	EC	3/21/18 1400
Relinquished by		3/21/18 1758
Received by	EC	3/21/18 1758

Shipping Details
Shipment Method: FedEx
Airbill No:
Lab Name: CalScience
Lab Phone: (949) 870-8766
On Ice: yes / no **Cooler Temp** _____

ATTN:
Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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Chain of Custody Record

COC Number: CALS03211801

JACOBS ch2m

3/21/2018 1:04:01 PM

Project Name	SSFL	**Location**	Santa Susana Field Lab
Project	CH661 PO 100067108373		
Project Number	692670.61.SW	**Task Order**	661
Project Manager	Randy Dean		
Sample Manager	Jamie Beckett		530 570 5084
Turnaround Time	10 Days		
PO Number	100067108373		

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
(5) **CABMP0003S001**	21-Mar-18 8:25	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		8						
(6) **EVBMP0003S022**	21-Mar-18 7:40	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
				Total Containers:		7						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by		3/21/18
Relinquished by		3/21/18 1400
Received by	E.C	3/21/18 1400
Relinquished by		3/21/18 1755
Received by		3/21/18 1755

Shipping Details

Shipment Method: FedEx

Airbill No:

Lab Name: CalScience

Lab Phone: (949) 870-8766

On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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Chain of Custody Record

COC Number: CALS03211801

JACOBS ch2m

3/21/2018 1:04:01 PM

Project Name	SSFL	**Location**	Santa Susana Field Lab
Project	CH661 PO 100067108373		
Project Number	692670.61.SW	**Task Order**	661
Project Manager	Randy Dean		
Sample Manager	Jamie Beckett		530 570 5084
Turnaround Time	10 Days		
PO Number	100067108373		

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
(7) **FBQW1852Q001**	21-Mar-18 14:00	EB	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
				Total Containers:		4						

MS = Matrix Spike SD = Matrix Spike Duplicate

	Signatures	Date/Time
Sampled by		3/21/18
Relinquished by		3/21/18 14.00
Received by	E.C	3/21/18 14.00
Relinquished by		3/21/18 17.05
Received by		3/21/18 17:55

Shipping Details

Shipment Method: FedEx

Airbill No:

Lab Name: CalScience

Lab Phone: (949) 870-8766

On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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WORK ORDER NUMBER: 18-03-1798

SAMPLE RECEIPT CHECKLIST

COOLER 1 **OF** 3

CLIENT: CH2M HILL **DATE:** 03/21/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.6 °C (w/ CF): 2.8 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: BDY

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: BDY

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1140

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☐	☑	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: **(Trip Blank Lot Number:** _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☑ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH 2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☐ 500PB

☑ 1AGB (2) ☐ 1AGB**na$_2$** ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☐ 1PB ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 1140

Reviewed by: LB

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WORK ORDER NUMBER: 18-03-1798

SAMPLE RECEIPT CHECKLIST

COOLER 2 OF 3

CLIENT: CH2M HILL

DATE: 03/21/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.7 °C (w/ CF): 2.9 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: BDY

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: BDY

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1140

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOAh ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH 2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☑ 500PB

☑ 1AGB ☐ 1AGB**na$_2$** ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☑ 1PB ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 1140

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: MR

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WORK ORDER NUMBER: 18-03-1798

SAMPLE RECEIPT CHECKLIST

COOLER 3 OF 3

CLIENT: CH2M HILL

DATE: 03/21/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.5 °C (w/ CF): 2.7 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: BDY

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: BDY

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1040

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: **(Trip Blank Lot Number: _____)**

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH__2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☑ 500PB

☑ 1AGB (2) ☐ 1AGB**na$_2$** ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☑ 1PB (2) ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 1040

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: BDY

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eurofins | Calscience

WORK ORDER NUMBER: 18-03-1798

SAMPLE ANOMALY REPORT

DATE: 03 / 21 / 2018

SAMPLES, CONTAINERS, AND LABELS:

- ☐ Sample(s) NOT RECEIVED but listed on COC
- ☐ Sample(s) received but NOT LISTED on COC
- ☐ Holding time expired (list client or ECI sample ID and analysis)
- ☐ Insufficient sample amount for requested analysis (list analysis)
- ☐ Improper container(s) used (list analysis)
- ☐ Improper preservative used (list analysis)
- ☐ pH outside acceptable range (list analysis)
- ☐ No preservative noted on COC or label (list analysis and notify lab)
- ☐ Sample container(s) not labeled
- ☐ Client sample label(s) illegible (list container type and analysis)
- ☐ Client sample label(s) do not match COC (comment)
  - ☐ Project information
  - ☐ Client sample ID
  - ☐ Sampling date and/or time
  - ☐ Number of container(s)
  - ☐ Requested analysis
- ☐ Sample container(s) compromised (comment)
  - ☐ Broken
  - ☐ Water present in sample container
- ☐ Air sample container(s) compromised (comment)
  - ☐ Flat
  - ☐ Very low in volume
  - ☐ Leaking (not transferred; duplicate bag submitted)
  - ☐ Leaking (transferred into ECI Tedlar™ bags*)
  - ☐ Leaking (transferred into client's Tedlar™ bags*)

* Transferred at client's request.

Comments

(-7) Received 2x unpreserved 1L amber glass bottles w/ approx. 150mL & 250mL. for Dioxins.

MISCELLANEOUS: (Describe)

Comments

HEADSPACE:

(Containers with bubble > 6 mm or ¼ inch for volatile organic or dissolved gas analysis)

ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**

(Containers with bubble for other analysis)

ECI Sample ID	ECI Container ID	Total Number**	Requested Analysis

Comments: _____

Reported by: 1140

Reviewed by: 489

** Record the total number of containers (i.e., vials or bottles) for the affected sample.

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Subcontractor Analysis Report

Work Order: 18-03-1798 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

1. Cape Fear Analytical - Wilmington,NC
   EPA 1613B

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CFA | Cape Fear Analytical LLC
an affiliate of The GEL Group INC

3306 Kitty Hawk Road, Suite 120 Wilmington, NC 28405
P 910.795.0421

www.capefearanalytical.com

April 10, 2018

Mr. Virendra Patel
Calscience Environmental Laboratories, Inc.
7440 Lincoln Way
Garden Grove, California 92841-1432

Re: Stormwater RFP Boeing SSFL MECX DXN
Work Order: 13123
SDG: 18-03-1974

Dear Mr. Patel:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 27, 2018. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421 Ext. 2.

Sincerely,

Cynde Larkins

Cynde Larkins
Project Manager

Purchase Order: 18-03-1974
Chain of Custody: 18-03-1974
Enclosures

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Ship to: Cynde Larkins CFA WO# 13123
Cape Fear Analytical
3306 Kitty Hawk Road
Wilmington, NC 28405

CHAIN OF CUSTODY RECORD

DATE: 3/26/2018
PAGE: 1 OF 1

LABORATORY CLIENT: Eurofins Calscience, Inc.
ADDRESS: 7440 Lincoln Way
Garden Grove, CA 92841-1427
TEL: 714-895-5494
VirendraPatel@eurofinsUS.com

CLIENT PROJECT NAME / NUMBER: 18-03-1974
PROJECT CONTACT: Virendra Patel
SAMPLER(S): (SIGNATURE)
COELT LOG CODE
P.O. NO.:
LAB USE ONLY
COOLER RECEIPT Temp = 3.0 °C

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

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ LOCUS EIM53 EDD ☐ COELT EDF ☐

SPECIAL INSTRUCTIONS
BOEING CH661 BOEING SSFL NASA Stormwater
Report with "J" flags - Level IV deliverables
Standard TAT - CH2M Hill Lab Spec 7 EDD format required

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	CEL Sample #	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	EPA 1613B - Dioxins/Furans	
	A2BMP0006S005		03/22/18	11:00	W	2	X	2 x 1 liter ambers 3.4°
	A2BMP0007S011		03/22/18	11:30	W	2	X	2 x 1 liter ambers 3.0
	EVBMP0002S022		03/22/18	07:50	W	2	X	2 x 1 liter ambers 3.4~~6~~ 3.0
	EVBMP0007S010		03/22/18	09:00	W	2	X	2 x 1 liter ambers 3.0
	EVBMP0008S013		03/22/18	09:20	W	2	X	2 x 1 liter ambers
	EVBMP0009S011		03/22/18	08:50	W	2	X	2 x 1 liter ambers
	FBQW1853Q001		03/22/18	1400	W	2	X	2 x 1 liter ambers

Relinquished by: (Signature)	Received by: (Signature)	~~2 x 1 liter ambers~~ Date:	Time:
(Eurofins Calscience)	FedEx AB# 771840038343,8711	3/23/2018	1509
FedEx	Cynde Larkins / CFA	27MAR18	1020

temp. ok 27MAR18

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SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: CALS	Work Order: 13123
Shipping Company: FedEx	Date/Time Received: 27MAR18 1020

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		✓	
Samples < 2x background?		✓	

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	✓			
3	Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: (ice bags) blue ice dry ice none other (describe) 4.3°-1.3=3.0°C 4.7°-1.3=3.4°C
4	Aqueous samples found to have visible solids?	✓			Sample IDs, containers affected: Minimal visible solids (<1%) in all containers except EVBMP0009S001 and FBRW
5	Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: pH=7 on all. If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?	✓			Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	✓			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	✓			List type and number of containers / Sample IDs, containers affected: 2-1L NMA glass jars per sample
11	COC form is properly signed in relinquished/received sections?	✓			

Comments:

Custody seals intact.
Temp. blanks present.
2 coolers.

Checklist performed by: Initials: CF Date: 27MAR18 CF-UD-F-7

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High Resolution Dioxins and Furans Analysis

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Case Narrative

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HDOX Case Narrative
Calscience Environmental Laboratories, Inc. (CALS)
SDG 18-03-1974
Work Order 13123

Method/Analysis Information

Product:	**Dioxins/Furans by EPA Method 1613B in Liquids**
Analytical Method:	EPA Method 1613B
Extraction Method:	SW846 3520C
Analytical Batch Number:	37301
Clean Up Batch Number:	37285
Extraction Batch Number:	37284

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
12020981	Method Blank (MB)
12020982	Laboratory Control Sample (LCS)
12020983	Laboratory Control Sample Duplicate (LCSD)
13123001	A2BMP0006S005
13123002	A2BMP0007S011
13123003	EVBMP0002S022
13123004	EVBMP0007S010
13123005	EVBMP0008S013
13123006	EVBMP0009S011
13123007	FBQW1853Q001

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 15.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

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Initial Calibration
All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement
The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

Method Blank (MB) Statement
The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery
The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement
The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation
A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications
CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required in this SDG.

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Miscellaneous Information

Nonconformance (NCR) Documentation
A NCR was not required for this SDG.

Manual Integrations
Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

System Configuration
This analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
HRP763_1	Primary Dioxin Analysis	Dioxin Analysis	DB-5MS	60m x 0.25mm, 0.25um

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

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Sample Data Summary

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Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report
for

CALS001 Calscience Environmental Laboratories, Inc.

Client SDG: 18-03-1974 CFA Work Order: 13123

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a surrogate compound

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature:  **Name: Heather Patterson**

Date: 10 APR 2018 **Title: Group Leader**

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123001**	**Date Collected:**	**03/22/2018 11:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0006S005**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:01**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-4**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1033.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000658	ng/L	0.000658	0.00968
40321-76-4	1,2,3,7,8-PeCDD	JK	0.000542	ng/L	0.000482	0.0484
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00114	ng/L	0.000809	0.0484
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.00186	ng/L	0.000774	0.0484
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.00163	ng/L	0.000813	0.0484
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0323	ng/L	0.00117	0.0484
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.278	ng/L	0.0025	0.0968
51207-31-9	2,3,7,8-TCDF	U	0.00049	ng/L	0.00049	0.00968
57117-41-6	1,2,3,7,8-PeCDF	U	0.000337	ng/L	0.000337	0.0484
57117-31-4	2,3,4,7,8-PeCDF	U	0.000298	ng/L	0.000298	0.0484
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000465	ng/L	0.000465	0.0484
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000441	ng/L	0.000441	0.0484
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.000581	ng/L	0.000482	0.0484
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.00067	ng/L	0.00067	0.0484
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00587	ng/L	0.00054	0.0484
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000803	ng/L	0.000803	0.0484
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0115	ng/L	0.00183	0.0968
41903-57-5	Total TeCDD	U	0.000658	ng/L	0.000658	0.00968
36088-22-9	Total PeCDD	JK	0.000542	ng/L	0.000482	0.0484
34465-46-8	Total HxCDD	JK	0.0112	ng/L	0.000774	0.0484
37871-00-4	Total HpCDD		0.0575	ng/L	0.00117	0.0484
30402-14-3	Total TeCDF	U	0.00049	ng/L	0.00049	0.00968
30402-15-4	Total PeCDF	JK	0.00116	ng/L	0.000298	0.0484
55684-94-1	Total HxCDF	JK	0.00575	ng/L	0.000441	0.0484
38998-75-3	Total HpCDF	J	0.0135	ng/L	0.00054	0.0484
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00153	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00202	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.73	1.94	ng/L	89.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.45	1.94	ng/L	74.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.37	1.94	ng/L	70.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.59	1.94	ng/L	81.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.49	1.94	ng/L	76.7	(23%-140%)
13C-OCDD		2.58	3.87	ng/L	66.5	(17%-157%)
13C-2,3,7,8-TCDF		1.77	1.94	ng/L	91.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.69	1.94	ng/L	87.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.59	1.94	ng/L	82.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.40	1.94	ng/L	72.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.53	1.94	ng/L	79.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.47	1.94	ng/L	76.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.55	1.94	ng/L	80.1	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123001**	**Date Collected:**	**03/22/2018 11:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0006S005**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:01**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-4**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1033.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.35	1.94	ng/L	69.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.38	1.94	ng/L	71.1	(26%-138%)
37Cl-2,3,7,8-TCDD		0.171	0.194	ng/L	88.3	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123002**	**Date Collected:**	**03/22/2018 11:30**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0007S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:49**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-5**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**970.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000797	ng/L	0.000797	0.0103
40321-76-4	1,2,3,7,8-PeCDD	J	0.000989	ng/L	0.000645	0.0515
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00134	ng/L	0.000979	0.0515
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.00262	ng/L	0.000942	0.0515
19408-74-3	1,2,3,7,8,9-HxCDD	JK	0.00192	ng/L	0.000987	0.0515
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0515	ng/L	0.00188	0.0515
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.693	ng/L	0.00398	0.103
51207-31-9	2,3,7,8-TCDF	U	0.000593	ng/L	0.000593	0.0103
57117-41-6	1,2,3,7,8-PeCDF	U	0.000453	ng/L	0.000453	0.0515
57117-31-4	2,3,4,7,8-PeCDF	U	0.000416	ng/L	0.000416	0.0515
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000453	ng/L	0.000453	0.0515
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000451	ng/L	0.000451	0.0515
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.000515	ng/L	0.000474	0.0515
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.00068	ng/L	0.000672	0.0515
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00585	ng/L	0.00056	0.0515
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000845	ng/L	0.000845	0.0515
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0155	ng/L	0.00149	0.103
41903-57-5	Total TeCDD	U	0.000797	ng/L	0.000797	0.0103
36088-22-9	Total PeCDD	JK	0.00181	ng/L	0.000645	0.0515
34465-46-8	Total HxCDD	JK	0.0194	ng/L	0.000942	0.0515
37871-00-4	Total HpCDD		0.111	ng/L	0.00188	0.0515
30402-14-3	Total TeCDF	U	0.000593	ng/L	0.000593	0.0103
30402-15-4	Total PeCDF	JK	0.0015	ng/L	0.000373	0.0515
55684-94-1	Total HxCDF	JK	0.00783	ng/L	0.000451	0.0515
38998-75-3	Total HpCDF	J	0.0159	ng/L	0.00056	0.0515
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00248	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00303	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.84	2.06	ng/L	89.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.57	2.06	ng/L	76.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.60	2.06	ng/L	77.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.82	2.06	ng/L	88.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.75	2.06	ng/L	85.0	(23%-140%)
13C-OCDD		2.96	4.12	ng/L	71.8	(17%-157%)
13C-2,3,7,8-TCDF		1.94	2.06	ng/L	94.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.85	2.06	ng/L	89.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.75	2.06	ng/L	85.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.64	2.06	ng/L	79.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.80	2.06	ng/L	87.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.72	2.06	ng/L	83.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.77	2.06	ng/L	85.8	(29%-147%)

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123002**	**Date Collected:**	**03/22/2018 11:30**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0007S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:49**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-5**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**970.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.58	2.06	ng/L	76.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.61	2.06	ng/L	77.9	(26%-138%)
37Cl-2,3,7,8-TCDD		0.186	0.206	ng/L	90.4	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123003**	**Date Collected:**	**03/22/2018 07:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0002S022**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 22:38**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-6**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1016 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000563	ng/L	0.000563	0.00984
40321-76-4	1,2,3,7,8-PeCDD	JK	0.000846	ng/L	0.0005	0.0492
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00183	ng/L	0.00131	0.0492
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.0037	ng/L	0.00125	0.0492
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.00283	ng/L	0.00131	0.0492
35822-46-9	1,2,3,4,6,7,8-HpCDD		0.0792	ng/L	0.00205	0.0492
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1.08	ng/L	0.00502	0.0984
51207-31-9	2,3,7,8-TCDF	U	0.000486	ng/L	0.000486	0.00984
57117-41-6	1,2,3,7,8-PeCDF	JK	0.000433	ng/L	0.000319	0.0492
57117-31-4	2,3,4,7,8-PeCDF	JK	0.00065	ng/L	0.000301	0.0492
70648-26-9	1,2,3,4,7,8-HxCDF	JK	0.000709	ng/L	0.000463	0.0492
57117-44-9	1,2,3,6,7,8-HxCDF	JK	0.000531	ng/L	0.000465	0.0492
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.000866	ng/L	0.00049	0.0492
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.00063	ng/L	0.00063	0.0492
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.0157	ng/L	0.000754	0.0492
55673-89-7	1,2,3,4,7,8,9-HpCDF	JK	0.00132	ng/L	0.00107	0.0492
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0753	ng/L	0.00168	0.0984
41903-57-5	Total TeCDD	U	0.000563	ng/L	0.000563	0.00984
36088-22-9	Total PeCDD	JK	0.00185	ng/L	0.0005	0.0492
34465-46-8	Total HxCDD	JK	0.0241	ng/L	0.00125	0.0492
37871-00-4	Total HpCDD		0.202	ng/L	0.00205	0.0492
30402-14-3	Total TeCDF	JK	0.000571	ng/L	0.000486	0.00984
30402-15-4	Total PeCDF	JK	0.00886	ng/L	0.000293	0.0492
55684-94-1	Total HxCDF	JK	0.0145	ng/L	0.000463	0.0492
38998-75-3	Total HpCDF	K	0.0524	ng/L	0.000754	0.0492
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00341	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00375	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.69	1.97	ng/L	85.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.43	1.97	ng/L	72.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.54	1.97	ng/L	78.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.63	1.97	ng/L	82.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.68	1.97	ng/L	85.3	(23%-140%)
13C-OCDD		2.94	3.94	ng/L	74.6	(17%-157%)
13C-2,3,7,8-TCDF		1.73	1.97	ng/L	87.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.66	1.97	ng/L	84.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.59	1.97	ng/L	80.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.56	1.97	ng/L	79.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.59	1.97	ng/L	80.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.61	1.97	ng/L	81.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.71	1.97	ng/L	86.9	(29%-147%)

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123003**	**Date Collected:**	**03/22/2018 07:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0002S022**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 22:38**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-6**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1016 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.51	1.97	ng/L	76.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.57	1.97	ng/L	79.8	(26%-138%)
37Cl-2,3,7,8-TCDD		0.175	0.197	ng/L	88.6	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123004**	**Date Collected:**	**03/22/2018 09:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0007S010**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 23:26**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-7**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1029.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000616	ng/L	0.000616	0.00972
40321-76-4	1,2,3,7,8-PeCDD	U	0.000478	ng/L	0.000478	0.0486
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000764	ng/L	0.000764	0.0486
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000738	ng/L	0.000738	0.0486
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000773	ng/L	0.000773	0.0486
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0187	ng/L	0.00133	0.0486
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.251	ng/L	0.00274	0.0972
51207-31-9	2,3,7,8-TCDF	U	0.000447	ng/L	0.000447	0.00972
57117-41-6	1,2,3,7,8-PeCDF	U	0.000424	ng/L	0.000424	0.0486
57117-31-4	2,3,4,7,8-PeCDF	U	0.000367	ng/L	0.000367	0.0486
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000455	ng/L	0.000455	0.0486
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000441	ng/L	0.000441	0.0486
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000466	ng/L	0.000466	0.0486
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.000622	ng/L	0.000622	0.0486
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00394	ng/L	0.000484	0.0486
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000698	ng/L	0.000698	0.0486
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0145	ng/L	0.00168	0.0972
41903-57-5	Total TeCDD	U	0.000616	ng/L	0.000616	0.00972
36088-22-9	Total PeCDD	U	0.000478	ng/L	0.000478	0.0486
34465-46-8	Total HxCDD	JK	0.00455	ng/L	0.000738	0.0486
37871-00-4	Total HpCDD		0.052	ng/L	0.00133	0.0486
30402-14-3	Total TeCDF	U	0.000447	ng/L	0.000447	0.00972
30402-15-4	Total PeCDF	JK	0.00101	ng/L	0.000293	0.0486
55684-94-1	Total HxCDF	JK	0.00243	ng/L	0.000441	0.0486
38998-75-3	Total HpCDF	J	0.0118	ng/L	0.000484	0.0486
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000306	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00115	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.81	1.94	ng/L	93.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.52	1.94	ng/L	78.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.63	1.94	ng/L	83.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.70	1.94	ng/L	87.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.74	1.94	ng/L	89.5	(23%-140%)
13C-OCDD		2.93	3.89	ng/L	75.4	(17%-157%)
13C-2,3,7,8-TCDF		1.89	1.94	ng/L	97.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.75	1.94	ng/L	89.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.71	1.94	ng/L	87.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.65	1.94	ng/L	85.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.69	1.94	ng/L	87.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.71	1.94	ng/L	87.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.77	1.94	ng/L	91.1	(29%-147%)

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123004**	**Date Collected:**	**03/22/2018 09:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0007S010**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 23:26**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-7**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1029.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.57	1.94	ng/L	80.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.60	1.94	ng/L	82.1	(26%-138%)
37Cl-2,3,7,8-TCDD		0.179	0.194	ng/L	92.2	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123005**	**Date Collected:**	**03/22/2018 09:20**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0008S013**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 00:15**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-8**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1053.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000678	ng/L	0.000678	0.00949
40321-76-4	1,2,3,7,8-PeCDD	U	0.000446	ng/L	0.000446	0.0475
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000636	ng/L	0.000636	0.0475
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000575	ng/L	0.000575	0.0475
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000623	ng/L	0.000623	0.0475
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.00697	ng/L	0.000892	0.0475
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.105	ng/L	0.00156	0.0949
51207-31-9	2,3,7,8-TCDF	U	0.000516	ng/L	0.000516	0.00949
57117-41-6	1,2,3,7,8-PeCDF	U	0.000298	ng/L	0.000298	0.0475
57117-31-4	2,3,4,7,8-PeCDF	U	0.00027	ng/L	0.00027	0.0475
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000372	ng/L	0.000372	0.0475
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000338	ng/L	0.000338	0.0475
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000382	ng/L	0.000382	0.0475
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.000778	ng/L	0.000509	0.0475
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	0.00139	ng/L	0.000361	0.0475
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000562	ng/L	0.000562	0.0475
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.00617	ng/L	0.00135	0.0949
41903-57-5	Total TeCDD	U	0.000678	ng/L	0.000678	0.00949
36088-22-9	Total PeCDD	U	0.000446	ng/L	0.000446	0.0475
34465-46-8	Total HxCDD	JK	0.0023	ng/L	0.000575	0.0475
37871-00-4	Total HpCDD	JK	0.0189	ng/L	0.000892	0.0475
30402-14-3	Total TeCDF	U	0.000516	ng/L	0.000516	0.00949
30402-15-4	Total PeCDF	U	0.00027	ng/L	0.00027	0.0475
55684-94-1	Total HxCDF	JK	0.00125	ng/L	0.000338	0.0475
38998-75-3	Total HpCDF	JK	0.00372	ng/L	0.000361	0.0475
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000195	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.000976	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.56	1.90	ng/L	82.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.40	1.90	ng/L	73.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.52	1.90	ng/L	80.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.54	1.90	ng/L	81.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.54	1.90	ng/L	80.9	(23%-140%)
13C-OCDD		2.61	3.80	ng/L	68.7	(17%-157%)
13C-2,3,7,8-TCDF		1.59	1.90	ng/L	84.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.62	1.90	ng/L	85.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.53	1.90	ng/L	80.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.46	1.90	ng/L	77.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.54	1.90	ng/L	81.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.51	1.90	ng/L	79.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.57	1.90	ng/L	82.7	(29%-147%)

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123005**	**Date Collected:**	**03/22/2018 09:20**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0008S013**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 00:15**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-8**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1053.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.42	1.90	ng/L	75.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.40	1.90	ng/L	73.6	(26%-138%)
37Cl-2,3,7,8-TCDD		0.174	0.190	ng/L	91.8	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123006**	**Date Collected:**	**03/22/2018 08:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0009S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:03**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-9**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1024.9 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000562	ng/L	0.000562	0.00976
40321-76-4	1,2,3,7,8-PeCDD	U	0.000355	ng/L	0.000355	0.0488
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000531	ng/L	0.000531	0.0488
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.000956	ng/L	0.000541	0.0488
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000552	ng/L	0.000552	0.0488
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.0166	ng/L	0.00113	0.0488
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.220	ng/L	0.00265	0.0976
51207-31-9	2,3,7,8-TCDF	U	0.000336	ng/L	0.000336	0.00976
57117-41-6	1,2,3,7,8-PeCDF	JK	0.000332	ng/L	0.000263	0.0488
57117-31-4	2,3,4,7,8-PeCDF	U	0.000248	ng/L	0.000248	0.0488
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000433	ng/L	0.000433	0.0488
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000427	ng/L	0.000427	0.0488
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000453	ng/L	0.000453	0.0488
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.000578	ng/L	0.000578	0.0488
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00341	ng/L	0.000704	0.0488
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.00104	ng/L	0.00104	0.0488
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0131	ng/L	0.0016	0.0976
41903-57-5	Total TeCDD	U	0.000562	ng/L	0.000562	0.00976
36088-22-9	Total PeCDD	U	0.000355	ng/L	0.000355	0.0488
34465-46-8	Total HxCDD	JK	0.00502	ng/L	0.000531	0.0488
37871-00-4	Total HpCDD	JK	0.048	ng/L	0.00113	0.0488
30402-14-3	Total TeCDF	U	0.000336	ng/L	0.000336	0.00976
30402-15-4	Total PeCDF	JK	0.00127	ng/L	0.000248	0.0488
55684-94-1	Total HxCDF	J	0.00209	ng/L	0.000427	0.0488
38998-75-3	Total HpCDF	J	0.010	ng/L	0.000704	0.0488
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000375	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00104	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.92	1.95	ng/L	98.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.55	1.95	ng/L	79.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.66	1.95	ng/L	84.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.72	1.95	ng/L	88.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.70	1.95	ng/L	87.3	(23%-140%)
13C-OCDD		2.93	3.90	ng/L	75.0	(17%-157%)
13C-2,3,7,8-TCDF		1.97	1.95	ng/L	101	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.84	1.95	ng/L	94.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.72	1.95	ng/L	88.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.69	1.95	ng/L	86.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.73	1.95	ng/L	88.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.72	1.95	ng/L	88.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.88	1.95	ng/L	96.4	(29%-147%)

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SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123006**	**Date Collected:**	**03/22/2018 08:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0009S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:03**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-9**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1024.9 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.55	1.95	ng/L	79.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.55	1.95	ng/L	79.5	(26%-138%)
37Cl-2,3,7,8-TCDD		0.193	0.195	ng/L	98.8	(35%-197%)

Comments:

J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

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Hi-Res Dioxins/Furans
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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123007**	**Date Collected:**	**03/22/2018 14:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**FBQW1853Q001**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-10**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1060.8 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.00072	ng/L	0.00072	0.00943
40321-76-4	1,2,3,7,8-PeCDD	U	0.000494	ng/L	0.000494	0.0471
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000584	ng/L	0.000584	0.0471
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000552	ng/L	0.000552	0.0471
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000584	ng/L	0.000584	0.0471
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	0.000654	ng/L	0.000654	0.0471
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.00117	ng/L	0.00114	0.0943
51207-31-9	2,3,7,8-TCDF	U	0.000441	ng/L	0.000441	0.00943
57117-41-6	1,2,3,7,8-PeCDF	U	0.000322	ng/L	0.000322	0.0471
57117-31-4	2,3,4,7,8-PeCDF	U	0.000279	ng/L	0.000279	0.0471
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000341	ng/L	0.000341	0.0471
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000354	ng/L	0.000354	0.0471
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000358	ng/L	0.000358	0.0471
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.000773	ng/L	0.000469	0.0471
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	0.000394	ng/L	0.000394	0.0471
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000586	ng/L	0.000586	0.0471
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.00112	ng/L	0.00112	0.0943
41903-57-5	Total TeCDD	U	0.00072	ng/L	0.00072	0.00943
36088-22-9	Total PeCDD	U	0.000494	ng/L	0.000494	0.0471
34465-46-8	Total HxCDD	JK	0.000603	ng/L	0.000552	0.0471
37871-00-4	Total HpCDD	U	0.000654	ng/L	0.000654	0.0471
30402-14-3	Total TeCDF	U	0.000441	ng/L	0.000441	0.00943
30402-15-4	Total PeCDF	U	0.000279	ng/L	0.000279	0.0471
55684-94-1	Total HxCDF	J	0.000773	ng/L	0.000341	0.0471
38998-75-3	Total HpCDF	U	0.000394	ng/L	0.000394	0.0471
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0000777	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.000901	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.25	1.89	ng/L	66.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.01	1.89	ng/L	53.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.07	1.89	ng/L	56.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.20	1.89	ng/L	63.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.19	1.89	ng/L	63.2	(23%-140%)
13C-OCDD		2.02	3.77	ng/L	53.6	(17%-157%)
13C-2,3,7,8-TCDF		1.27	1.89	ng/L	67.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.18	1.89	ng/L	62.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.14	1.89	ng/L	60.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.08	1.89	ng/L	57.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.13	1.89	ng/L	59.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.16	1.89	ng/L	61.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.22	1.89	ng/L	64.7	(29%-147%)

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Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123007**	**Date Collected:**	**03/22/2018 14:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**FBQW1853Q001**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-10**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1060.8 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.05	1.89	ng/L	55.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.09	1.89	ng/L	57.8	(26%-138%)
37Cl-2,3,7,8-TCDD		0.122	0.189	ng/L	64.7	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quality Control Summary

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Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 18-03-1974

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12020982	LCS for batch 37284	13C-2,3,7,8-TCDD		87.2	(20%-175%)
		13C-1,2,3,7,8-PeCDD		81.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		80.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		80.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		86.6	(22%-166%)
		13C-OCDD		80.1	(13%-199%)
		13C-2,3,7,8-TCDF		94.2	(22%-152%)
		13C-1,2,3,7,8-PeCDF		93.9	(21%-192%)
		13C-2,3,4,7,8-PeCDF		91.7	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		80.7	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		81.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		82.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		84.9	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		78.6	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		82.9	(20%-186%)
		37Cl-2,3,7,8-TCDD		89.0	(31%-191%)
12020983	LCSD for batch 37284	13C-2,3,7,8-TCDD		82.7	(20%-175%)
		13C-1,2,3,7,8-PeCDD		75.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		76.3	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		80.5	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		85.5	(22%-166%)
		13C-OCDD		77.4	(13%-199%)
		13C-2,3,7,8-TCDF		87.1	(22%-152%)
		13C-1,2,3,7,8-PeCDF		84.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		84.9	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		77.3	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		80.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		80.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		82.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		77.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		81.4	(20%-186%)
		37Cl-2,3,7,8-TCDD		84.9	(31%-191%)
12020981	MB for batch 37284	13C-2,3,7,8-TCDD		85.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		78.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.7	(23%-140%)
		13C-OCDD		80.2	(17%-157%)
		13C-2,3,7,8-TCDF		91.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		90.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		84.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		87.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		88.1	(35%-197%)
13123001	A2BMP0006S005	13C-2,3,7,8-TCDD		89.2	(25%-164%)

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Surrogate Recovery Report

SDG Number: 18-03-1974

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
13123001	A2BMP0006S005	13C-1,2,3,7,8-PeCDD		74.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		70.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		76.7	(23%-140%)
		13C-OCDD		66.5	(17%-157%)
		13C-2,3,7,8-TCDF		91.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		82.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		72.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		79.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		76.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		69.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		71.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		88.3	(35%-197%)
13123002	A2BMP0007S011	13C-2,3,7,8-TCDD		89.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		76.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		77.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		88.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.0	(23%-140%)
		13C-OCDD		71.8	(17%-157%)
		13C-2,3,7,8-TCDF		94.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		85.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		87.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		77.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		90.4	(35%-197%)
13123003	EVBMP0002S022	13C-2,3,7,8-TCDD		85.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		72.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		78.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.3	(23%-140%)
		13C-OCDD		74.6	(17%-157%)
		13C-2,3,7,8-TCDF		87.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		80.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		80.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		86.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		79.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		88.6	(35%-197%)
13123004	EVBMP0007S010	13C-2,3,7,8-TCDD		93.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		78.2	(25%-181%)

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Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 18-03-1974

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
13123004	EVBMP0007S010	13C-1,2,3,4,7,8-HxCDD		83.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		87.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		89.5	(23%-140%)
		13C-OCDD		75.4	(17%-157%)
		13C-2,3,7,8-TCDF		97.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		85.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		87.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		87.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		91.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		82.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		92.2	(35%-197%)
13123005	EVBMP0008S013	13C-2,3,7,8-TCDD		82.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		73.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		80.9	(23%-140%)
		13C-OCDD		68.7	(17%-157%)
		13C-2,3,7,8-TCDF		84.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		80.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		81.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		75.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		73.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		91.8	(35%-197%)
13123006	EVBMP0009S011	13C-2,3,7,8-TCDD		98.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		88.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		87.3	(23%-140%)
		13C-OCDD		75.0	(17%-157%)
		13C-2,3,7,8-TCDF		101	(24%-169%)
		13C-1,2,3,7,8-PeCDF		94.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		86.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		88.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		96.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		79.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		98.8	(35%-197%)
13123007	FBQW1853Q001	13C-2,3,7,8-TCDD		66.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		53.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		56.5	(32%-141%)

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Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 18-03-1974

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
13123007	FBQW1853Q001	13C-1,2,3,6,7,8-HxCDD		63.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		63.2	(23%-140%)
		13C-OCDD		53.6	(17%-157%)
		13C-2,3,7,8-TCDF		67.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		62.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		60.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		57.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		59.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		61.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		64.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		55.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		57.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		64.7	(35%-197%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

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Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number: 18-03-1974 **Sample Type:** Laboratory Control Sample
Client ID: LCS for batch 37284 **Matrix:** WATER
Lab Sample ID: 12020982
Instrument: HRP763 **Analysis Date:** 03/29/2018 21:15 **Dilution:** 1
Analyst: CLP **Prep Batch ID:** 37284
Batch ID: 37301

CAS No.		Parmname	Amount Added ng/L	Spike Conc. ng/L	Recovery %	Acceptance Limits
1746-01-6	LCS	2,3,7,8-TCDD	0.200	0.219	109	67-158
40321-76-4	LCS	1,2,3,7,8-PeCDD	1.00	1.20	120	70-142
39227-28-6	LCS	1,2,3,4,7,8-HxCDD	1.00	1.14	114	70-164
57653-85-7	LCS	1,2,3,6,7,8-HxCDD	1.00	1.13	113	74-134
19408-74-3	LCS	1,2,3,7,8,9-HxCDD	1.00	1.16	116	64-162
35822-46-9	LCS	1,2,3,4,6,7,8-HpCDD	1.00	0.989	98.9	70-140
3268-87-9	LCS	1,2,3,4,6,7,8,9-OCDD	2.00	2.16	108	78-144
51207-31-9	LCS	2,3,7,8-TCDF	0.200	0.199	99.4	75-158
57117-41-6	LCS	1,2,3,7,8-PeCDF	1.00	1.01	101	80-134
57117-31-4	LCS	2,3,4,7,8-PeCDF	1.00	1.01	101	68-160
70648-26-9	LCS	1,2,3,4,7,8-HxCDF	1.00	1.09	109	72-134
57117-44-9	LCS	1,2,3,6,7,8-HxCDF	1.00	1.09	109	84-130
60851-34-5	LCS	2,3,4,6,7,8-HxCDF	1.00	1.10	110	70-156
72918-21-9	LCS	1,2,3,7,8,9-HxCDF	1.00	1.11	111	78-130
67562-39-4	LCS	1,2,3,4,6,7,8-HpCDF	1.00	1.08	108	82-122
55673-89-7	LCS	1,2,3,4,7,8,9-HpCDF	1.00	1.13	113	78-138
39001-02-0	LCS	1,2,3,4,6,7,8,9-OCDF	2.00	2.19	109	63-170

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Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number: 18-03-1974 **Sample Type:** Laboratory Control Sample Duplicate
Client ID: LCSD for batch 37284 **Matrix:** WATER
Lab Sample ID: 12020983
Instrument: HRP763 **Analysis Date:** 03/29/2018 22:03 **Dilution:** 1
Analyst: CLP **Prep Batch ID:** 37284
Batch ID: 37301

CAS No.		Parmname	Amount Added ng/L	Spike Conc. ng/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD	2,3,7,8-TCDD	0.200	0.210	105	67-158	4.23	0-20
40321-76-4	LCSD	1,2,3,7,8-PeCDD	1.00	1.19	119	70-142	0.453	0-20
39227-28-6	LCSD	1,2,3,4,7,8-HxCDD	1.00	1.14	114	70-164	0.214	0-20
57653-85-7	LCSD	1,2,3,6,7,8-HxCDD	1.00	1.12	112	74-134	0.705	0-20
19408-74-3	LCSD	1,2,3,7,8,9-HxCDD	1.00	1.15	115	64-162	0.974	0-20
35822-46-9	LCSD	1,2,3,4,6,7,8-HpCDD	1.00	0.985	98.5	70-140	0.383	0-20
3268-87-9	LCSD	1,2,3,4,6,7,8,9-OCDD	2.00	2.16	108	78-144	0.260	0-20
51207-31-9	LCSD	2,3,7,8-TCDF	0.200	0.195	97.4	75-158	1.98	0-20
57117-41-6	LCSD	1,2,3,7,8-PeCDF	1.00	1.04	104	80-134	2.78	0-20
57117-31-4	LCSD	2,3,4,7,8-PeCDF	1.00	1.01	101	68-160	0.913	0-20
70648-26-9	LCSD	1,2,3,4,7,8-HxCDF	1.00	1.10	110	72-134	0.277	0-20
57117-44-9	LCSD	1,2,3,6,7,8-HxCDF	1.00	1.10	110	84-130	0.971	0-20
60851-34-5	LCSD	2,3,4,6,7,8-HxCDF	1.00	1.10	110	70-156	0.843	0-20
72918-21-9	LCSD	1,2,3,7,8,9-HxCDF	1.00	1.11	111	78-130	0.0306	0-20
67562-39-4	LCSD	1,2,3,4,6,7,8-HpCDF	1.00	1.08	108	82-122	0.447	0-20
55673-89-7	LCSD	1,2,3,4,7,8,9-HpCDF	1.00	1.08	108	78-138	4.73	0-20
39001-02-0	LCSD	1,2,3,4,6,7,8,9-OCDF	2.00	2.20	110	63-170	0.554	0-20

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Method Blank Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Matrix:**	**WATER**
Client ID:	**MB for batch 37284**	**Instrument ID:**	**HRP763**	**Data File:**	**b28mar18b_4-3**
Lab Sample ID:	**12020981**	**Prep Date:**	**28-MAR-18**	**Analyzed:**	**03/29/18 22:52**
Column:					

This method blank applies to the following samples and quality control samples:

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01	LCS for batch 37284	12020982	b28mar18b_4-1	03/29/18	2115
02	LCSD for batch 37284	12020983	b28mar18b_4-2	03/29/18	2203
03	A2BMP0006S005	13123001	b30mar18a_2-4	03/30/18	2101
04	A2BMP0007S011	13123002	b30mar18a_2-5	03/30/18	2149
05	EVBMP0002S022	13123003	b30mar18a_2-6	03/30/18	2238
06	EVBMP0007S010	13123004	b30mar18a_2-7	03/30/18	2326
07	EVBMP0008S013	13123005	b30mar18a_2-8	03/31/18	0015
08	EVBMP0009S011	13123006	b30mar18a_2-9	03/31/18	0103
09	FBQW1853Q001	13123007	b30mar18a_2-10	03/31/18	0152

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Sample Raw Data

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123001**	**Date Collected:**	**03/22/2018 11:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0006S005**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:01**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-4**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1033.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000658	ng/L	0.000658	0.00968
40321-76-4	1,2,3,7,8-PeCDD	JK	0.000542	ng/L	0.000482	0.0484
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00114	ng/L	0.000809	0.0484
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.00186	ng/L	0.000774	0.0484
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.00163	ng/L	0.000813	0.0484
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0323	ng/L	0.00117	0.0484
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.278	ng/L	0.0025	0.0968
51207-31-9	2,3,7,8-TCDF	U	0.00049	ng/L	0.00049	0.00968
57117-41-6	1,2,3,7,8-PeCDF	U	0.000337	ng/L	0.000337	0.0484
57117-31-4	2,3,4,7,8-PeCDF	U	0.000298	ng/L	0.000298	0.0484
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000465	ng/L	0.000465	0.0484
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000441	ng/L	0.000441	0.0484
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.000581	ng/L	0.000482	0.0484
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.00067	ng/L	0.00067	0.0484
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00587	ng/L	0.00054	0.0484
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000803	ng/L	0.000803	0.0484
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0115	ng/L	0.00183	0.0968
41903-57-5	Total TeCDD	U	0.000658	ng/L	0.000658	0.00968
36088-22-9	Total PeCDD	JK	0.000542	ng/L	0.000482	0.0484
34465-46-8	Total HxCDD	JK	0.0112	ng/L	0.000774	0.0484
37871-00-4	Total HpCDD		0.0575	ng/L	0.00117	0.0484
30402-14-3	Total TeCDF	U	0.00049	ng/L	0.00049	0.00968
30402-15-4	Total PeCDF	JK	0.00116	ng/L	0.000298	0.0484
55684-94-1	Total HxCDF	JK	0.00575	ng/L	0.000441	0.0484
38998-75-3	Total HpCDF	J	0.0135	ng/L	0.00054	0.0484
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00153	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00202	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.73	1.94	ng/L	89.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.45	1.94	ng/L	74.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.37	1.94	ng/L	70.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.59	1.94	ng/L	81.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.49	1.94	ng/L	76.7	(23%-140%)
13C-OCDD		2.58	3.87	ng/L	66.5	(17%-157%)
13C-2,3,7,8-TCDF		1.77	1.94	ng/L	91.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.69	1.94	ng/L	87.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.59	1.94	ng/L	82.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.40	1.94	ng/L	72.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.53	1.94	ng/L	79.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.47	1.94	ng/L	76.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.55	1.94	ng/L	80.1	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123001**	**Date Collected:**	**03/22/2018 11:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0006S005**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:01**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-4**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1033.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.35	1.94	ng/L	69.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.38	1.94	ng/L	71.1	(26%-138%)
37Cl-2,3,7,8-TCDD		0.171	0.194	ng/L	88.3	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 10:54:27 Eastern Standard Time
Printed: Wednesday, April 04, 2018 10:54:49 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD							NO		0.0340		1598			1158			
2	12378-PeCDD	2.30e2	1.15e2	3.45e2	33.61	1.000	1.99	YES	0.028	0.0249	7.07e3	1519	4.7	3.70e3	1113	3.3	bb	bb
3	123478-HxCDD	3.23e2	2.75e2	5.97e2	36.06	1.000	1.17	NO	0.059	0.0418	7.33e3	1792	4.1	5.82e3	1613	3.6	bd	bd
4	123678-HxCDD	6.39e2	5.87e2	1.23e3	36.17	1.001	1.09	NO	0.096	0.0400	1.16e4	1792	6.5	1.22e4	1613	7.6	db	db
5	123789-HxCDD	5.38e2	3.97e2	9.35e2	36.37	1.006	1.36	NO	0.084	0.0420	9.97e3	1792	5.6	1.02e4	1613	6.3	bb	bb
6	1234678-HpCDD	8.33e3	7.71e3	1.60e4	39.24	1.001	1.08	NO	1.668	0.0604	1.21e5	1704	70.8	1.22e5	1450	84.1	bb	bd
7	OCDD	5.04e4	5.42e4	1.05e5	43.14	1.000	0.93	NO	14.357	0.129	5.42e5	1792	302.5	5.73e5	1850	309.7	bd	bd
8	2378-TCDF	9.18e1	6.84e1	1.60e2	29.51	1.002	1.34	YES	0.007	0.0253	2.05e3	915	2.2	3.61e3	1695	2.1	bb	bb
9	12378-PeCDF	2.19e2	9.70e1	3.16e2	32.84	1.000	2.26	YES	0.016	0.0174	3.96e3	1182	3.4	3.12e3	1693	1.8	bb	bb
10	23478-PeCDF	1.74e2	1.51e2	3.25e2	33.43	1.000	1.15	YES	0.016	0.0154	3.14e3	1182	2.7	3.81e3	1693	2.2	bb	MM
11	123478-HxCDF	1.31e2	1.16e2	2.47e2	35.38	1.000	1.13	NO	0.019	0.0240	3.00e3	1385	2.2	2.41e3	1215	2.0	bd	bd
12	123678-HxCDF	1.29e2	8.83e1	2.18e2	35.48	1.000	1.47	YES	0.014	0.0228	2.44e3	1385	1.8	2.99e3	1215	2.5	db	db
13	234678-HxCDF	2.18e2	2.02e2	4.21e2	35.94	1.000	1.08	NO	0.030	0.0249	5.36e3	1385	3.9	6.36e3	1215	5.2	MM	bb
14	123789-HxCDF	1.91e2	2.31e2	4.22e2	36.69	1.001	0.83	YES	0.034	0.0346	5.98e3	1385	4.3	3.18e3	1215	2.6	bb	MM
15	1234678-HpCDF	1.66e3	1.61e3	3.27e3	38.06	1.000	1.03	NO	0.303	0.0279	3.11e4	1064	29.2	2.62e4	788	33.3	bb	bd
16	1234789-HpCDF							NO		0.0415		1064			788			
17	OCDF	2.10e3	2.29e3	4.38e3	43.41	1.007	0.92	NO	0.594	0.0947	2.08e4	1404	14.8	2.52e4	1314	19.2	MM	MM
18	13C-2378-TCDD	9.50e5	1.25e6	2.20e6	30.39	1.024	0.76	NO	89.156	0.0767	9.83e6	4894	2008.5	1.30e7	3204	4058.6	bb	bb
19	13C-12378-PeCDD	9.55e5	6.03e5	1.56e6	33.61	1.133	1.58	NO	74.949	0.0878	2.05e7	4407	4661.5	1.29e7	3404	3775.7	bb	bb
20	13C-123478-HxCDD	6.64e5	5.40e5	1.20e6	36.06	0.991	1.23	NO	70.648	0.137	1.34e7	8445	1588.8	1.09e7	5672	1913.6	bd	bd
21	13C-123678-HxCDD	8.44e5	6.83e5	1.53e6	36.15	0.994	1.24	NO	81.884	0.125	1.40e7	8445	1656.6	1.13e7	5672	1987.4	dd	dd
22	13C-1234678-HpCDD	4.82e5	4.77e5	9.59e5	39.22	1.078	1.01	NO	76.716	0.150	6.54e6	5576	1173.5	6.10e6	5711	1068.6	bb	bd
23	13C-OCDD	7.46e5	8.56e5	1.60e6	43.13	1.186	0.87	NO	133.036	0.151	7.24e6	5789	1251.5	8.43e6	5204	1619.7	bb	bd
24	13C-2378-TCDF	1.15e6	1.49e6	2.64e6	29.44	0.992	0.78	NO	91.390	0.0926	1.22e7	7293	1679.6	1.58e7	4158	3792.5	bb	bb
25	13C-12378-PeCDF	1.44e6	9.00e5	2.34e6	32.83	1.107	1.60	NO	87.065	0.102	3.10e7	5830	5311.4	2.03e7	5946	3408.0	bd	bb
26	13C-23478-PeCDF	1.34e6	8.50e5	2.19e6	33.42	1.127	1.57	NO	82.060	0.103	3.09e7	5830	5294.0	1.94e7	5946	3266.3	bb	bb
27	13C-123478-HxCDF	4.41e5	8.81e5	1.32e6	35.39	0.973	0.50	NO	72.502	0.157	9.04e6	8063	1121.4	1.79e7	9197	1943.1	bd	bd
28	13C-123678-HxCDF	5.54e5	1.12e6	1.67e6	35.48	0.975	0.50	NO	79.133	0.135	1.01e7	8063	1255.0	1.97e7	9197	2140.0	db	db
29	13C-234678-HxCDF	4.52e5	9.11e5	1.36e6	35.94	0.988	0.50	NO	76.156	0.160	8.37e6	8063	1038.4	1.65e7	9197	1798.2	bb	bd
30	13C-123789-HxCDF	4.44e5	8.68e5	1.31e6	36.65	1.008	0.51	NO	80.090	0.175	6.66e6	8063	826.1	1.30e7	9197	1409.9	bd	bd
31	13C-1234678-HpCDF	2.95e5	6.88e5	9.83e5	38.05	1.046	0.43	NO	69.743	0.130	4.55e6	3731	1220.5	1.05e7	7343	1430.7	bb	bd

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 10:54:27 Eastern Standard Time
Printed: Wednesday, April 04, 2018 10:54:49 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.40e5	5.56e5	7.96e5	39.83	1.095	0.43	NO	71.057	0.164	3.04e6	3731	814.5	7.02e6	7343	955.4	bd	bd
33	13C-1234-TCDD	9.41e5	1.22e6	2.16e6	29.67	0.000	0.77	NO	100.000	0.0875	1.01e7	4894	2057.1	1.32e7	3204	4131.0	bb	bb
34	13C-123789-HxCDD	9.16e5	7.43e5	1.66e6	36.37	0.000	1.23	NO	100.000	0.141	1.38e7	8445	1636.7	1.12e7	5672	1979.9	dd	dd
35	37Cl-2378-TCDD	2.22e5		2.22e5	30.40	1.025			8.827	0.0132	2.26e6	1414	1596.5				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 10:54:27 Eastern Standard Time
Printed: Wednesday, April 04, 2018 10:54:49 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetradioxins	5.00e1	7.50e1	1.25e2	29.21	0.67	NO	0.006	0.0340	1.55e3	1598	1.0	1.63e3	1158	1.4	bb	bb
2	Total-tetradioxins	5.62e1	7.18e1	1.28e2	28.80	0.78	NO	0.007	0.0340	2.04e3	1598	1.3	2.15e3	1158	1.9	bb	bb
3	Total-tetradioxins	5.22e1	5.43e1	1.06e2	28.39	0.96	YES	0.005	0.0340	1.85e3	1598	1.2	2.28e3	1158	2.0	bb	bb
4	Total-tetradioxins	9.08e1	7.13e1	1.62e2	27.16	1.27	YES	0.008	0.0340	1.83e3	1598	1.1	2.77e3	1158	2.4	bb	bd
5	Total-tetradioxins	6.75e1	5.37e1	1.21e2	25.26	1.26	YES	0.006	0.0340	1.97e3	1598	1.2	1.21e3	1158	1.0	bb	bb
6	Total-tetradioxins	1.13e2	7.42e1	1.87e2	31.38	1.52	YES	0.010	0.0340	2.12e3	1598	1.3	1.40e3	1158	1.2	bb	bb
7	Total-tetradioxins	2.92e2	6.02e1	3.53e2	29.46	4.86	YES	0.018	0.0340	3.96e3	1598	2.5	1.30e3	1158	1.1	db	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	2.30e2	1.15e2	3.45e2	33.61	1.99	YES	0.028	0.0249	7.07e3	1519	4.7	3.70e3	1113	3.3	bb	bb
2	Total-pentadioxins	1.91e2	6.83e1	2.59e2	33.41	2.79	YES	0.021	0.0249	5.04e3	1519	3.3	1.89e3	1113	1.7	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDD	5.38e2	3.97e2	9.35e2	36.37	1.36	NO	0.084	0.0420	9.97e3	1792	5.6	1.02e4	1613	6.3	bb	bb
2	123678-HxCDD	6.39e2	5.87e2	1.23e3	36.17	1.09	NO	0.096	0.0400	1.16e4	1792	6.5	1.22e4	1613	7.6	db	db
3	123478-HxCDD	3.23e2	2.75e2	5.97e2	36.06	1.17	NO	0.059	0.0418	7.33e3	1792	4.1	5.82e3	1613	3.6	bd	bd
4	Total-hexadioxins	2.58e2	1.73e2	4.32e2	35.96	1.49	YES	0.038	0.0412	4.52e3	1792	2.5	2.88e3	1613	1.8	bb	bb
5	Total-hexadioxins	1.65e3	1.09e3	2.75e3	35.54	1.51	YES	0.242	0.0412	2.27e4	1792	12.7	1.56e4	1613	9.7	db	MM
6	Total-hexadioxins	3.53e2	1.99e2	5.52e2	35.38	1.78	YES	0.049	0.0412	6.63e3	1792	3.7	2.87e3	1613	1.8	bd	MM
7	Total-hexadioxins	6.36e2	4.39e2	1.07e3	34.91	1.45	YES	0.095	0.0412	1.35e4	1792	7.5	8.43e3	1613	5.2	bb	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	1234678-HpCDD	8.33e3	7.71e3	1.60e4	39.24	1.08	NO	1.668	0.0604	1.21e5	1704	70.8	1.22e5	1450	84.1	bb	bd
2	Total-heptadioxins	6.26e3	6.26e3	1.25e4	38.38	1.00	NO	1.303	0.0604	8.84e4	1704	51.9	1.03e5	1450	71.2	bb	bd

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 10:54:27 Eastern Standard Time
Printed: Wednesday, April 04, 2018 10:54:49 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	6.55e1	6.70e1	1.33e2	31.34	0.98	YES	0.005	0.0253	1.43e3	915	1.6	1.83e3	1695	1.1	bb	bb
2	Total-tetrafurans	6.53e1	1.25e2	1.90e2	31.19	0.52	YES	0.008	0.0253	2.20e3	915	2.4	2.29e3	1695	1.4	bb	bb
3	2378-TCDF	9.18e1	6.84e1	1.60e2	29.51	1.34	YES	0.007	0.0253	2.05e3	915	2.2	3.61e3	1695	2.1	bb	bb
4	Total-tetrafurans	6.09e1	9.95e1	1.60e2	29.30	0.61	YES	0.007	0.0253	2.28e3	915	2.5	2.62e3	1695	1.5	bb	dd
5	Total-tetrafurans	7.56e1	5.95e1	1.35e2	26.87	1.27	YES	0.006	0.0253	3.31e3	915	3.6	1.63e3	1695	1.0	db	bb
6	Total-tetrafurans	8.39e1	9.79e1	1.82e2	26.69	0.86	NO	0.007	0.0253	1.89e3	915	2.1	1.74e3	1695	1.0	bd	bb

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	6.48e2	5.42e2	1.19e3	31.34	1.19	YES	0.060	0.0183	1.05e4	1273	8.3	1.09e4	1959	5.6	bb	bb
2	Total-pentafurans (F1)	6.87e1	8.20e1	1.51e2	27.58	0.84	YES	0.008	0.0183	3.17e3	1273	2.5	2.74e3	1959	1.4	bb	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	23478-PeCDF	1.74e2	1.51e2	3.25e2	33.43	1.15	YES	0.016	0.0154	3.14e3	1182	2.7	3.81e3	1693	2.2	bb	MM
2	12378-PeCDF	2.19e2	9.70e1	3.16e2	32.84	2.26	YES	0.016	0.0174	3.96e3	1182	3.4	3.12e3	1693	1.8	bb	bb
3	Total-pentafurans	1.80e2	1.26e2	3.05e2	32.32	1.43	NO	0.015	0.0163	3.70e3	1182	3.1	2.64e3	1693	1.6	MM	bb

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-hexafurans	9.75e2	6.25e2	1.60e3	34.63	1.56	YES	0.115	0.0263	2.17e4	1385	15.7	1.72e4	1215	14.2	db	db
2	Total-hexafurans	2.89e2	3.23e2	6.12e2	34.51	0.90	YES	0.044	0.0263	6.76e3	1385	4.9	1.11e4	1215	9.2	bd	bd
3	123789-HxCDF	1.91e2	2.31e2	4.22e2	36.69	0.83	YES	0.034	0.0346	5.98e3	1385	4.3	3.18e3	1215	2.6	bb	MM
4	234678-HxCDF	2.18e2	2.02e2	4.21e2	35.94	1.08	NO	0.030	0.0249	5.36e3	1385	3.9	6.36e3	1215	5.2	MM	bb
5	123678-HxCDF	1.29e2	8.83e1	2.18e2	35.48	1.47	YES	0.014	0.0228	2.44e3	1385	1.8	2.99e3	1215	2.5	db	db
6	123478-HxCDF	1.31e2	1.16e2	2.47e2	35.38	1.13	NO	0.019	0.0240	3.00e3	1385	2.2	2.41e3	1215	2.0	bd	bd
7	Total-hexafurans	8.81e2	6.25e2	1.51e3	35.02	1.41	NO	0.108	0.0263	1.80e4	1385	13.0	1.54e4	1215	12.7	bb	bb

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 10:54:27 Eastern Standard Time
Printed: Wednesday, April 04, 2018 10:54:49 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	1.96e3	1.90e3	3.86e3	38.55	1.04	NO	0.393	0.0340	3.35e4	1064	31.5	3.24e4	788	41.1	bd	bb
2	1234678-HpCDF	1.66e3	1.61e3	3.27e3	38.06	1.03	NO	0.303	0.0279	3.11e4	1064	29.2	2.62e4	788	33.3	bb	bd

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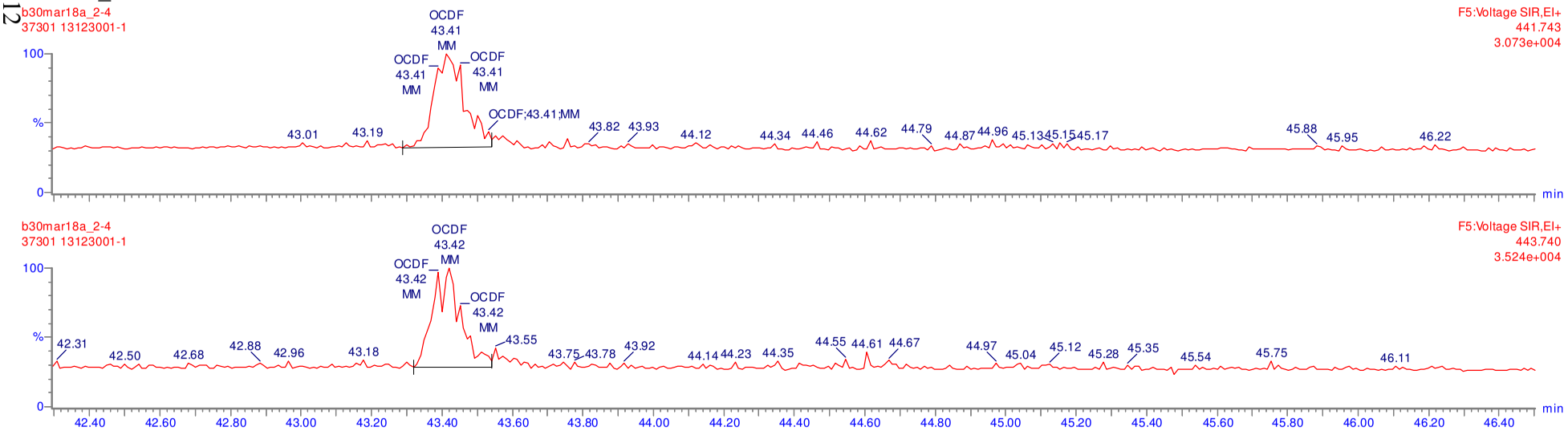
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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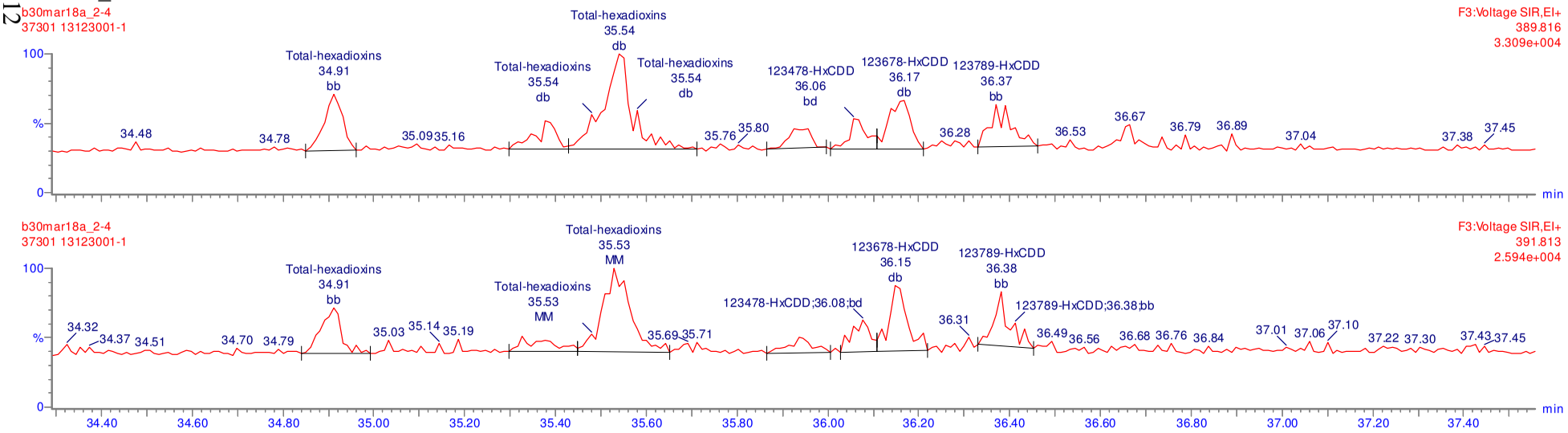
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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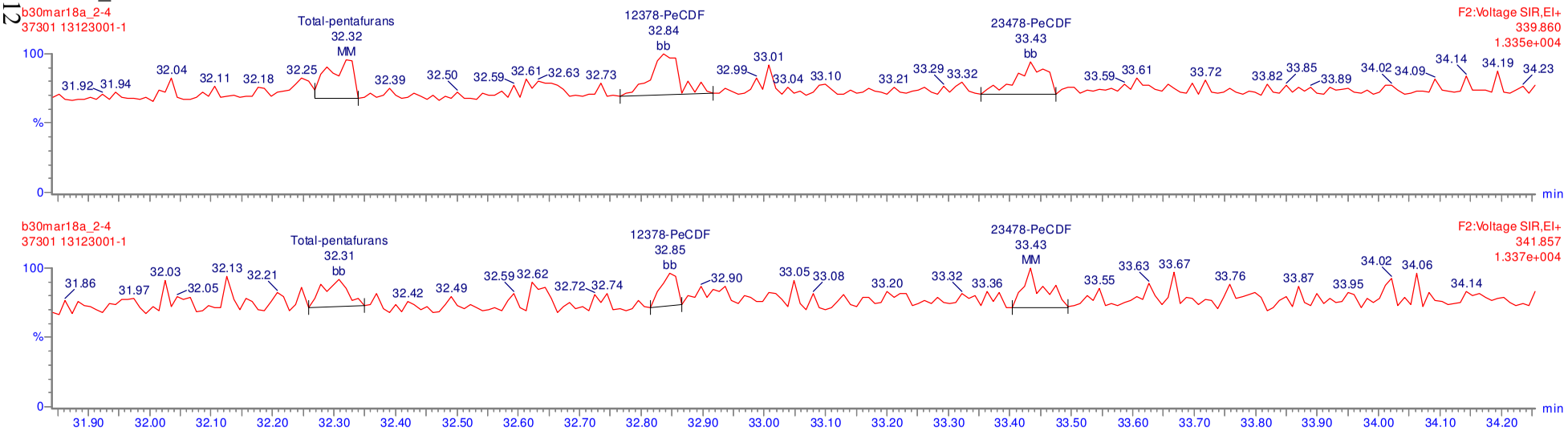
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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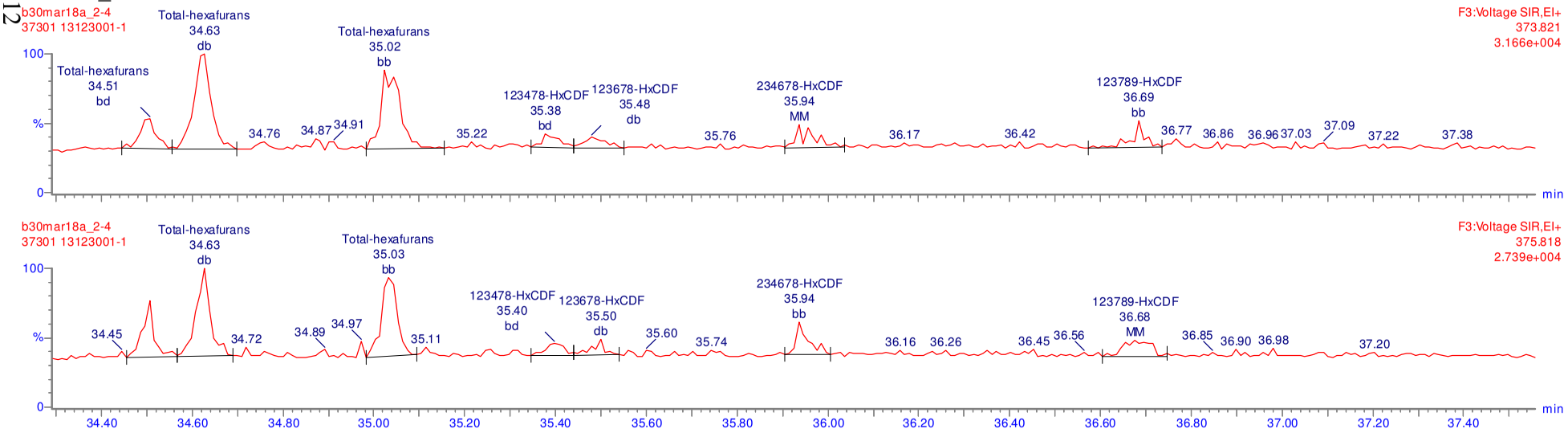
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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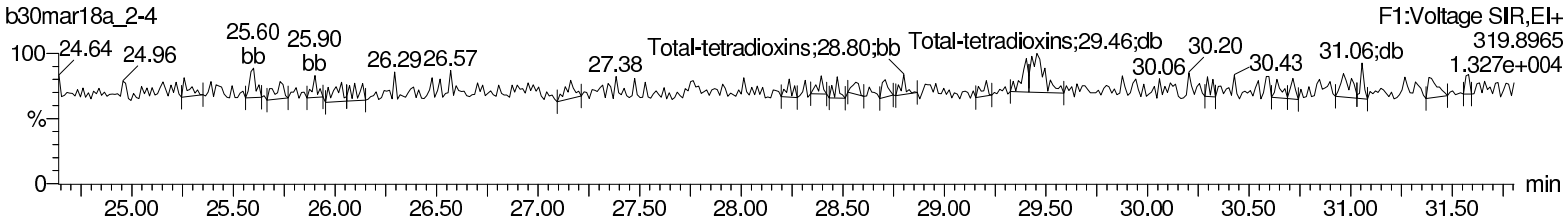
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

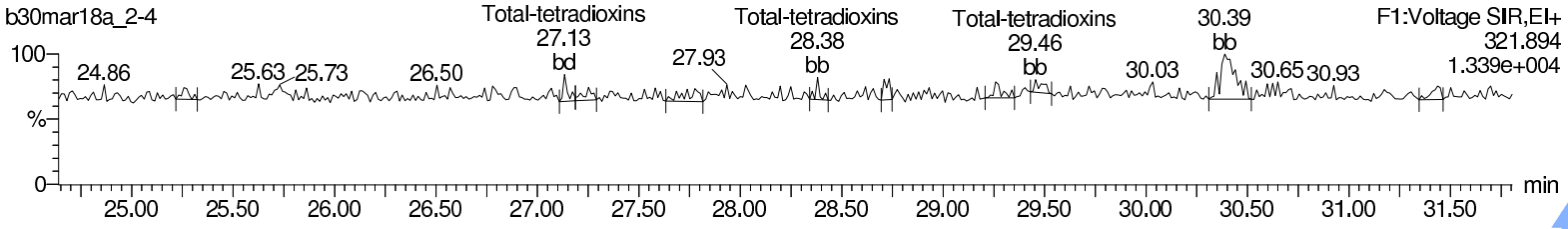
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

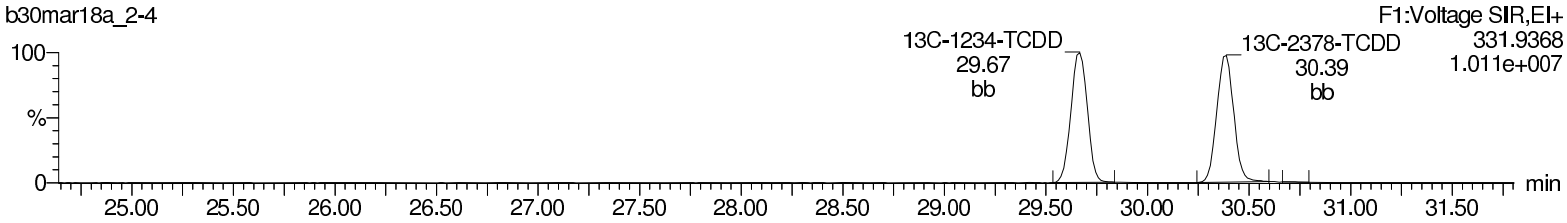
Total-tetradioxins



Total-tetradioxins



13C-2378-TCDD



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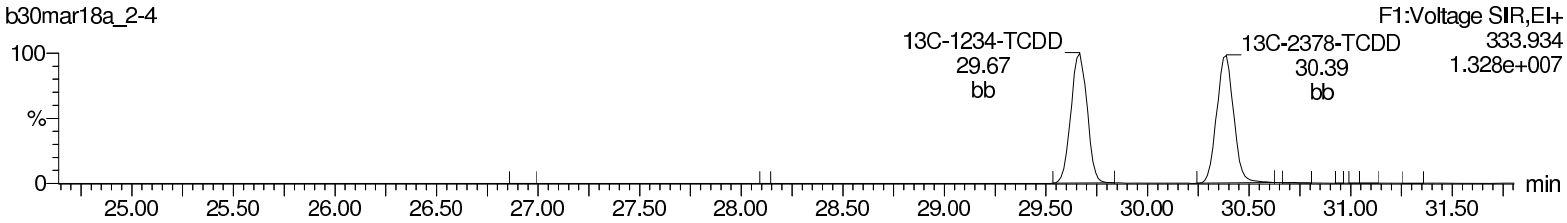

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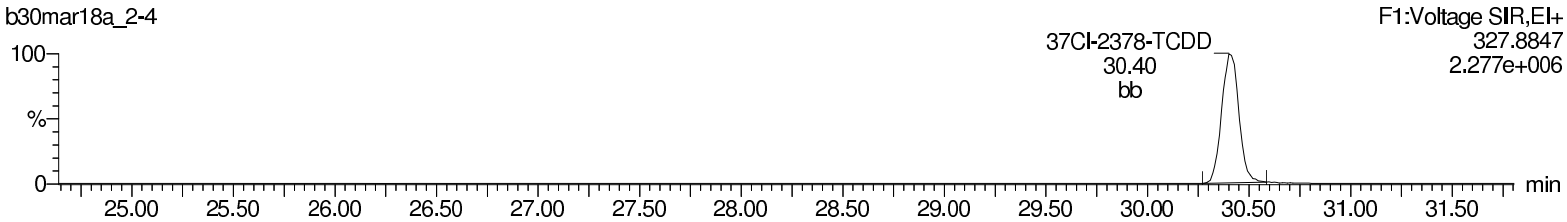
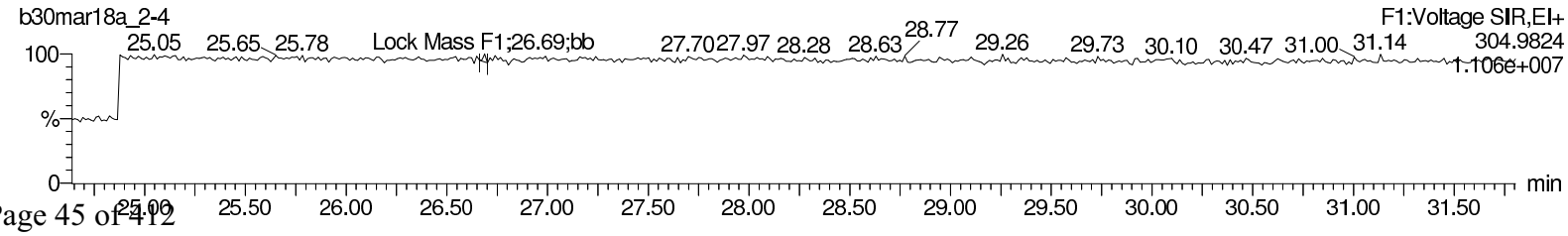


Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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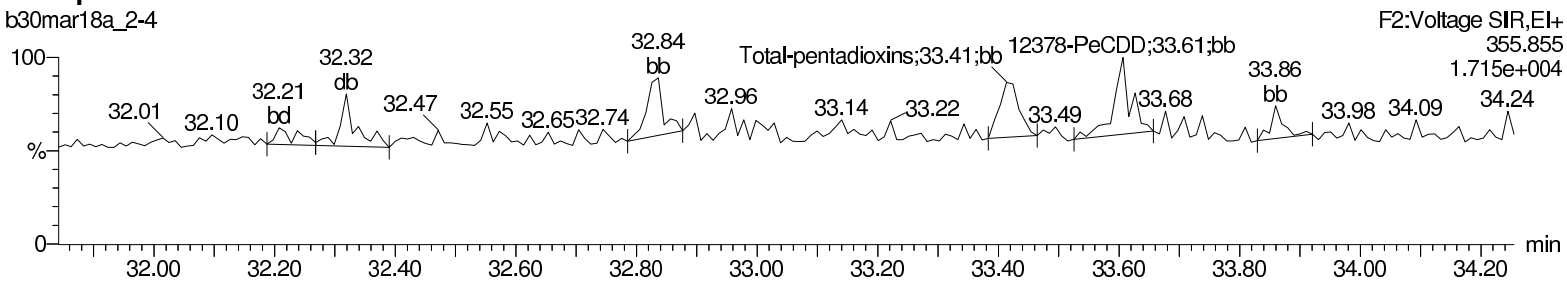
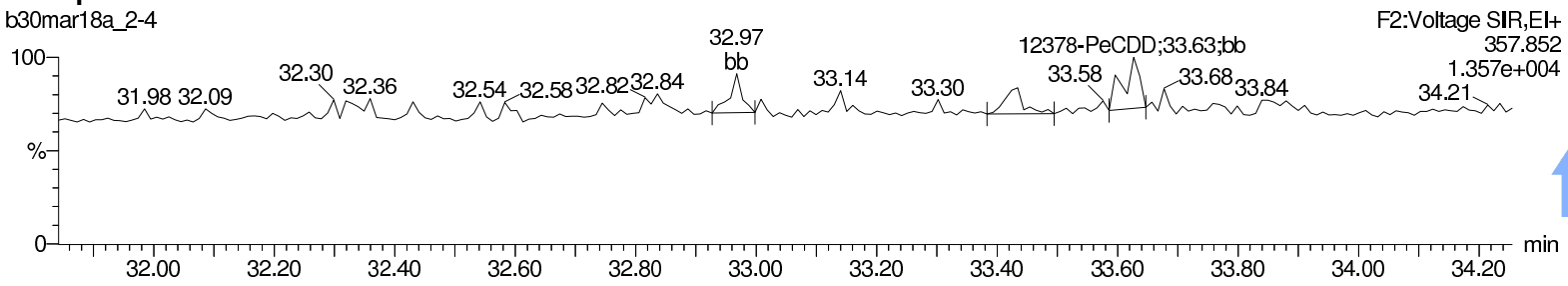
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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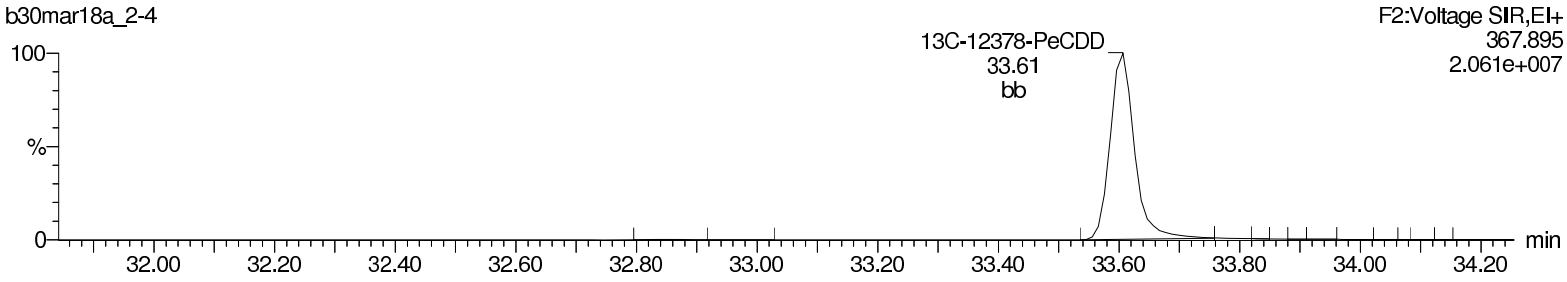

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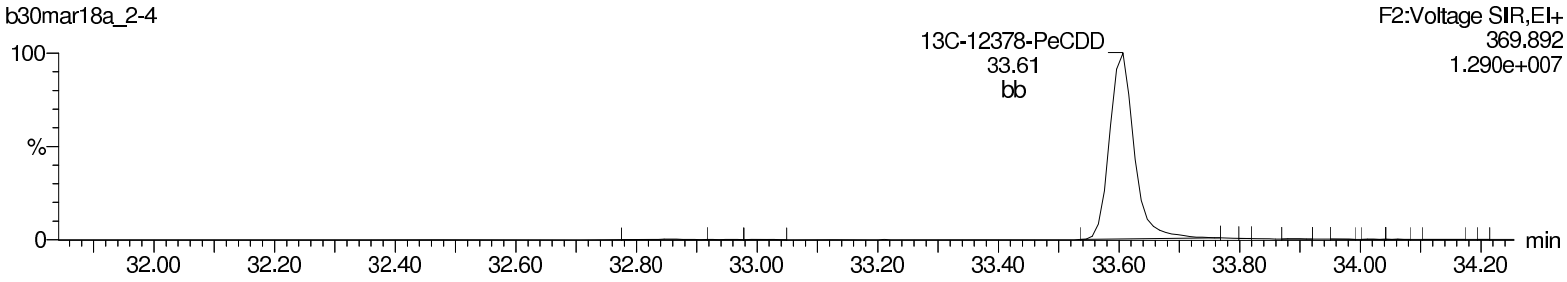
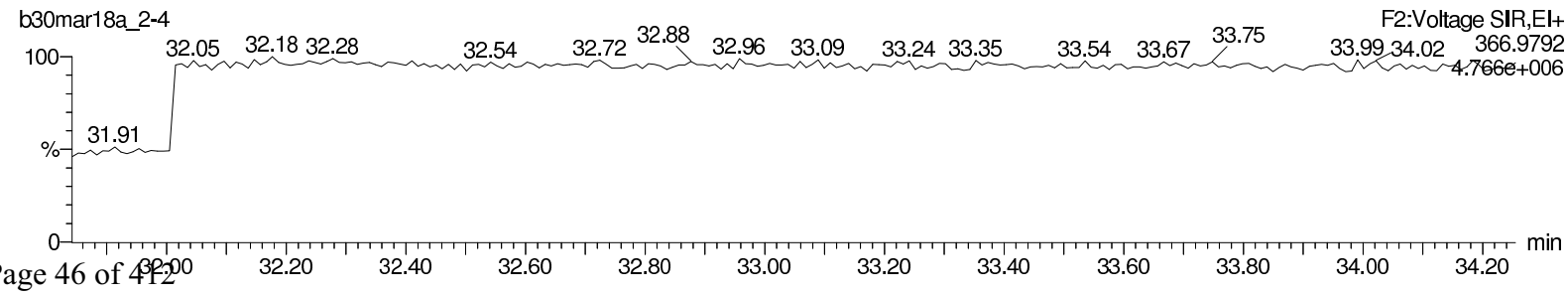


Lock Mass F2



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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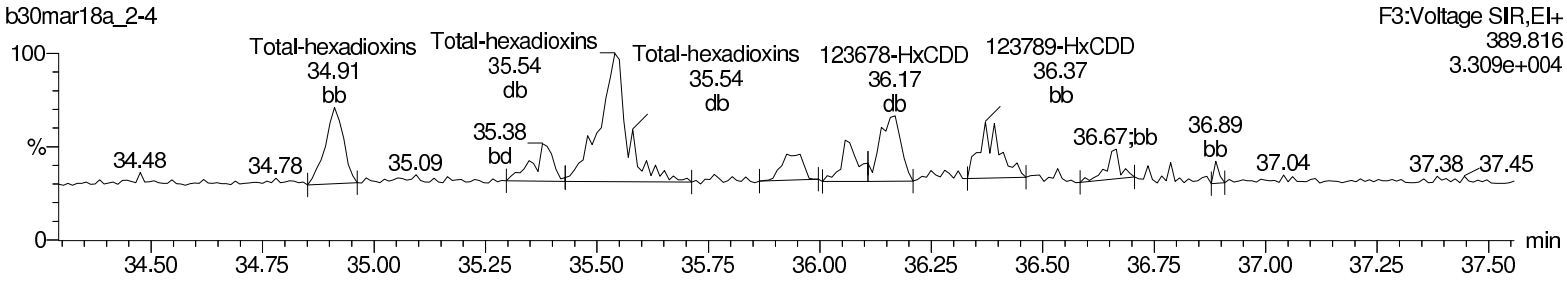
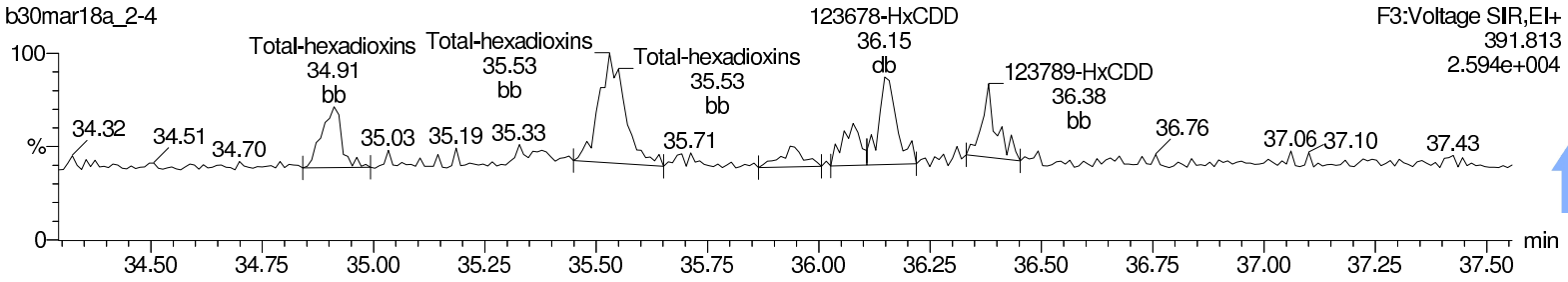
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

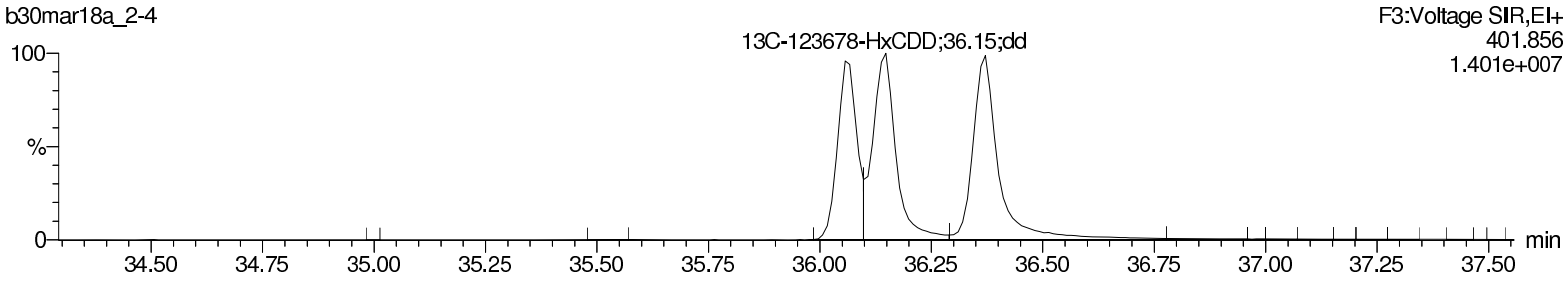
Total-hexadioxins



Total-hexadioxins



13C-123478-HxCDD



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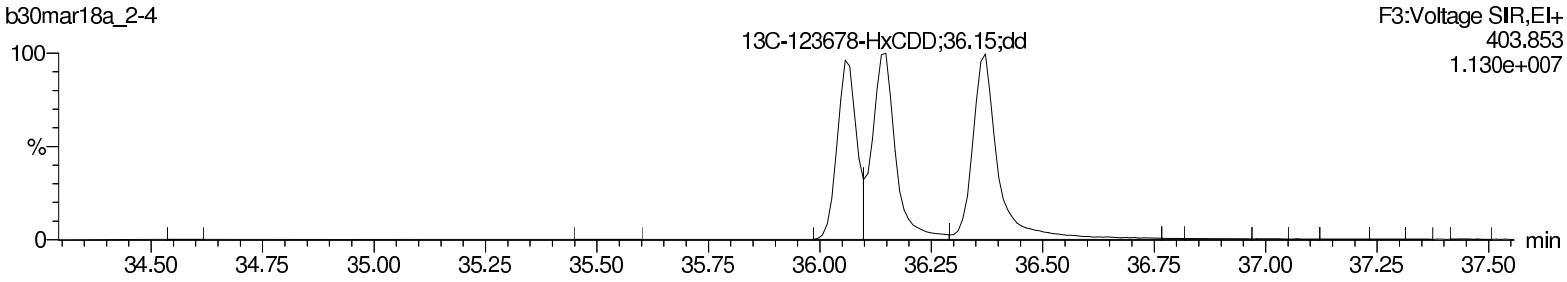
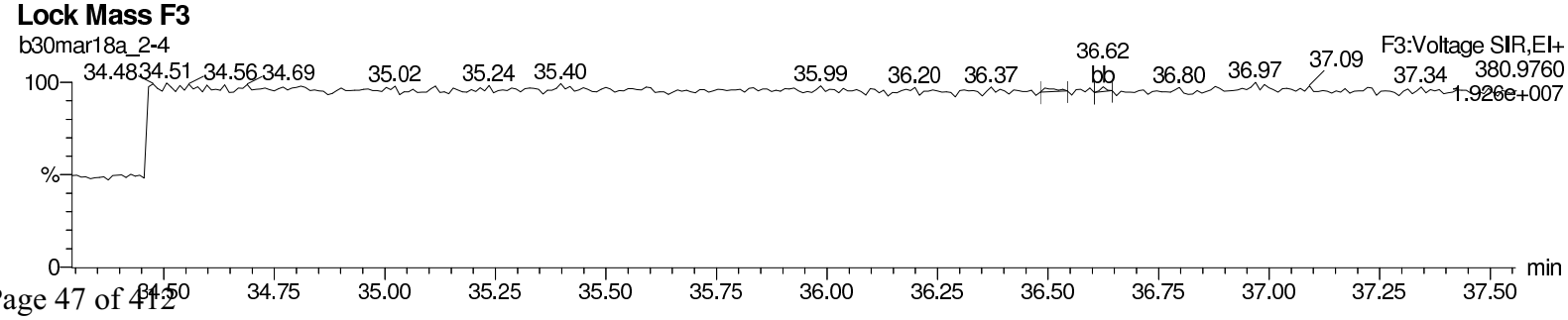


Lock Mass F3



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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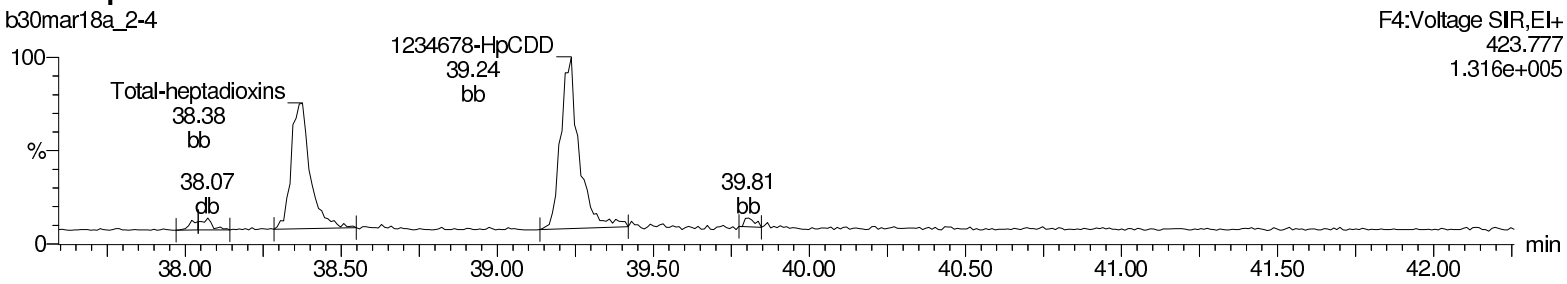
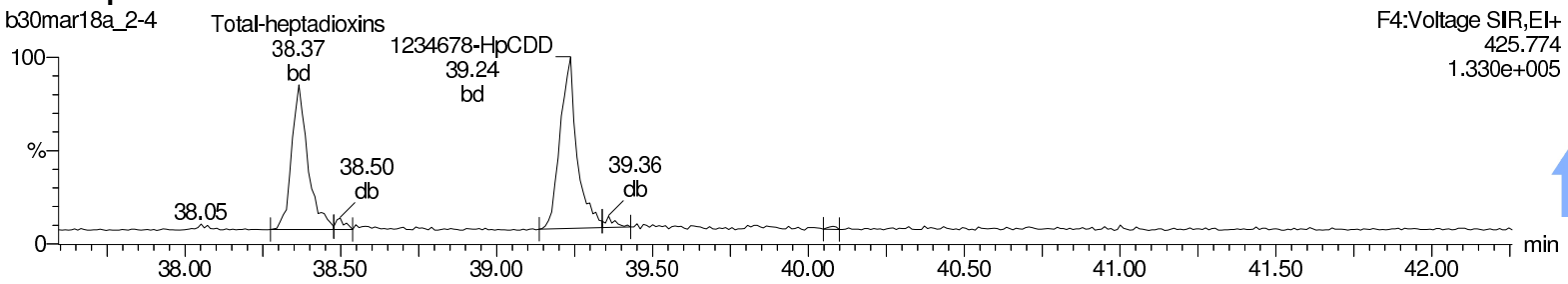
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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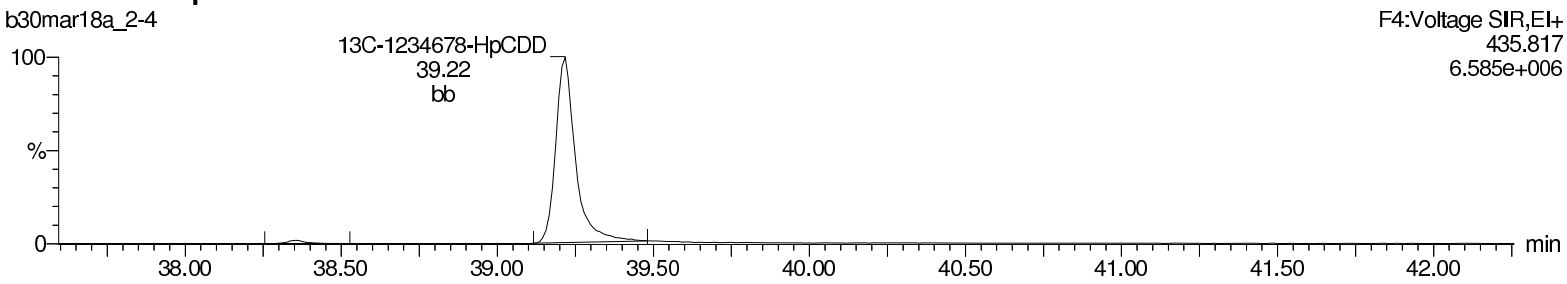

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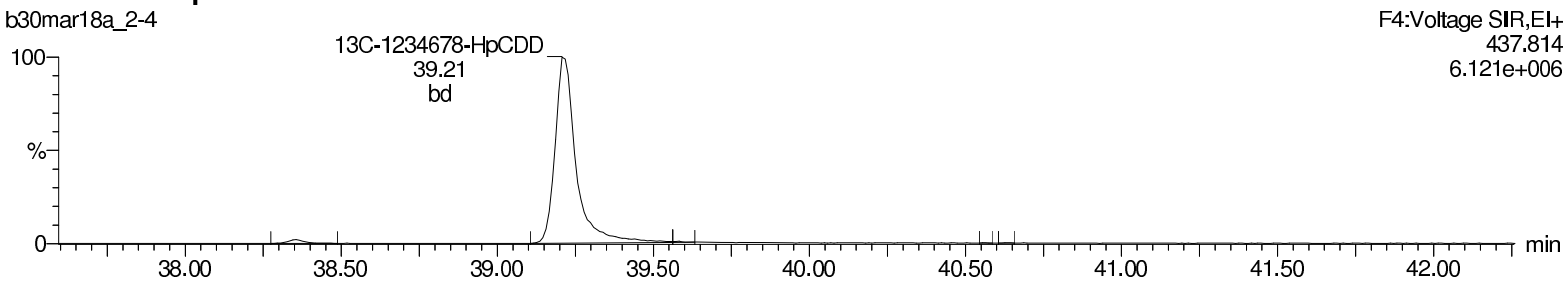
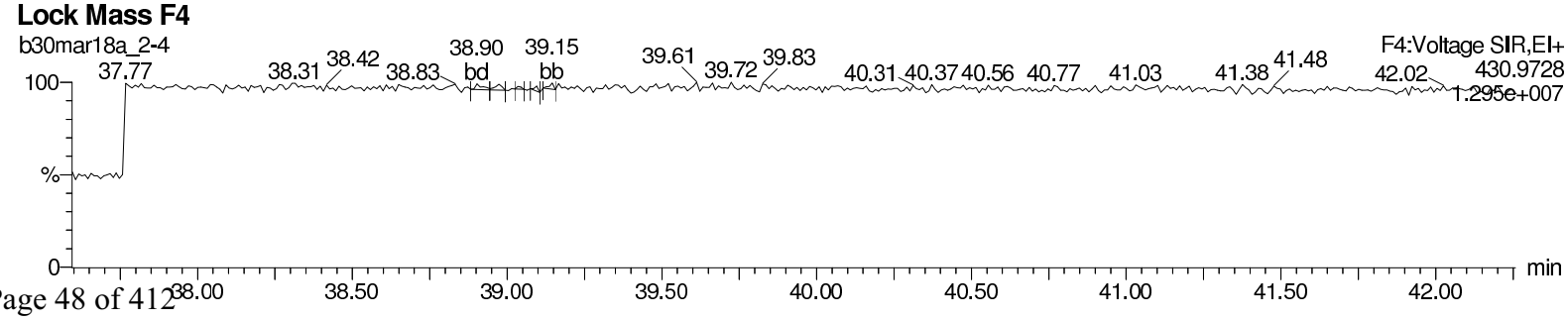


Lock Mass F4



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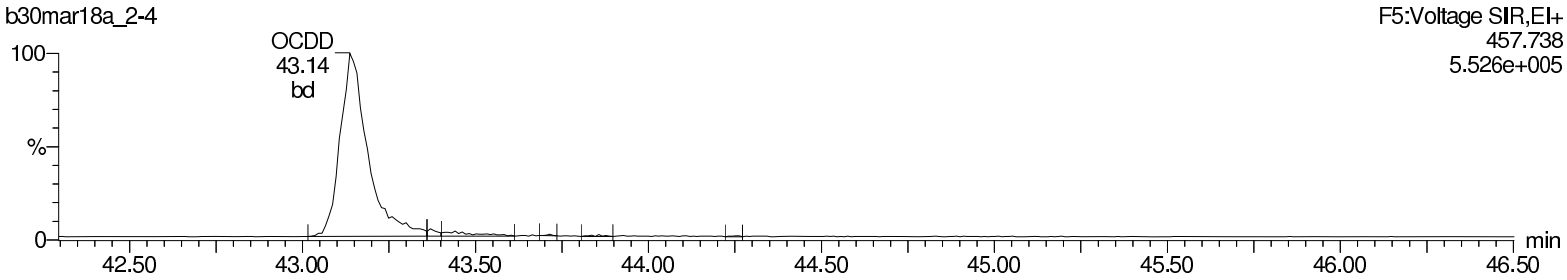
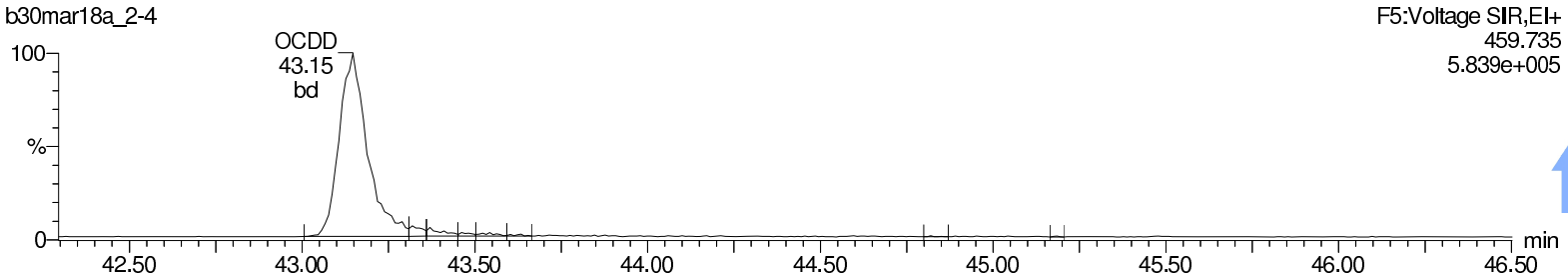
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



OCDD



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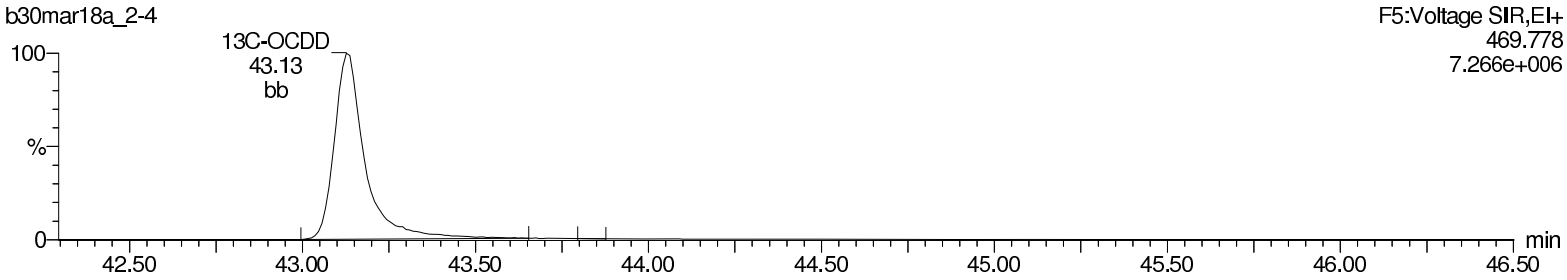

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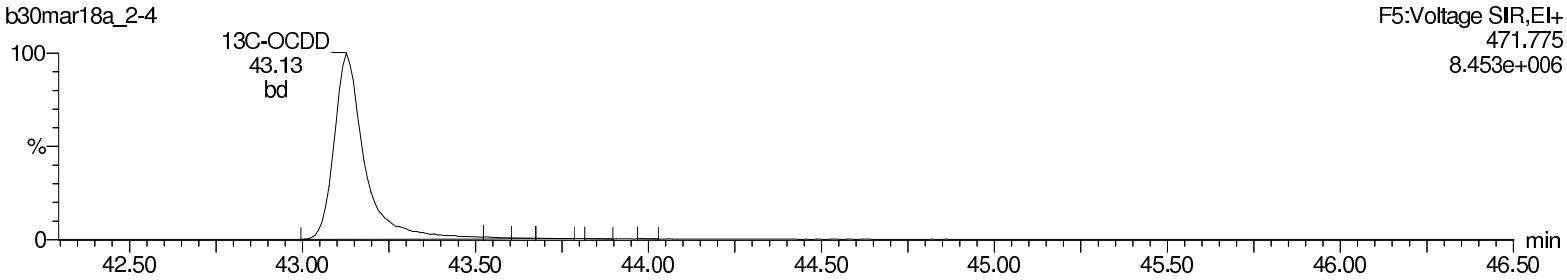
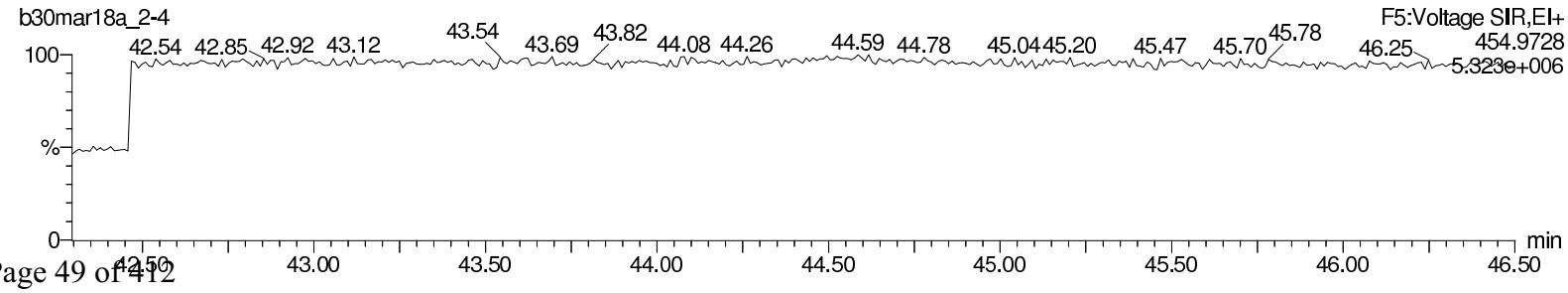


Lock Mass F5



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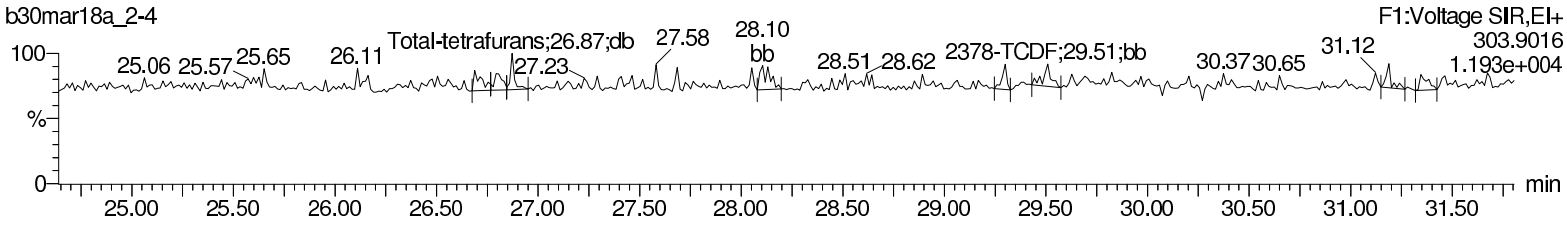
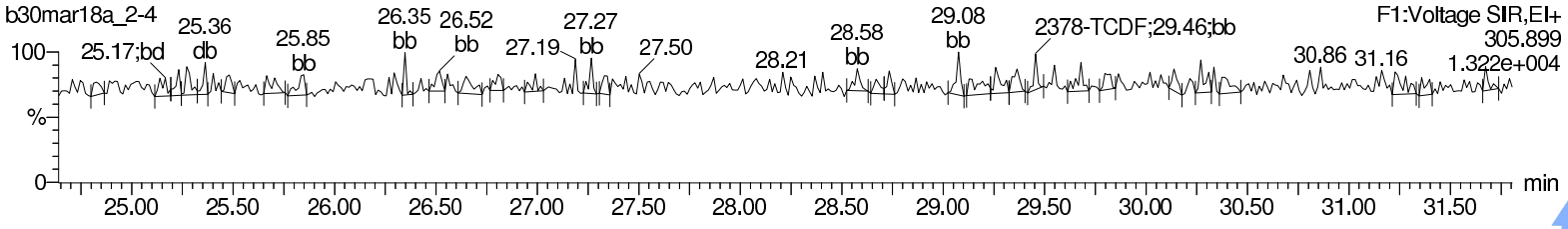
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

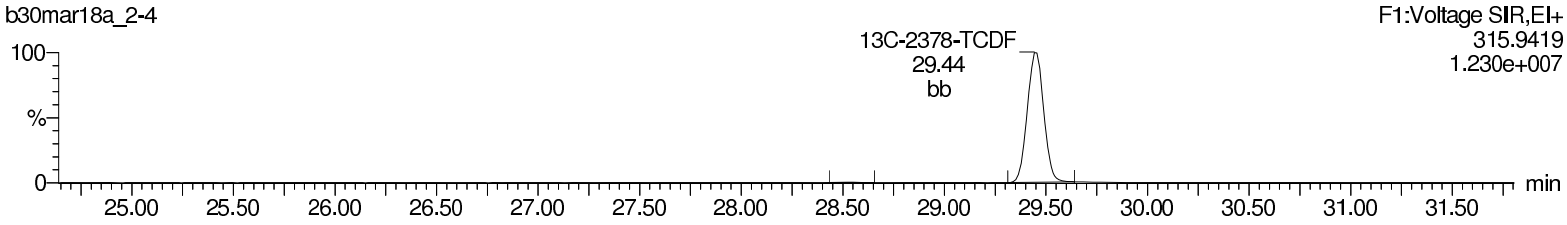
Total-tetrafurans



Total-tetrafurans



13C-2378-TCDF



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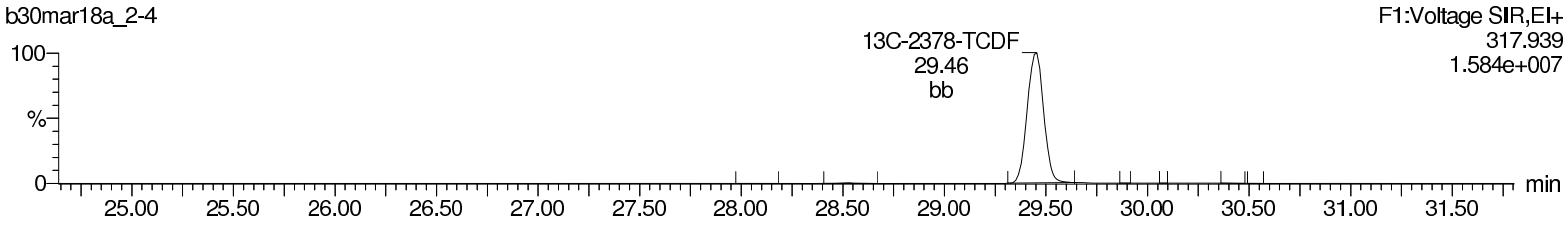
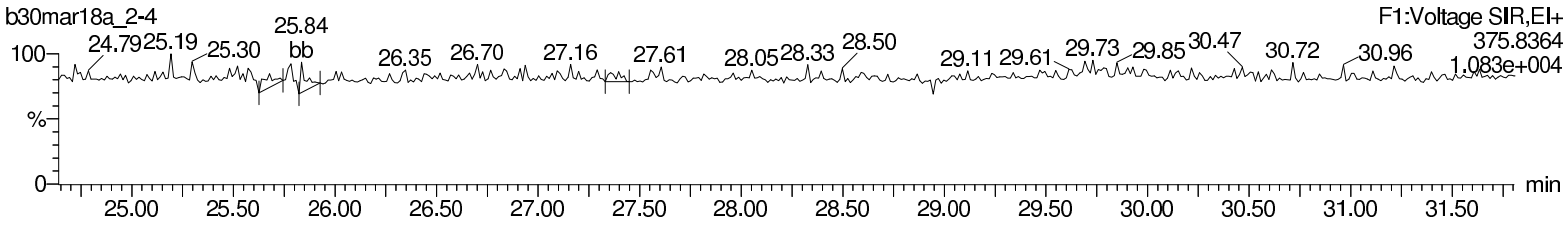
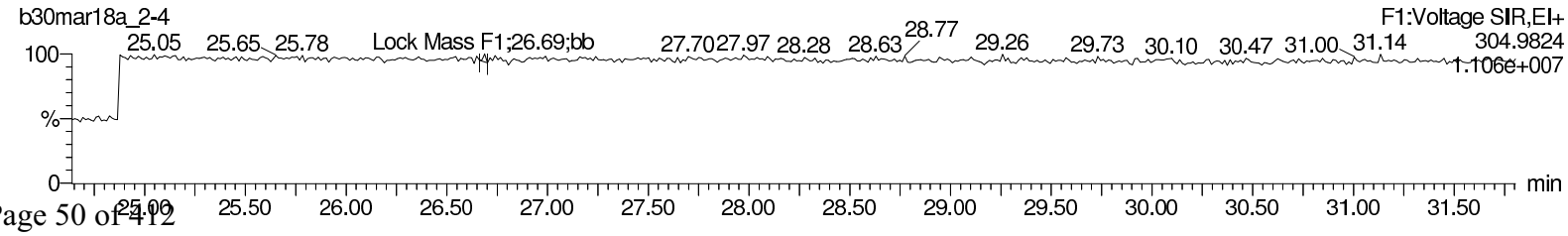


HxDPE



Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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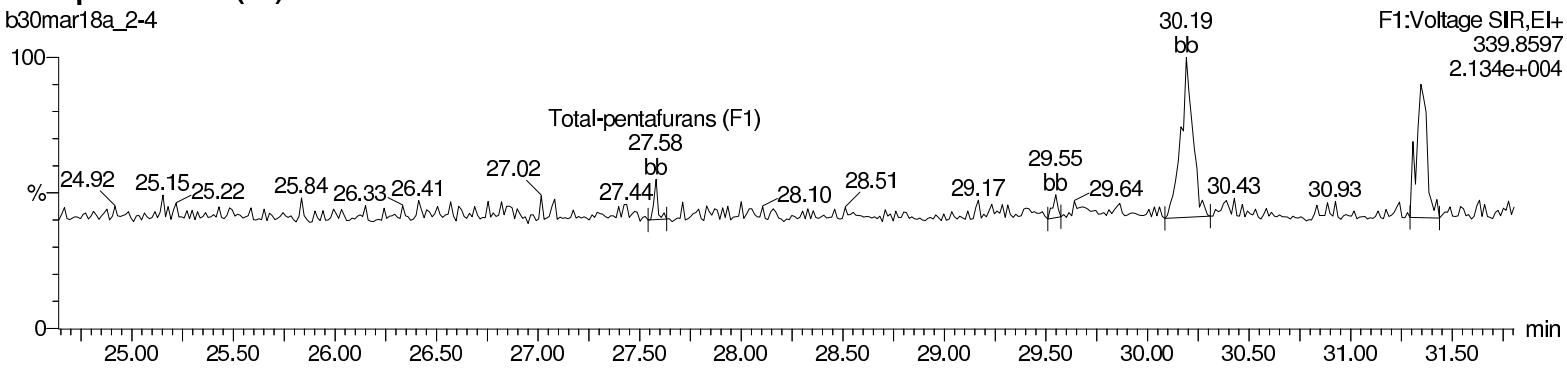
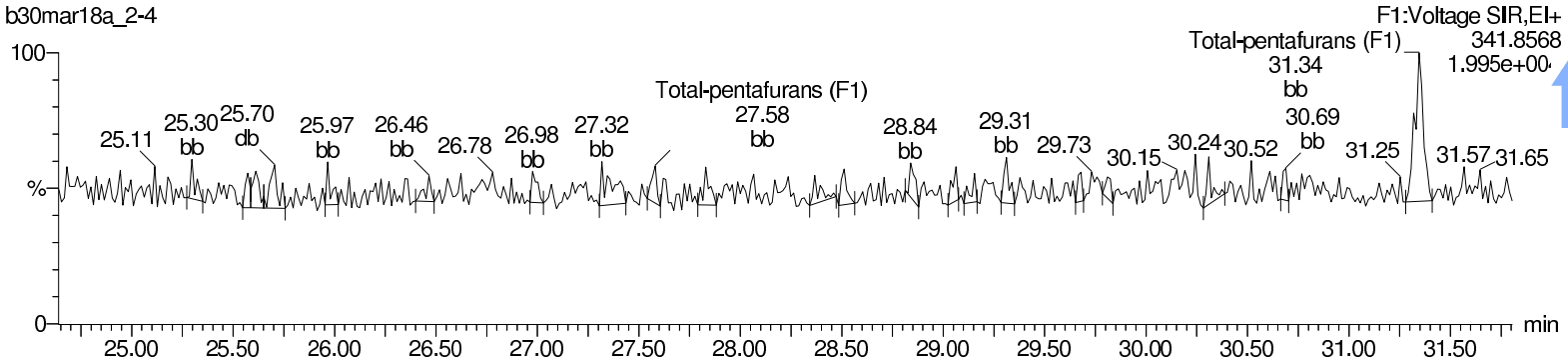
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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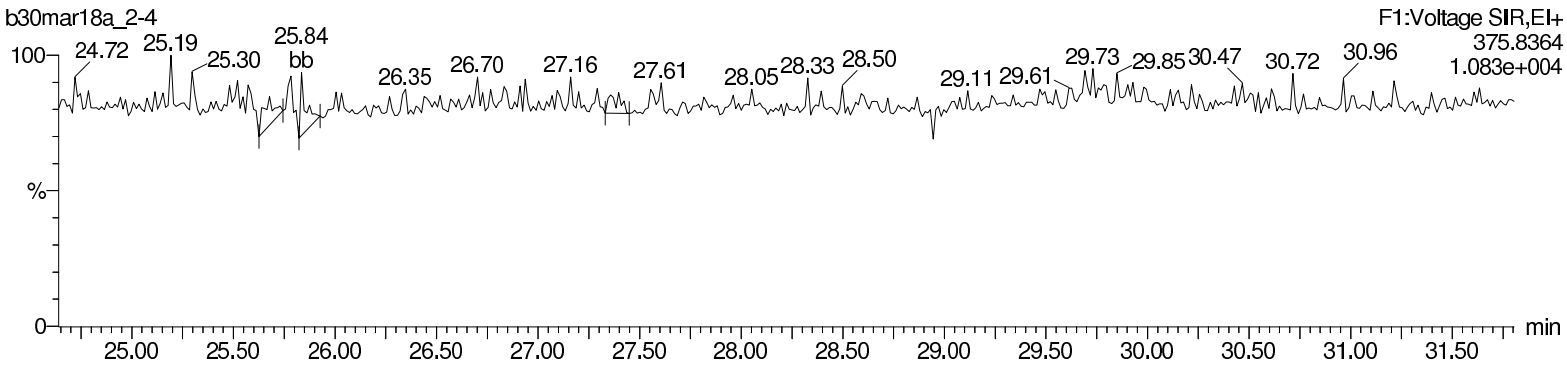
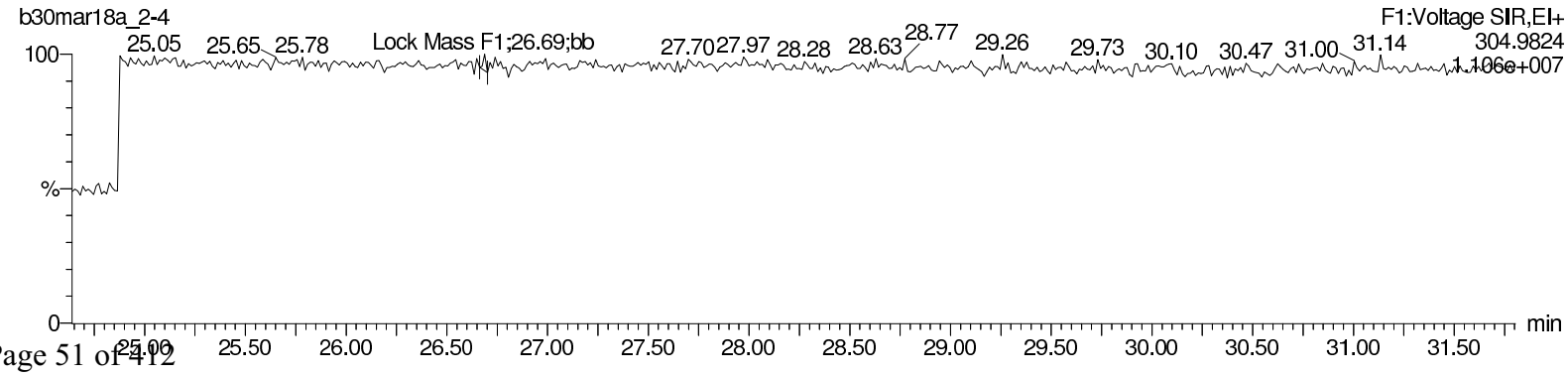


Lock Mass F1



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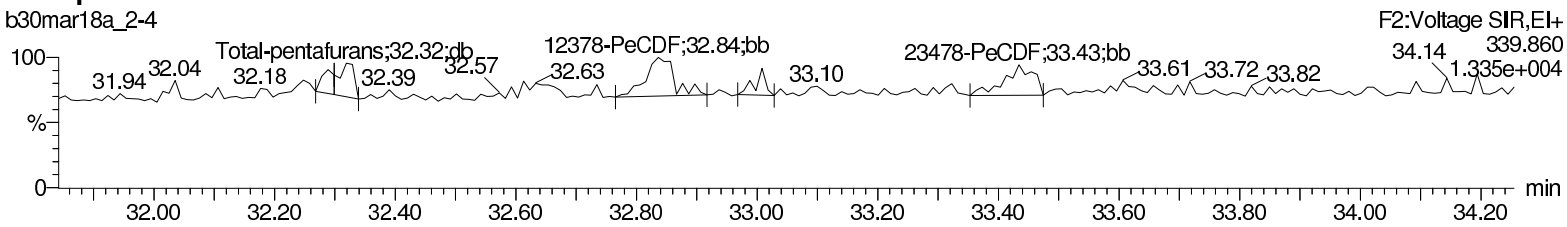
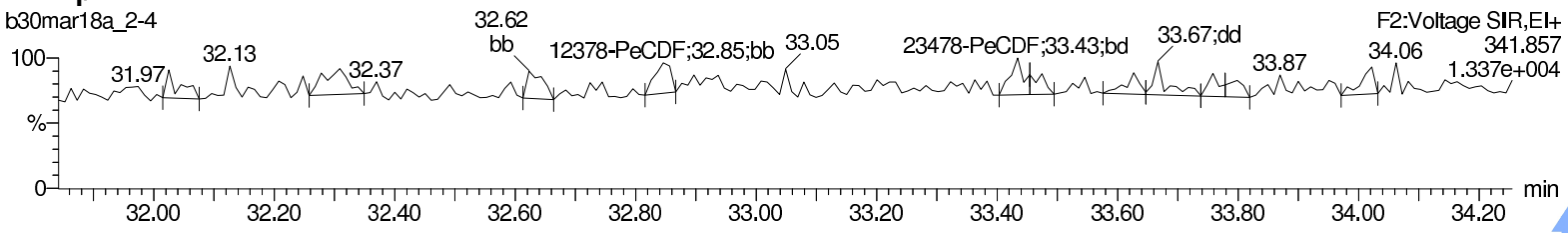
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

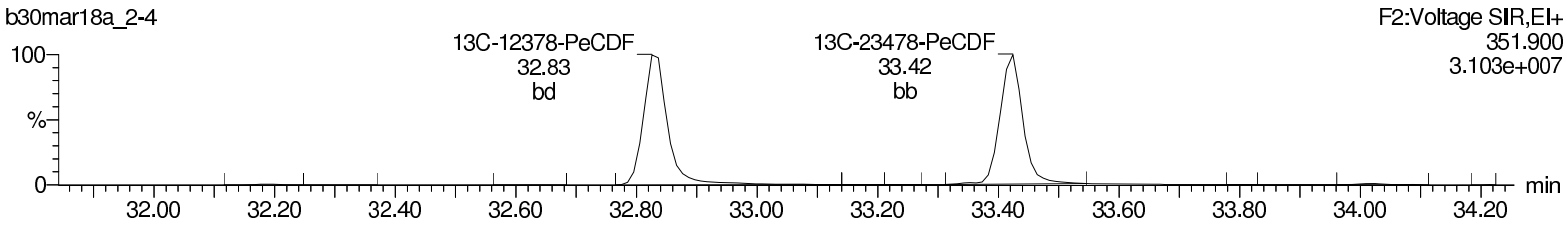
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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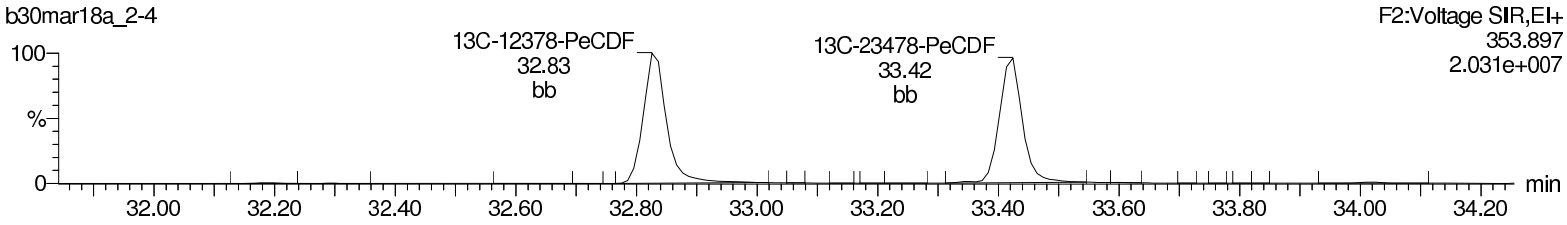

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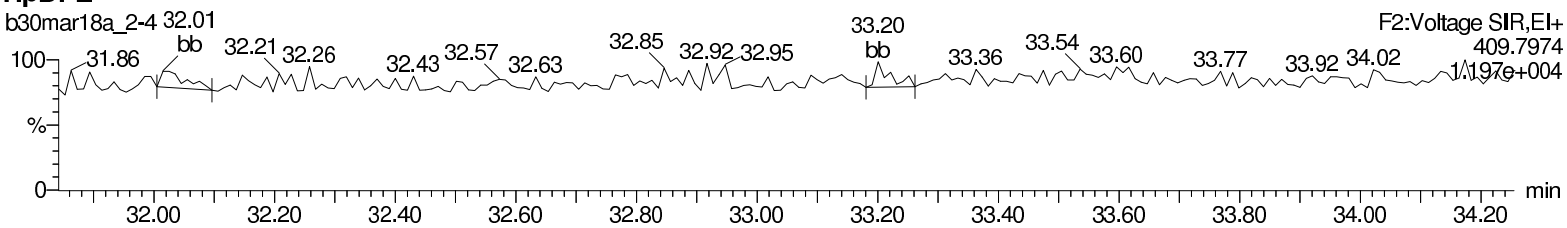
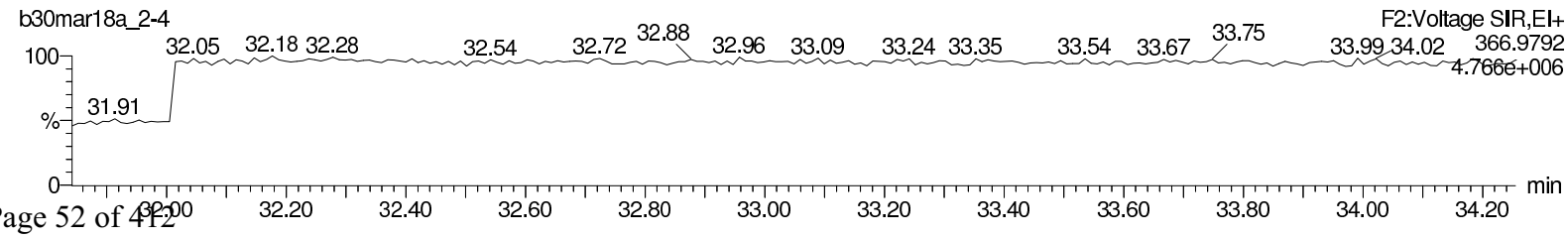


Lock Mass F2



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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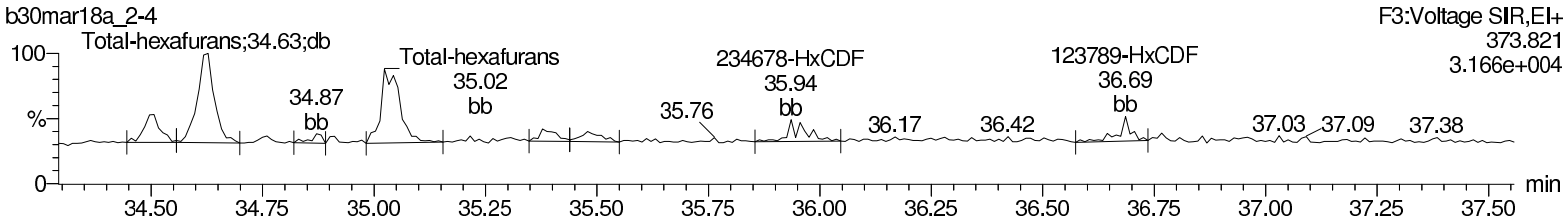
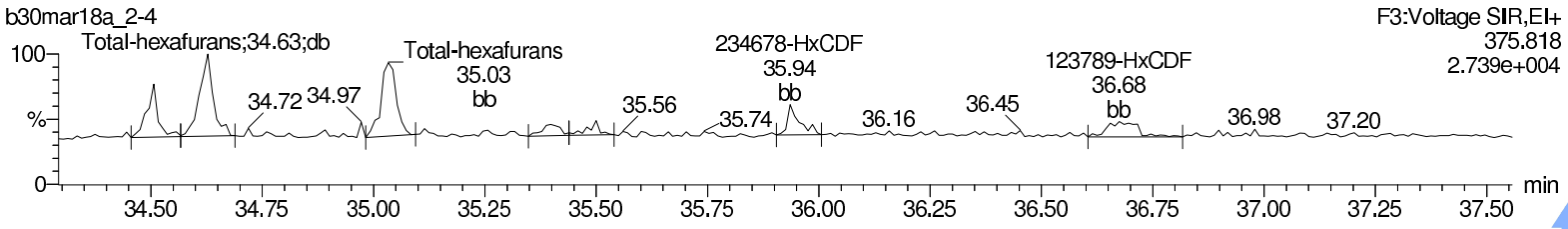
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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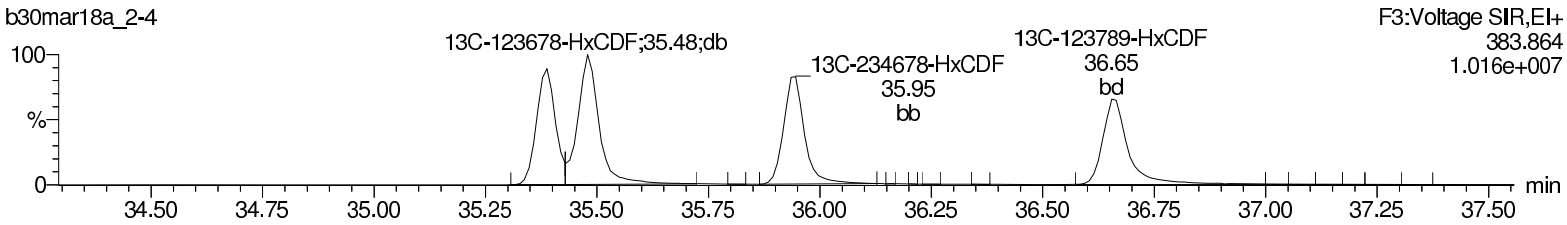

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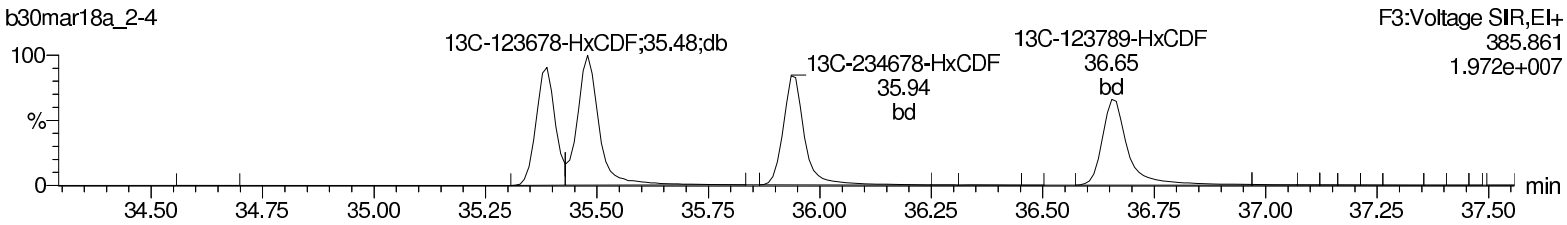

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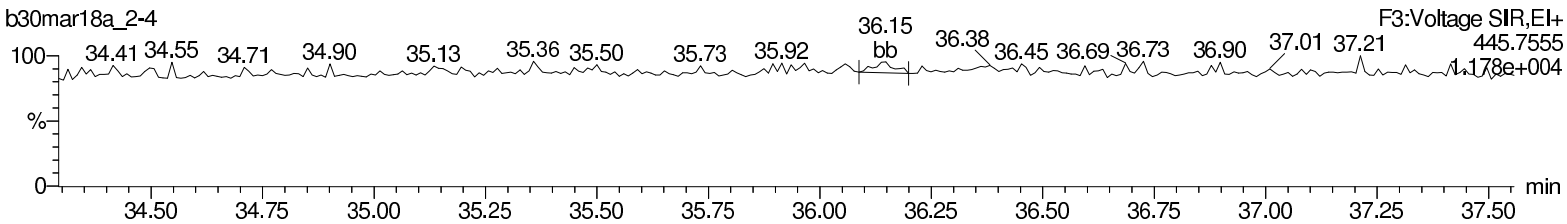
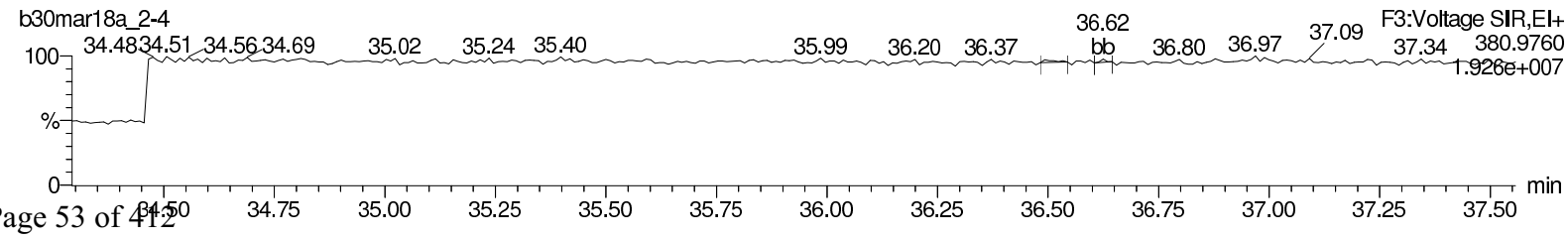


Lock Mass F3



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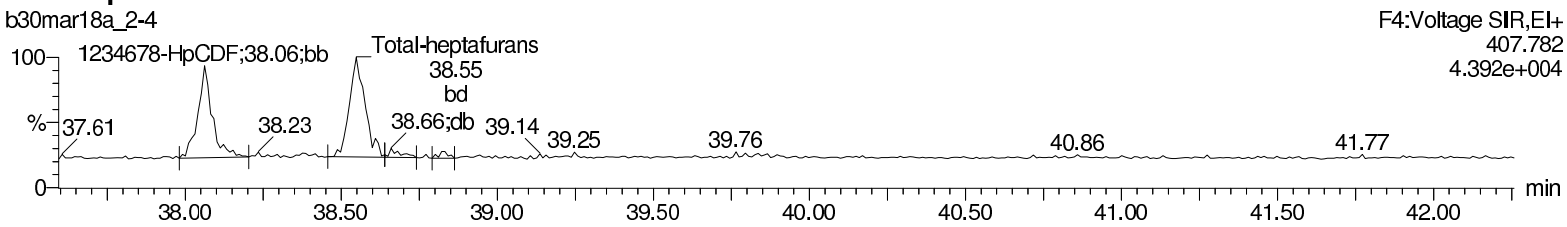
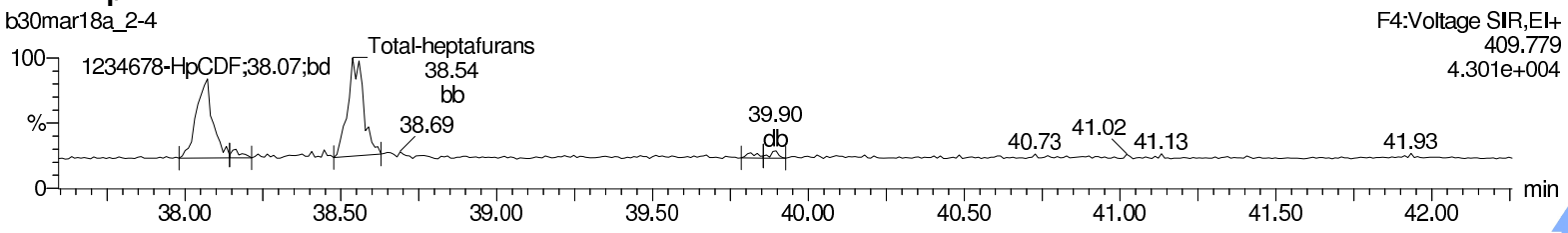
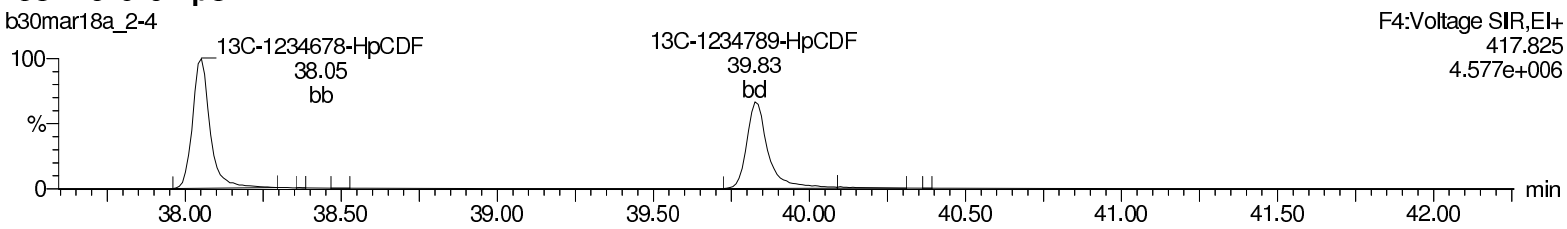
Total-heptafurans



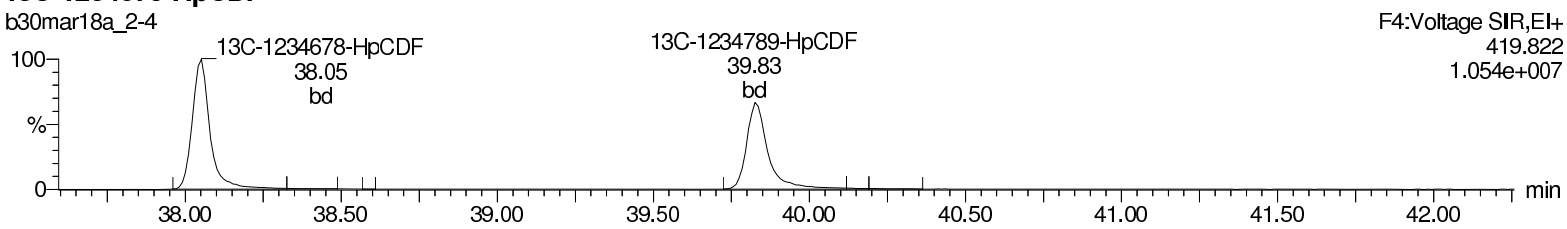
Total-heptafurans



13C-1234678-HpCDF



13C-1234678-HpCDF



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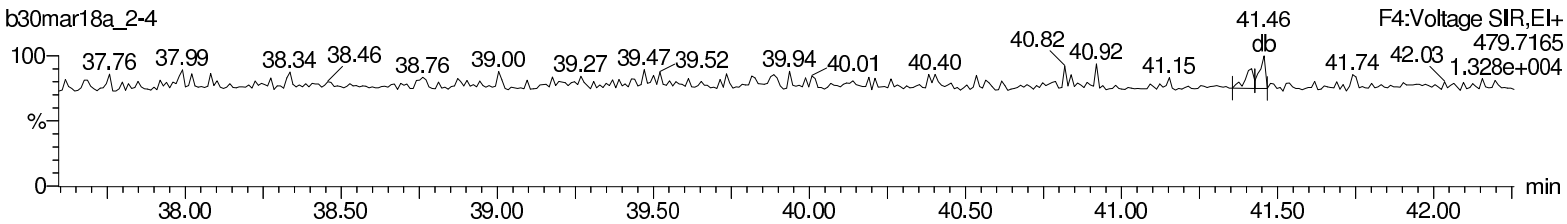
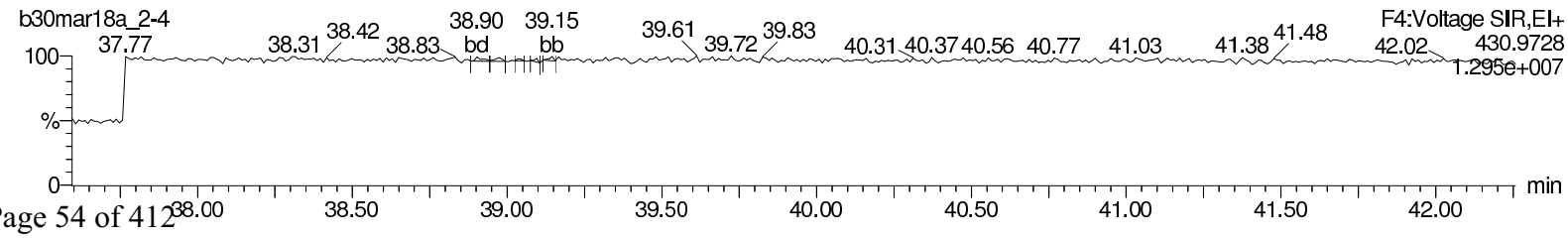


Lock Mass F4

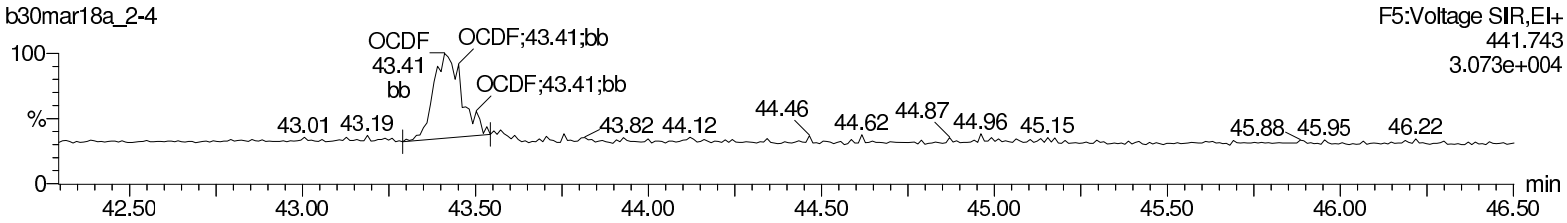


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

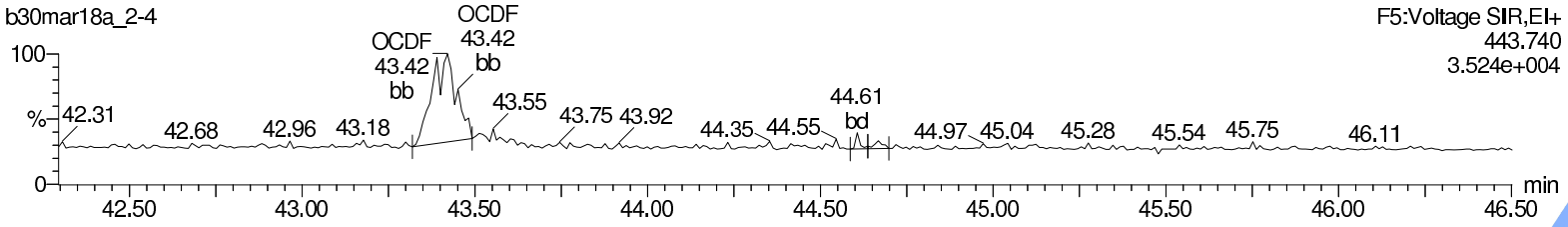
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

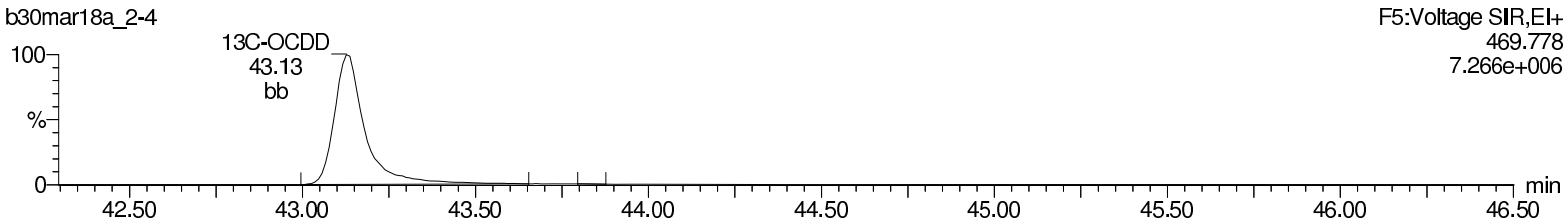
OCDF



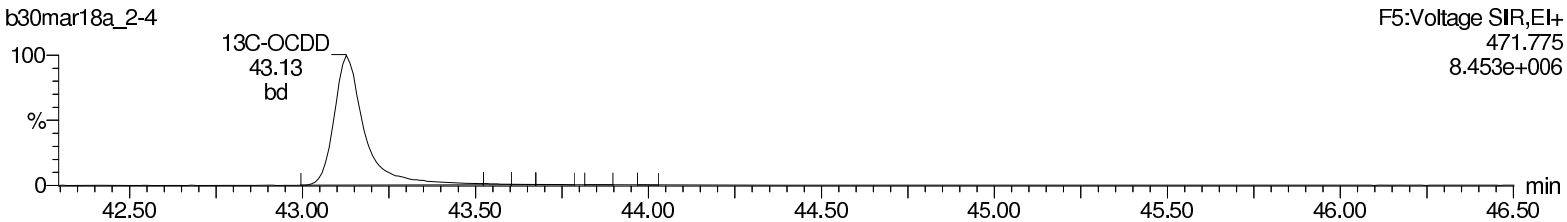
OCDF



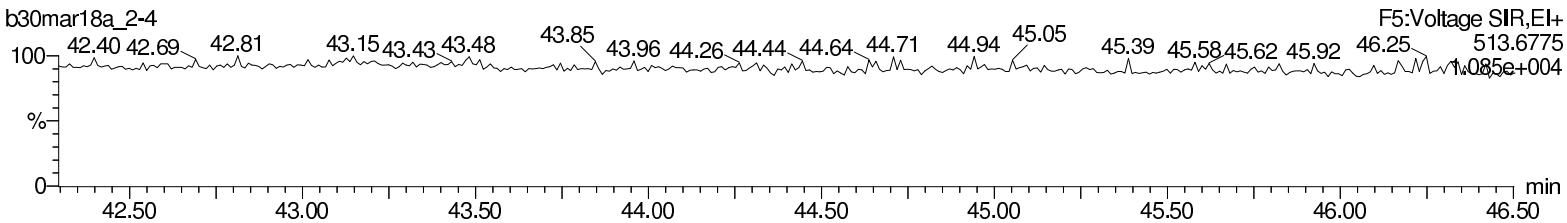
13C-OCDD



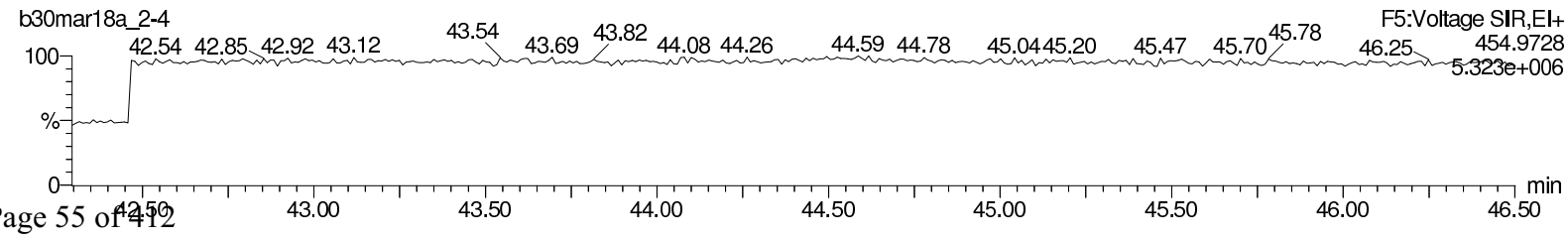
13C-OCDD



DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123002**	**Date Collected:**	**03/22/2018 11:30**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0007S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:49**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-5**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**970.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000797	ng/L	0.000797	0.0103
40321-76-4	1,2,3,7,8-PeCDD	J	0.000989	ng/L	0.000645	0.0515
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00134	ng/L	0.000979	0.0515
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.00262	ng/L	0.000942	0.0515
19408-74-3	1,2,3,7,8,9-HxCDD	JK	0.00192	ng/L	0.000987	0.0515
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0515	ng/L	0.00188	0.0515
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.693	ng/L	0.00398	0.103
51207-31-9	2,3,7,8-TCDF	U	0.000593	ng/L	0.000593	0.0103
57117-41-6	1,2,3,7,8-PeCDF	U	0.000453	ng/L	0.000453	0.0515
57117-31-4	2,3,4,7,8-PeCDF	U	0.000416	ng/L	0.000416	0.0515
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000453	ng/L	0.000453	0.0515
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000451	ng/L	0.000451	0.0515
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.000515	ng/L	0.000474	0.0515
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.00068	ng/L	0.000672	0.0515
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00585	ng/L	0.00056	0.0515
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000845	ng/L	0.000845	0.0515
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0155	ng/L	0.00149	0.103
41903-57-5	Total TeCDD	U	0.000797	ng/L	0.000797	0.0103
36088-22-9	Total PeCDD	JK	0.00181	ng/L	0.000645	0.0515
34465-46-8	Total HxCDD	JK	0.0194	ng/L	0.000942	0.0515
37871-00-4	Total HpCDD		0.111	ng/L	0.00188	0.0515
30402-14-3	Total TeCDF	U	0.000593	ng/L	0.000593	0.0103
30402-15-4	Total PeCDF	JK	0.0015	ng/L	0.000373	0.0515
55684-94-1	Total HxCDF	JK	0.00783	ng/L	0.000451	0.0515
38998-75-3	Total HpCDF	J	0.0159	ng/L	0.00056	0.0515
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00248	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00303	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.84	2.06	ng/L	89.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.57	2.06	ng/L	76.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.60	2.06	ng/L	77.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.82	2.06	ng/L	88.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.75	2.06	ng/L	85.0	(23%-140%)
13C-OCDD		2.96	4.12	ng/L	71.8	(17%-157%)
13C-2,3,7,8-TCDF		1.94	2.06	ng/L	94.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.85	2.06	ng/L	89.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.75	2.06	ng/L	85.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.64	2.06	ng/L	79.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.80	2.06	ng/L	87.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.72	2.06	ng/L	83.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.77	2.06	ng/L	85.8	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123002**	**Date Collected:**	**03/22/2018 11:30**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0007S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:49**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-5**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**970.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.58	2.06	ng/L	76.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.61	2.06	ng/L	77.9	(26%-138%)
37Cl-2,3,7,8-TCDD		0.186	0.206	ng/L	90.4	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:03:35 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:03:56 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD							NO		0.0387		1594			1224			
2	12378-PeCDD	3.34e2	2.07e2	5.41e2	33.61	1.000	1.61	NO	0.048	0.0313	7.60e3	1644	4.6	5.45e3	1480	3.7	MM	bb
3	123478-HxCDD	3.46e2	2.76e2	6.22e2	36.08	1.000	1.25	NO	0.065	0.0475	8.95e3	1795	5.0	4.97e3	1817	2.7	bd	bd
4	123678-HxCDD	8.12e2	7.06e2	1.52e3	36.15	1.000	1.15	NO	0.127	0.0457	1.80e4	1795	10.0	1.33e4	1817	7.3	db	db
5	123789-HxCDD	4.97e2	4.74e2	9.72e2	36.38	1.007	1.05	YES	0.093	0.0479	8.81e3	1795	4.9	8.15e3	1817	4.5	bb	db
6	1234678-HpCDD	1.16e4	1.14e4	2.30e4	39.24	1.001	1.02	NO	2.498	0.0914	1.55e5	2274	68.3	1.57e5	2127	73.6	bb	bb
7	OCDD	1.08e5	1.21e5	2.29e5	43.15	1.000	0.89	NO	33.641	0.193	1.09e6	2958	368.7	1.26e6	2044	615.9	bd	bd
8	2378-TCDF							NO		0.0288		1064			1732			
9	12378-PeCDF	1.81e2	2.17e2	3.98e2	32.84	1.000	0.83	YES	0.022	0.0220	4.29e3	1493	2.9	6.54e3	1974	3.3	db	bd
10	23478-PeCDF							NO		0.0202		1493			1974			
11	123478-HxCDF	1.46e2	7.48e1	2.20e2	35.40	1.000	1.95	YES	0.018	0.0220	4.97e3	1051	4.7	3.53e3	1250	2.8	bd	bb
12	123678-HxCDF							NO		0.0219		1051			1250			
13	234678-HxCDF	1.97e2	1.36e2	3.33e2	35.97	1.001	1.45	YES	0.025	0.0230	5.47e3	1051	5.2	3.14e3	1250	2.5	bb	MM
14	123789-HxCDF	1.99e2	1.88e2	3.87e2	36.71	1.001	1.06	NO	0.033	0.0326	3.23e3	1051	3.1	4.31e3	1250	3.4	MM	bb
15	1234678-HpCDF	1.53e3	1.38e3	2.91e3	38.06	1.000	1.11	NO	0.284	0.0272	2.91e4	857	33.9	2.91e4	906	32.1	bb	bb
16	1234789-HpCDF							NO		0.0410		857			906			
17	OCDF	2.44e3	2.73e3	5.17e3	43.40	1.006	0.89	NO	0.751	0.0721	2.68e4	647	41.4	2.91e4	1242	23.4	bd	bb
18	13C-2378-TCDD	8.74e5	1.14e6	2.01e6	30.37	1.024	0.77	NO	89.517	0.0882	8.88e6	4678	1898.2	1.16e7	4354	2674.0	bb	bb
19	13C-12378-PeCDD	8.83e5	5.58e5	1.44e6	33.61	1.133	1.58	NO	76.171	0.0856	1.94e7	2455	7897.8	1.22e7	4922	2484.4	bb	bb
20	13C-123478-HxCDD	6.34e5	5.08e5	1.14e6	36.07	0.992	1.25	NO	77.572	0.147	1.26e7	8478	1485.0	9.84e6	5624	1749.2	bd	bd
21	13C-123678-HxCDD	7.77e5	6.47e5	1.42e6	36.14	0.994	1.20	NO	88.443	0.134	1.28e7	8478	1514.1	1.06e7	5624	1884.8	dd	dd
22	13C-1234678-HpCDD	4.67e5	4.51e5	9.17e5	39.22	1.078	1.04	NO	84.959	0.156	6.11e6	5625	1086.0	5.97e6	5360	1114.2	bd	bb
23	13C-OCDD	7.00e5	7.95e5	1.49e6	43.13	1.186	0.88	NO	143.689	0.146	6.65e6	5543	1199.8	7.76e6	4381	1772.1	bd	bd
24	13C-2378-TCDF	1.08e6	1.40e6	2.48e6	29.44	0.992	0.77	NO	94.353	0.0870	1.15e7	6515	1757.8	1.51e7	3913	3858.3	bb	bb
25	13C-12378-PeCDF	1.34e6	8.53e5	2.19e6	32.84	1.107	1.57	NO	89.549	0.151	2.93e7	9366	3125.7	1.82e7	7509	2429.7	bd	bd
26	13C-23478-PeCDF	1.26e6	8.00e5	2.06e6	33.42	1.127	1.58	NO	85.025	0.153	2.84e7	9366	3029.7	1.78e7	7509	2374.6	bb	bb
27	13C-123478-HxCDF	4.22e5	8.32e5	1.25e6	35.39	0.973	0.51	NO	79.635	0.170	8.80e6	6698	1313.5	1.74e7	10830	1602.7	bd	bd
28	13C-123678-HxCDF	5.44e5	1.05e6	1.59e6	35.48	0.975	0.52	NO	87.246	0.147	9.64e6	6698	1438.8	1.92e7	10830	1769.4	dd	db
29	13C-234678-HxCDF	4.37e5	8.53e5	1.29e6	35.94	0.988	0.51	NO	83.344	0.174	8.20e6	6698	1224.6	1.59e7	10830	1464.6	bb	bb
30	13C-123789-HxCDF	4.20e5	7.94e5	1.21e6	36.65	1.008	0.53	NO	85.784	0.190	6.41e6	6698	956.6	1.24e7	10830	1141.9	bd	bb
31	13C-1234678-HpCDF	2.76e5	6.58e5	9.34e5	38.05	1.046	0.42	NO	76.740	0.116	4.37e6	3824	1142.5	1.01e7	5435	1853.0	bb	bd

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:03:35 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:03:56 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.25e5	5.29e5	7.54e5	39.83	1.095	0.43	NO	77.902	0.146	2.90e6	3824	757.8	6.65e6	5435	1224.3	bd	bd
33	13C-1234-TCDD	8.63e5	1.11e6	1.97e6	29.67	0.000	0.78	NO	100.000	0.101	9.82e6	4678	2100.3	1.21e7	4354	2788.6	bb	bb
34	13C-123789-HxCDD	7.67e5	6.67e5	1.43e6	36.37	0.000	1.15	NO	100.000	0.151	1.25e7	8478	1476.3	1.04e7	5624	1857.6	db	dd
35	37Cl-2378-TCDD	2.07e5		2.07e5	30.41	1.025			9.040	0.0146	2.19e6	1522	1441.0				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:03:35 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:03:56 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetradioxins	8.19e1	1.24e2	2.06e2	31.58	0.66	NO	0.011	0.0387	3.07e3	1594	1.9	2.37e3	1224	1.9	bb	bd
2	Total-tetradioxins	2.31e2	8.77e1	3.18e2	29.46	2.63	YES	0.018	0.0387	3.82e3	1594	2.4	2.07e3	1224	1.7	bb	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	3.34e2	2.07e2	5.41e2	33.61	1.61	NO	0.048	0.0313	7.60e3	1644	4.6	5.45e3	1480	3.7	MM	bb
2	Total-pentadioxins	1.40e2	1.25e2	2.65e2	33.15	1.12	YES	0.023	0.0313	3.16e3	1644	1.9	3.55e3	1480	2.4	bb	bb
3	Total-pentadioxins	8.06e1	1.48e2	2.29e2	33.00	0.54	YES	0.020	0.0313	2.77e3	1644	1.7	6.76e3	1480	4.6	db	bd
4	Total-pentadioxins	2.09e2	2.42e2	4.51e2	32.33	0.86	YES	0.040	0.0313	4.72e3	1644	2.9	4.43e3	1480	3.0	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDD	4.97e2	4.74e2	9.72e2	36.38	1.05	YES	0.093	0.0479	8.81e3	1795	4.9	8.15e3	1817	4.5	bb	db
2	123678-HxCDD	8.12e2	7.06e2	1.52e3	36.15	1.15	NO	0.127	0.0457	1.80e4	1795	10.0	1.33e4	1817	7.3	db	db
3	123478-HxCDD	3.46e2	2.76e2	6.22e2	36.08	1.25	NO	0.065	0.0475	8.95e3	1795	5.0	4.97e3	1817	2.7	bd	bd
4	Total-hexadioxins	2.28e3	1.84e3	4.12e3	35.53	1.24	NO	0.386	0.0470	3.11e4	1795	17.3	3.07e4	1817	16.9	db	bb
5	Total-hexadioxins	5.35e2	2.48e2	7.83e2	35.38	2.15	YES	0.073	0.0470	9.12e3	1795	5.1	6.34e3	1817	3.5	bd	bb
6	Total-hexadioxins	1.13e3	9.98e2	2.12e3	34.91	1.13	NO	0.199	0.0470	2.38e4	1795	13.2	2.26e4	1817	12.4	bb	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	1234678-HpCDD	1.16e4	1.14e4	2.30e4	39.24	1.02	NO	2.498	0.0914	1.55e5	2274	68.3	1.57e5	2127	73.6	bb	bb
2	Total-heptadioxins	1.32e4	1.36e4	2.68e4	38.37	0.97	NO	2.913	0.0914	1.99e5	2274	87.5	1.93e5	2127	90.8	bb	bb
3	Total-heptadioxins	5.55e2	1.31e2	6.86e2	38.05	4.23	YES	0.075	0.0914	8.39e3	2274	3.7	5.08e3	2127	2.4	bb	bb

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:03:35 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:03:56 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	5.38e1	6.24e1	1.16e2	28.14	0.86	NO	0.005	0.0288	2.28e3	1064	2.1	2.66e3	1732	1.5	db	db
2	Total-tetrafurans	7.24e1	7.84e1	1.51e2	28.09	0.92	YES	0.007	0.0288	1.83e3	1064	1.7	3.27e3	1732	1.9	dd	bd
3	Total-tetrafurans	5.81e1	1.40e2	1.98e2	26.49	0.41	YES	0.009	0.0288	2.39e3	1064	2.2	4.21e3	1732	2.4	bb	bb

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	7.63e2	5.93e2	1.36e3	31.34	1.29	YES	0.073	0.0181	1.61e4	960	16.8	1.54e4	2026	7.6	bb	bb
2	Total-pentafurans (F1)	7.01e1	9.79e1	1.68e2	29.65	0.72	YES	0.009	0.0181	1.13e3	960	1.2	3.32e3	2026	1.6	bb	bd
3	Total-pentafurans (F1)	5.37e1	1.41e2	1.95e2	27.71	0.38	YES	0.010	0.0181	1.10e3	960	1.1	3.64e3	2026	1.8	bb	bb
4	Total-pentafurans (F1)	6.34e1	6.20e1	1.25e2	26.37	1.02	YES	0.007	0.0181	1.55e3	960	1.6	2.29e3	2026	1.1	bb	bb
5	Total-pentafurans (F1)	7.08e1	6.39e1	1.35e2	25.27	1.11	YES	0.007	0.0181	2.64e3	960	2.7	2.96e3	2026	1.5	bb	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDF	1.81e2	2.17e2	3.98e2	32.84	0.83	YES	0.022	0.0220	4.29e3	1493	2.9	6.54e3	1974	3.3	db	bd
2	Total-pentafurans	1.43e2	1.02e2	2.46e2	32.60	1.40	NO	0.013	0.0210	4.08e3	1493	2.7	2.43e3	1974	1.2	MM	bb
3	Total-pentafurans	2.45e2	2.04e2	4.49e2	32.30	1.20	YES	0.024	0.0210	5.62e3	1493	3.8	3.97e3	1974	2.0	db	MM

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDF	1.99e2	1.88e2	3.87e2	36.71	1.06	NO	0.033	0.0326	3.23e3	1051	3.1	4.31e3	1250	3.4	MM	bb
2	234678-HxCDF	1.97e2	1.36e2	3.33e2	35.97	1.45	YES	0.025	0.0230	5.47e3	1051	5.2	3.14e3	1250	2.5	bb	MM
3	123478-HxCDF	1.46e2	7.48e1	2.20e2	35.40	1.95	YES	0.018	0.0220	4.97e3	1051	4.7	3.53e3	1250	2.8	bd	bb
4	Total-hexafurans	9.82e2	6.97e2	1.68e3	35.04	1.41	NO	0.128	0.0245	2.27e4	1051	21.6	1.78e4	1250	14.3	bb	bb
5	Total-hexafurans	1.08e3	7.65e2	1.84e3	34.62	1.41	NO	0.141	0.0245	2.49e4	1051	23.7	1.62e4	1250	13.0	db	db
6	Total-hexafurans	3.66e2	3.26e2	6.92e2	34.51	1.12	NO	0.053	0.0245	6.15e3	1051	5.9	7.57e3	1250	6.1	bd	bd

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:03:35 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:03:56 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	9.09e1	1.12e2	2.02e2	38.66	0.81	YES	0.022	0.0334	2.78e3	857	3.2	2.32e3	906	2.6	db	db
2	Total-heptafurans	2.37e3	2.18e3	4.55e3	38.55	1.09	NO	0.489	0.0334	3.82e4	857	44.6	3.38e4	906	37.3	bd	bd
3	1234678-HpCDF	1.53e3	1.38e3	2.91e3	38.06	1.11	NO	0.284	0.0272	2.91e4	857	33.9	2.91e4	906	32.1	bb	bb

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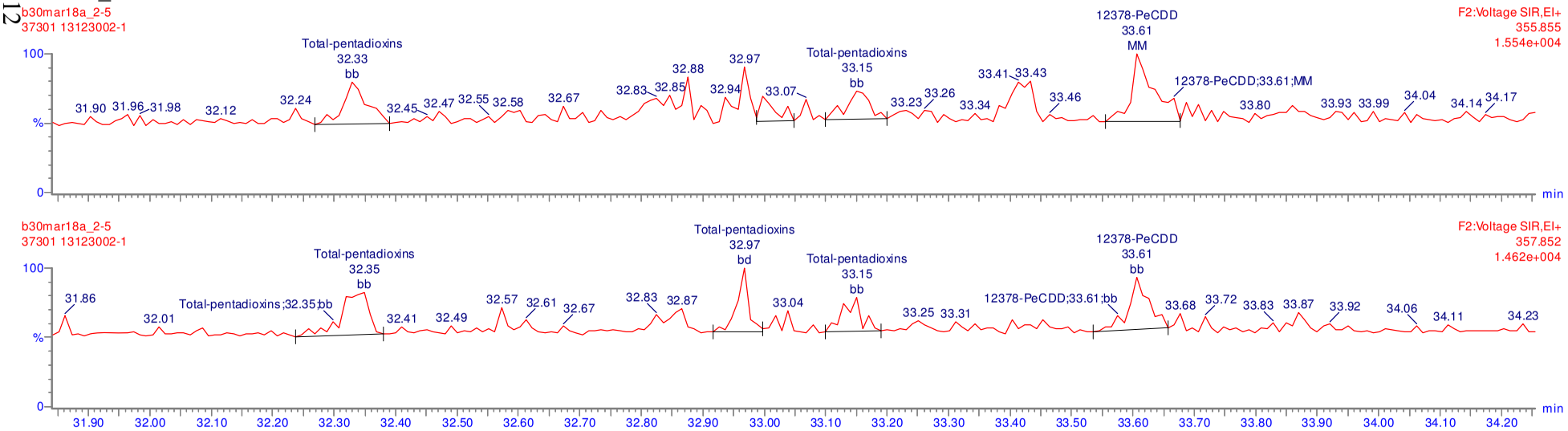
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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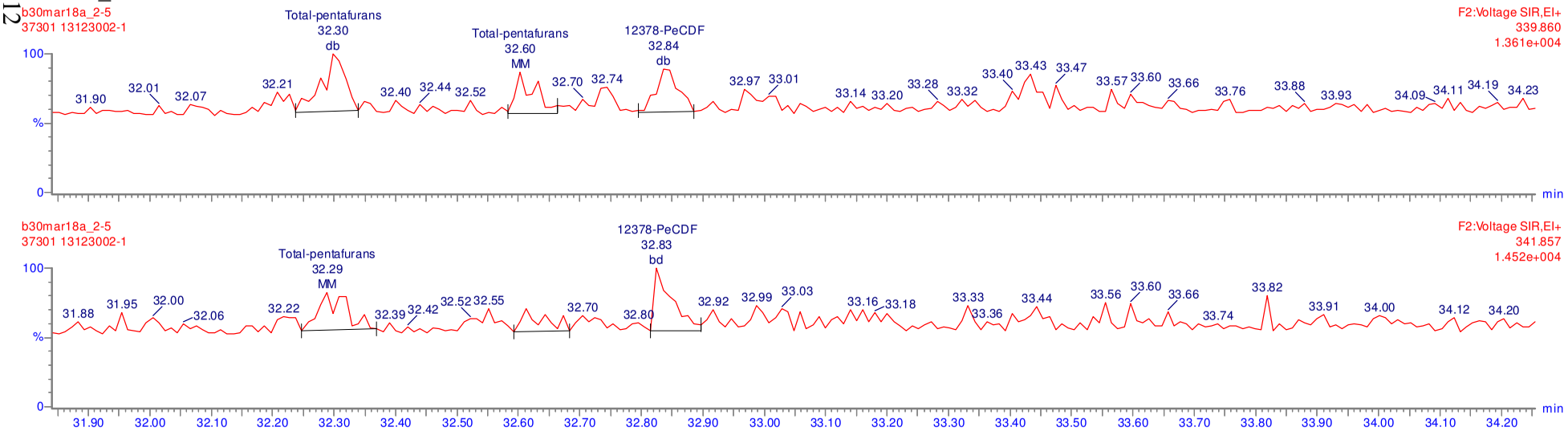
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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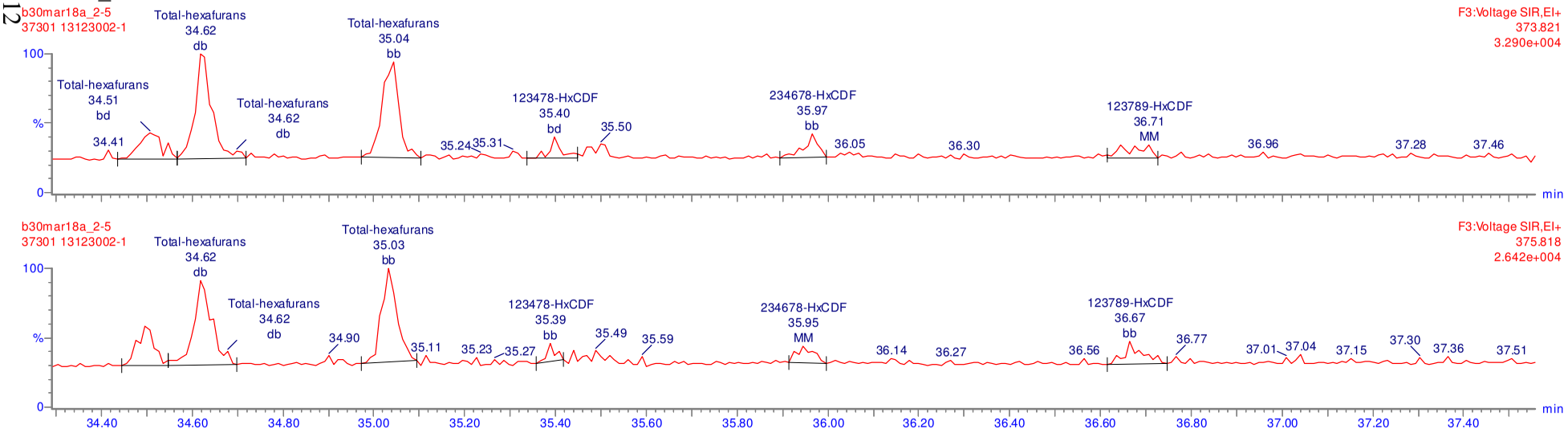
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

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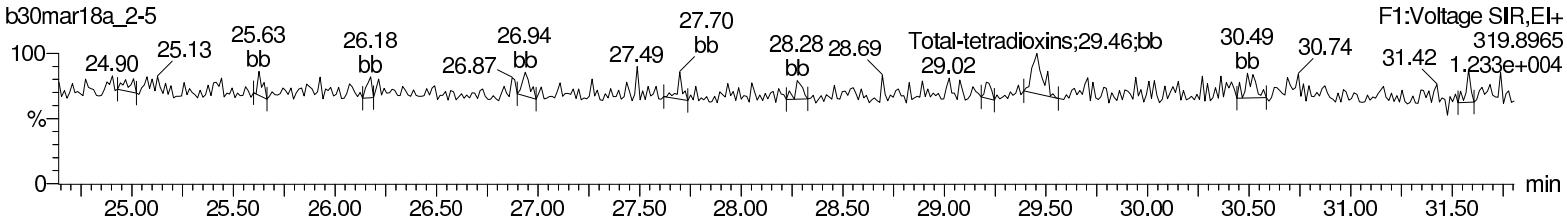

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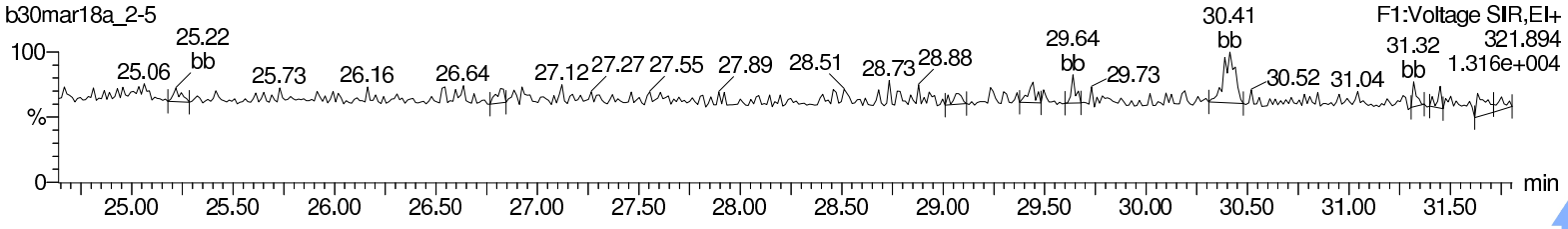

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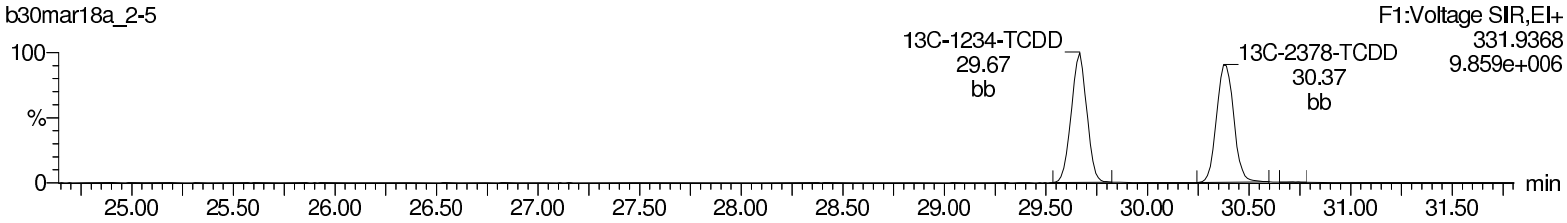

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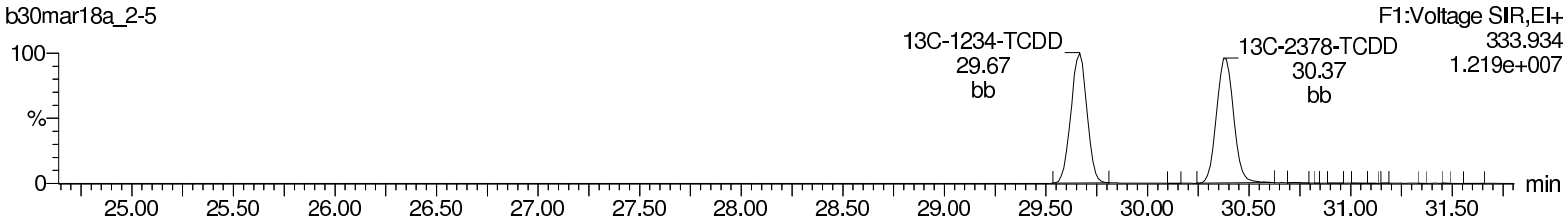

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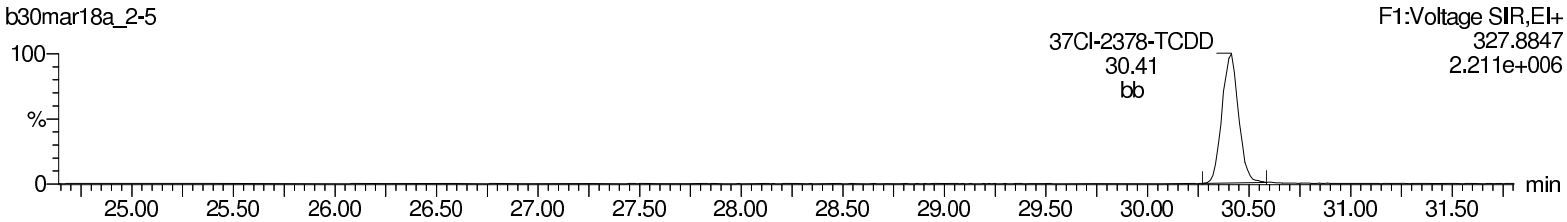

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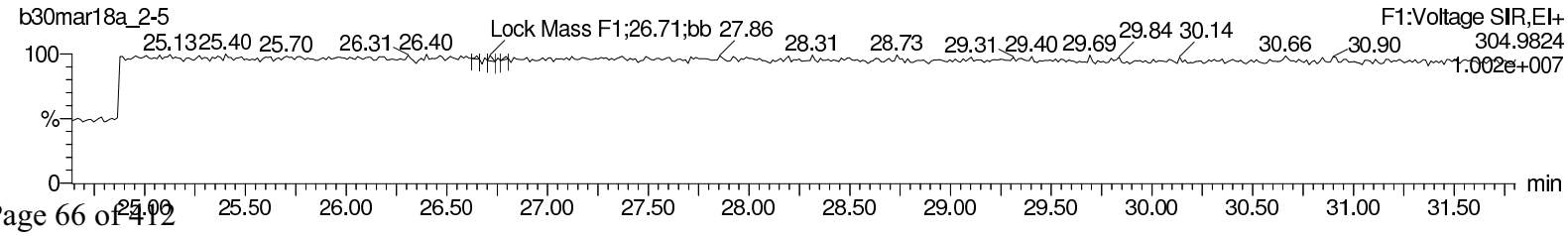

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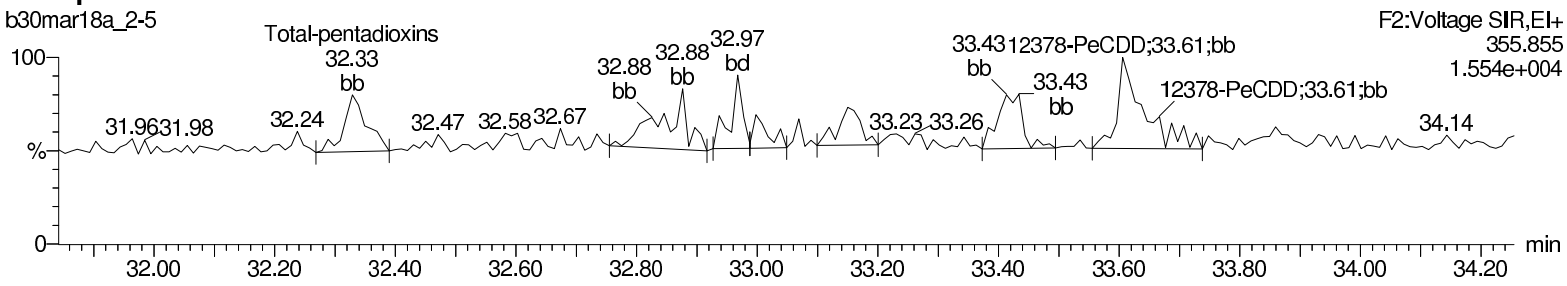
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



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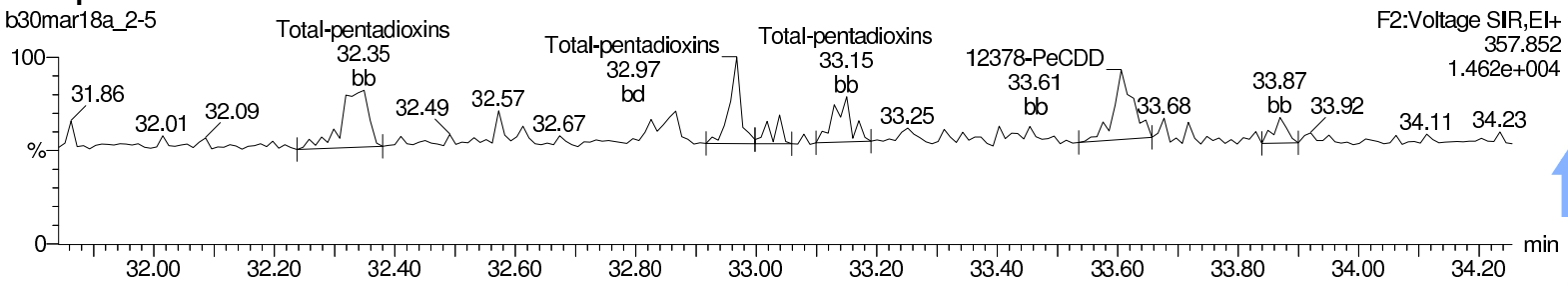

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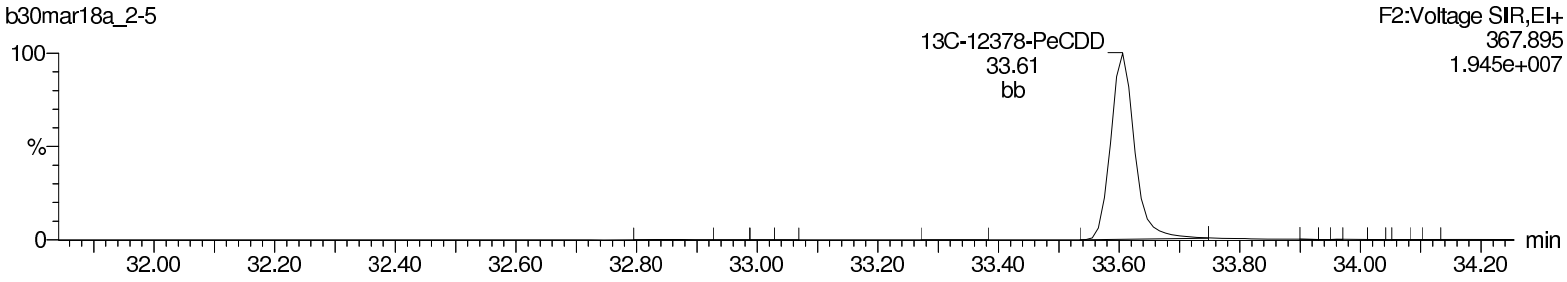

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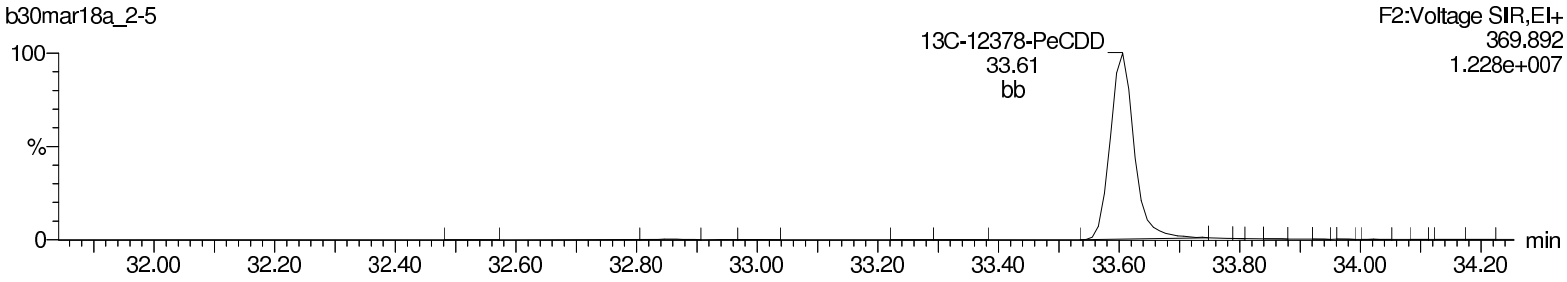

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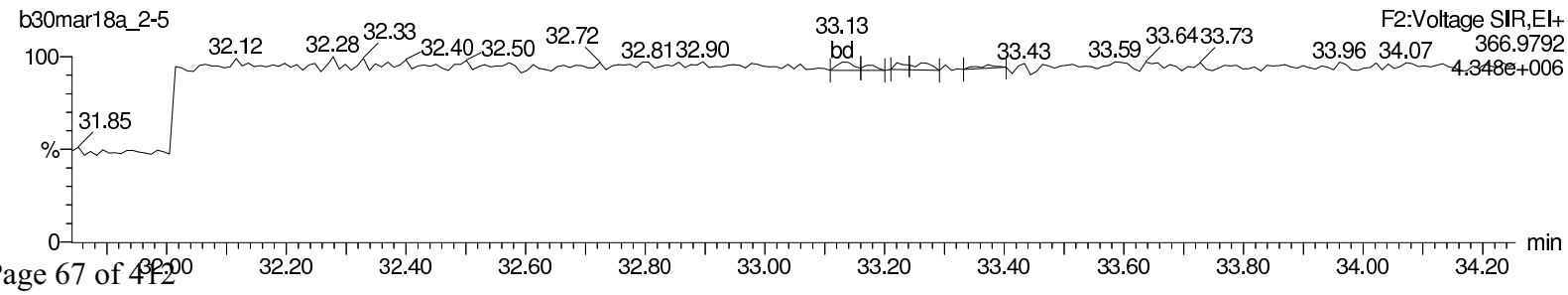

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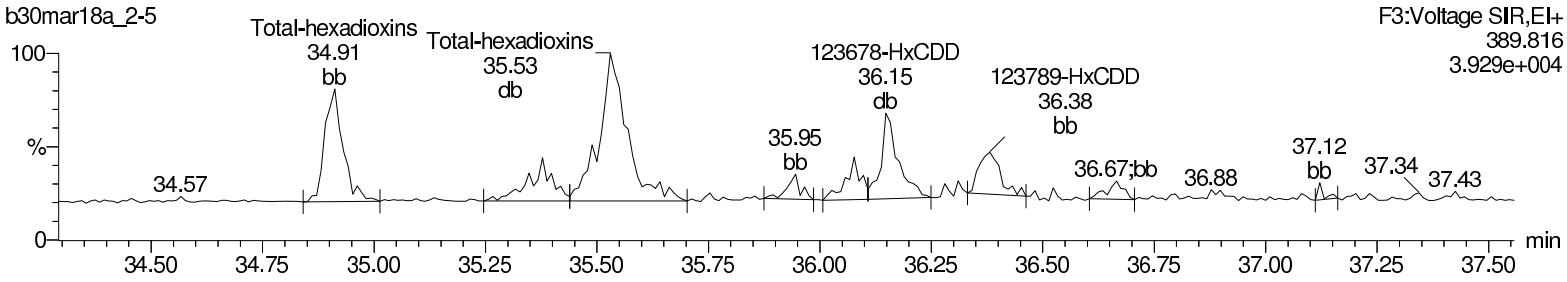
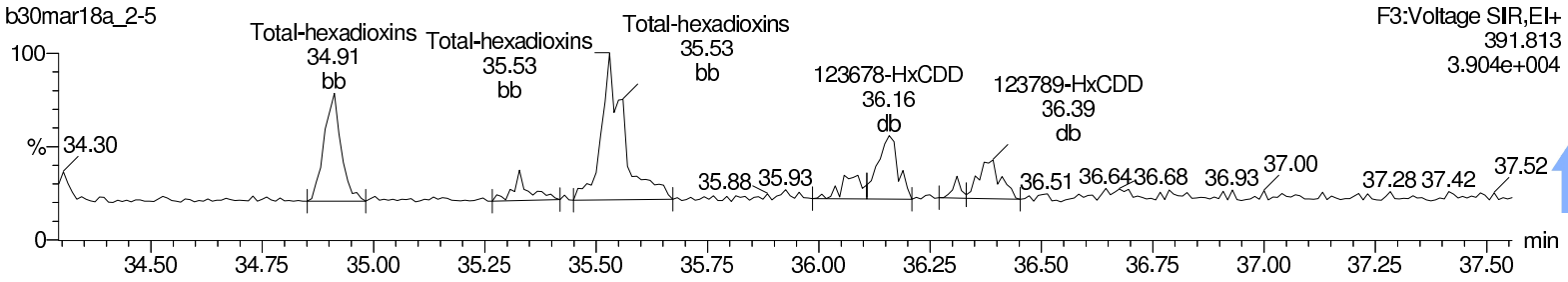
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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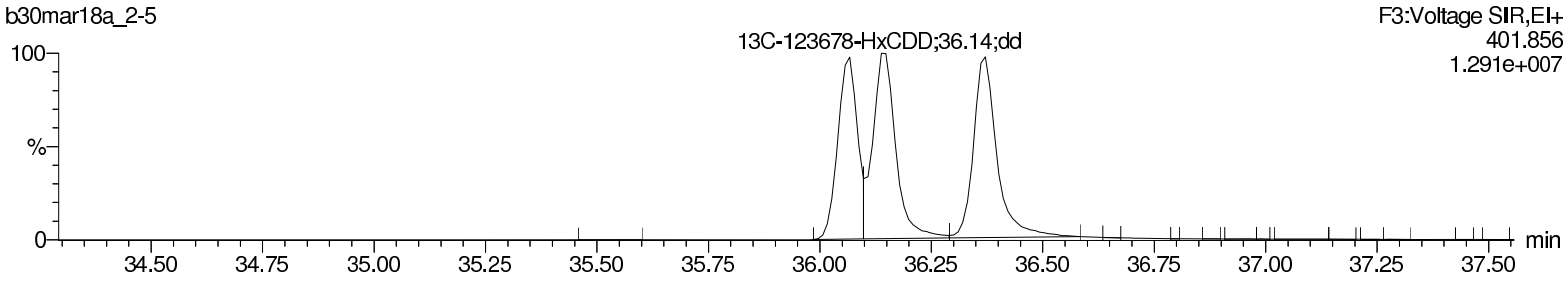

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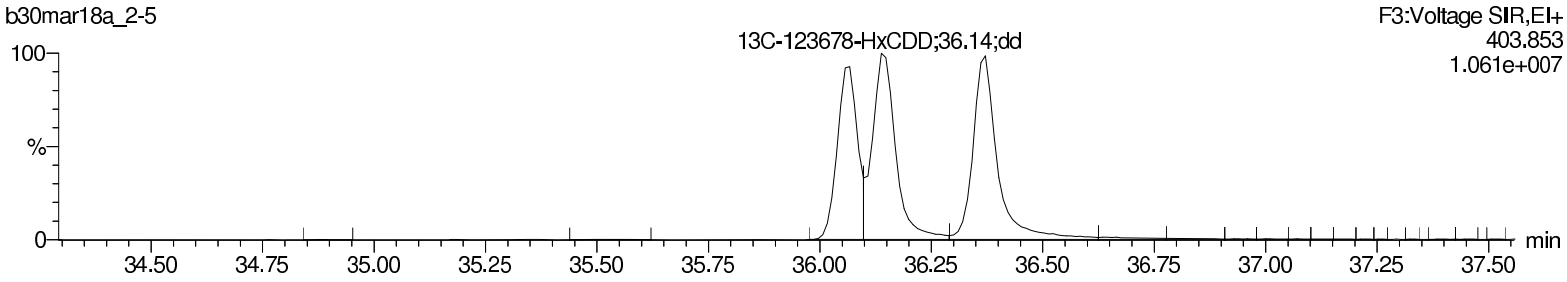

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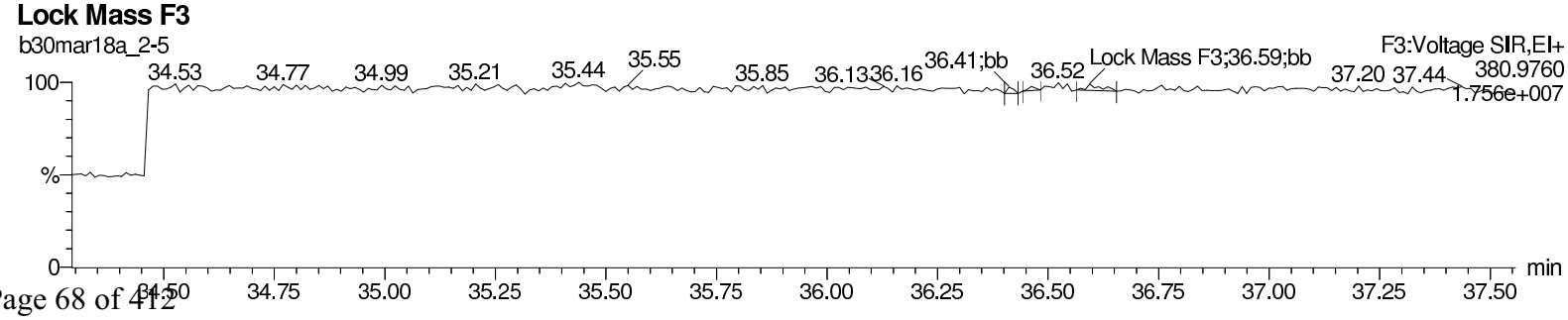

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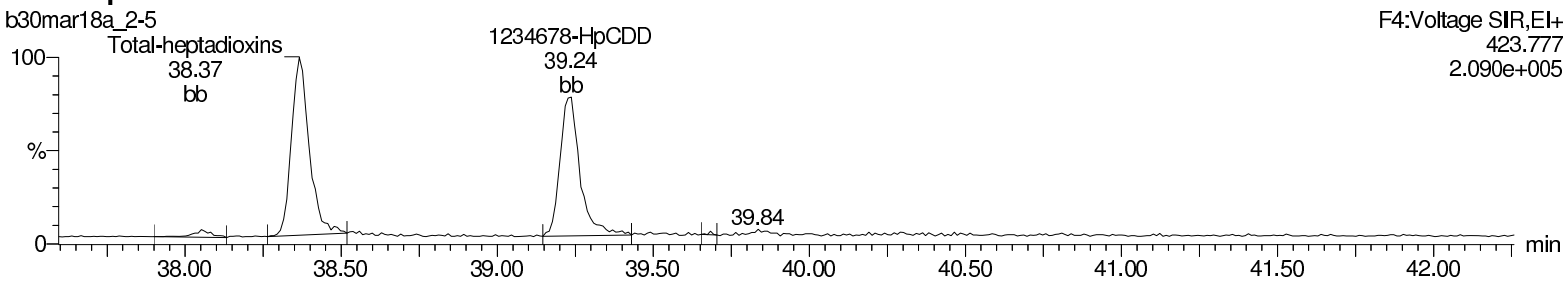
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

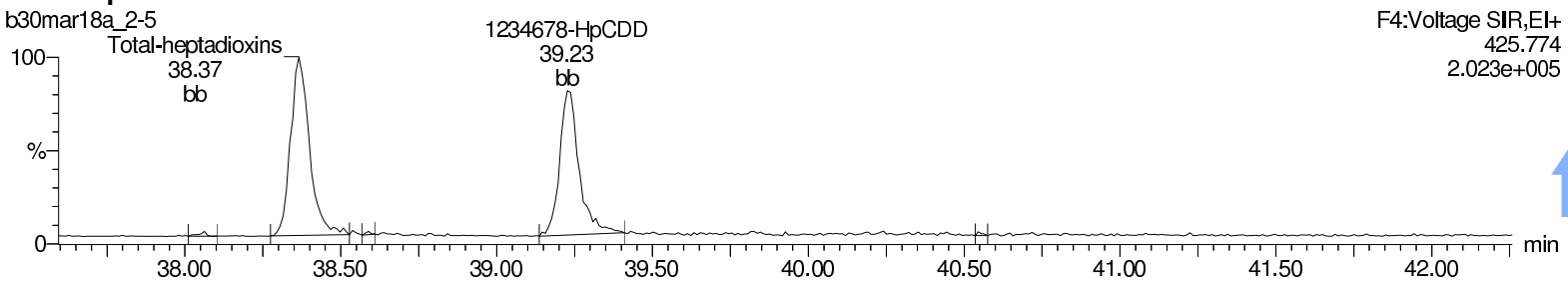
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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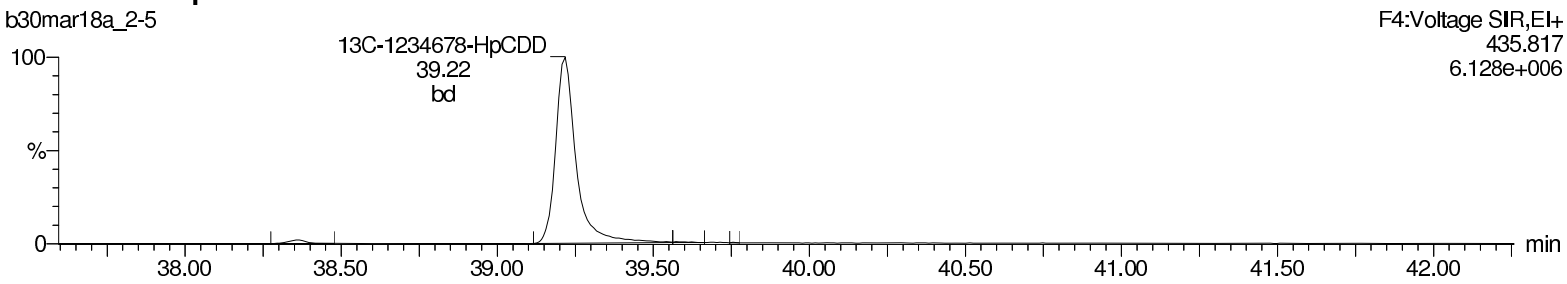

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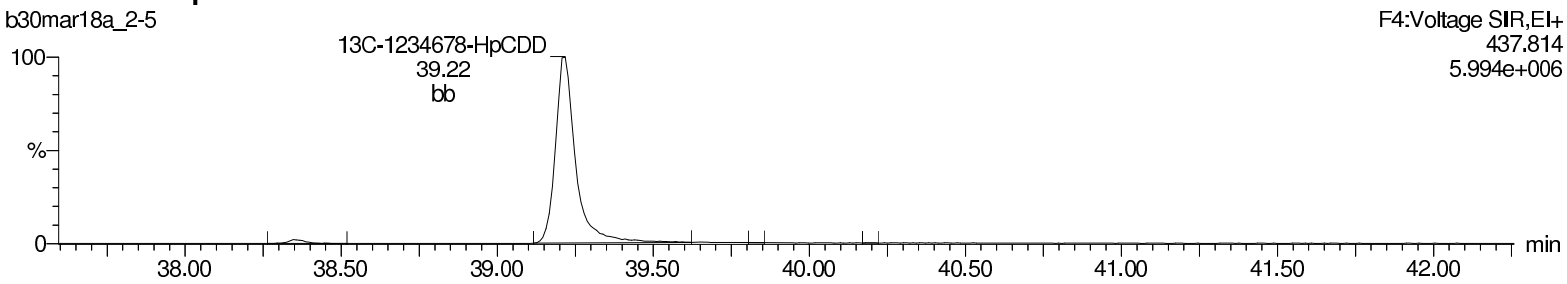

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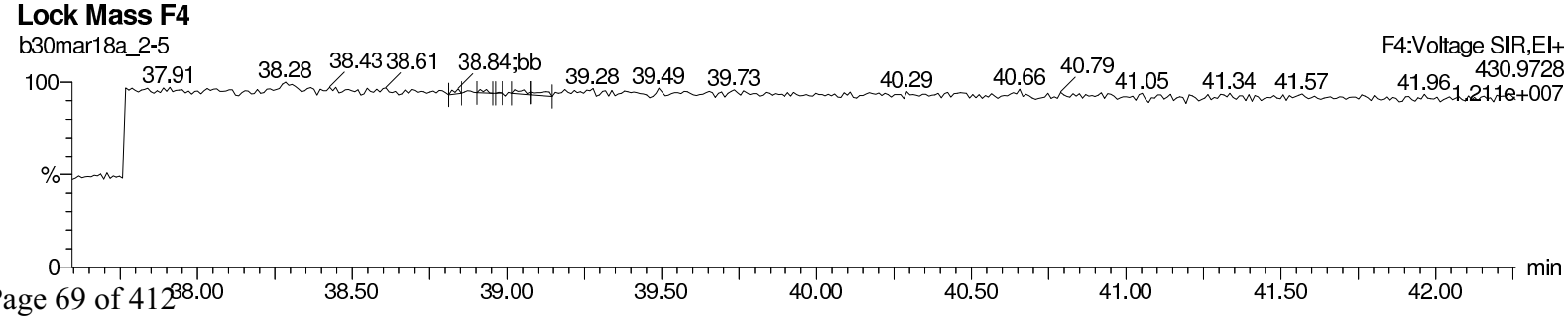

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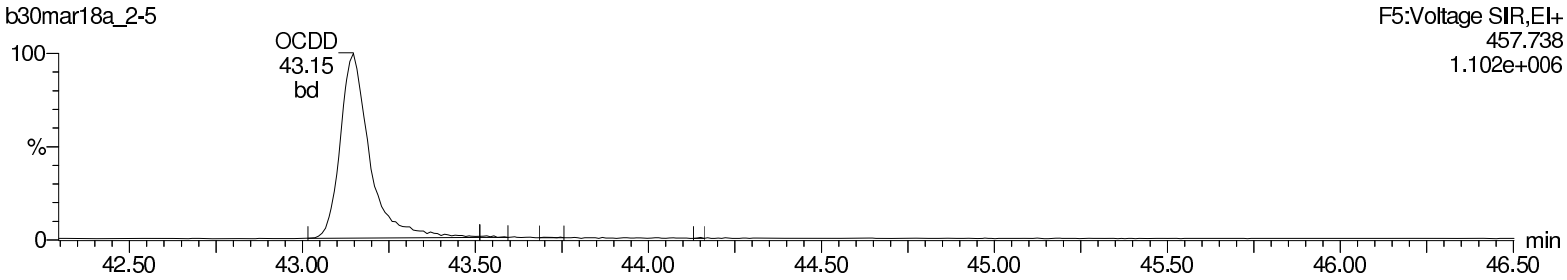
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



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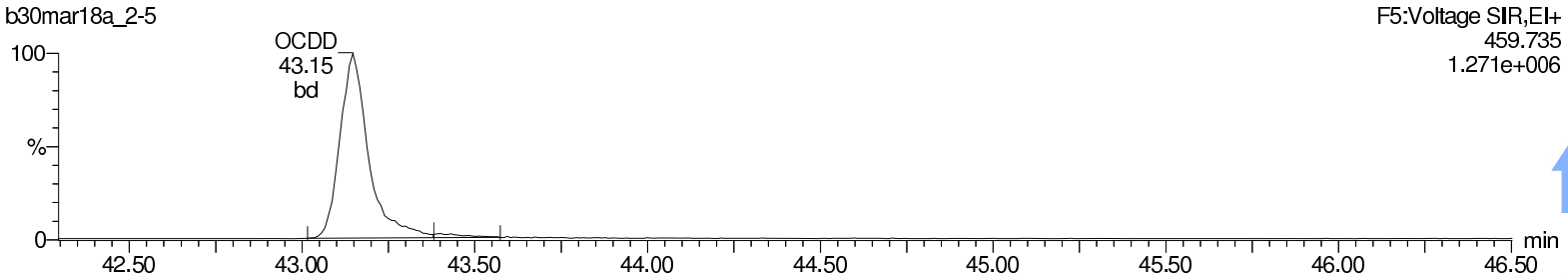

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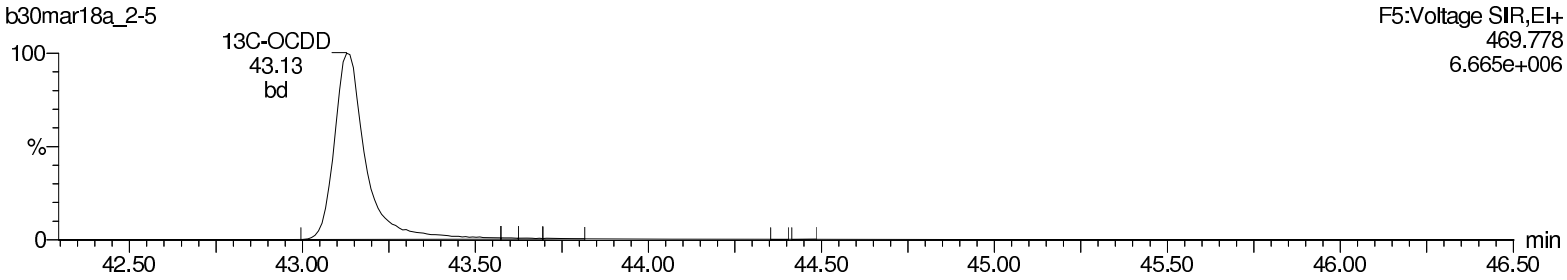

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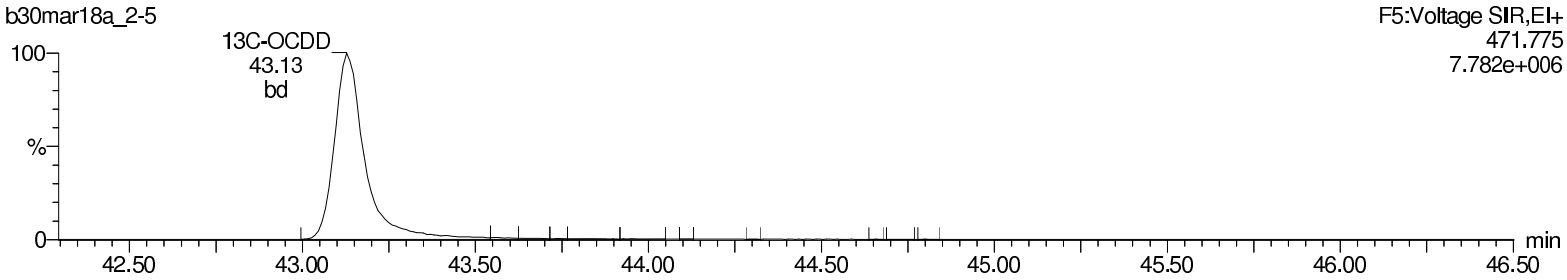

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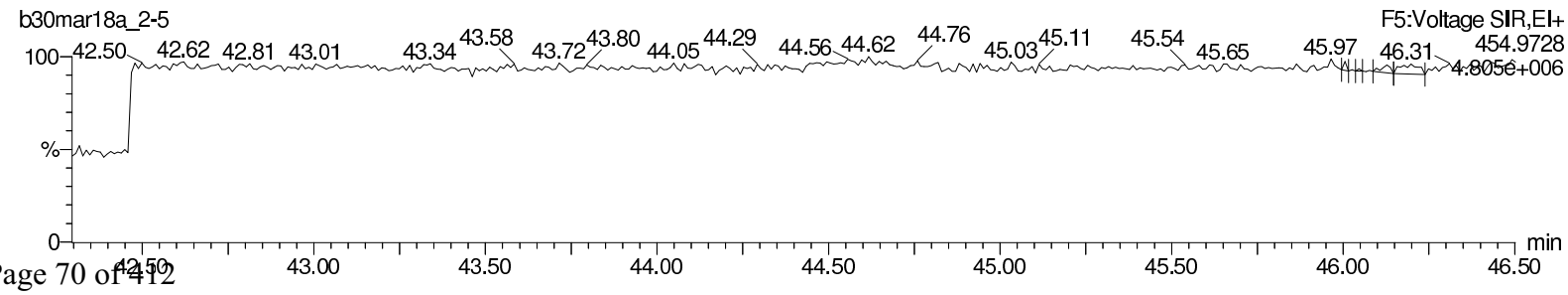

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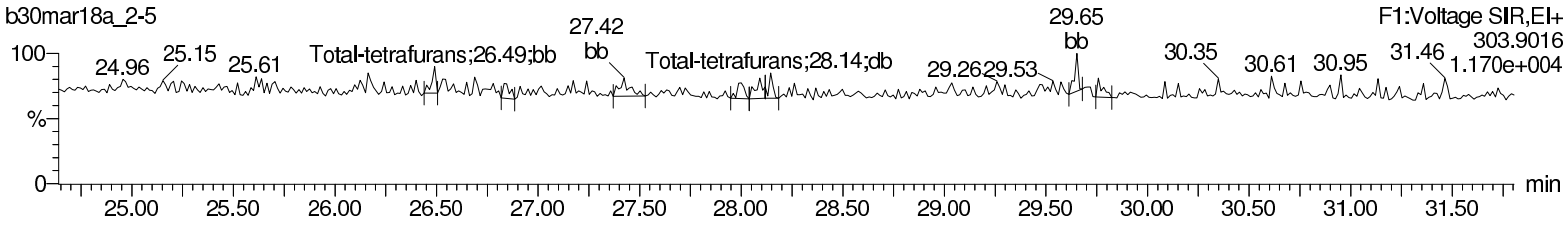
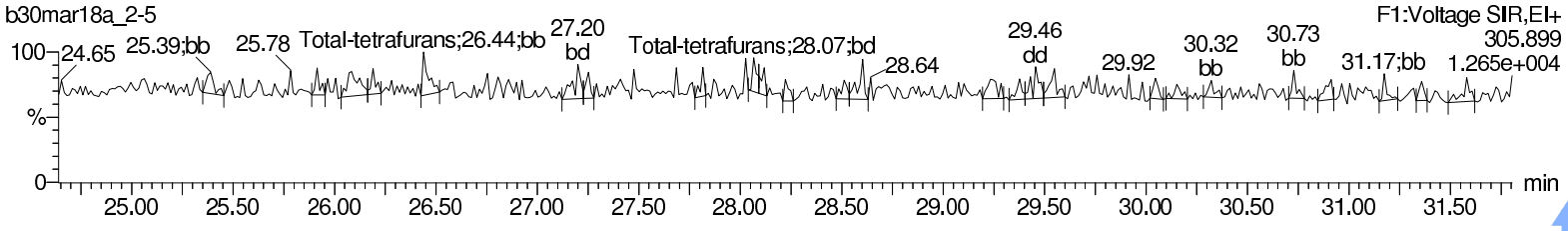
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

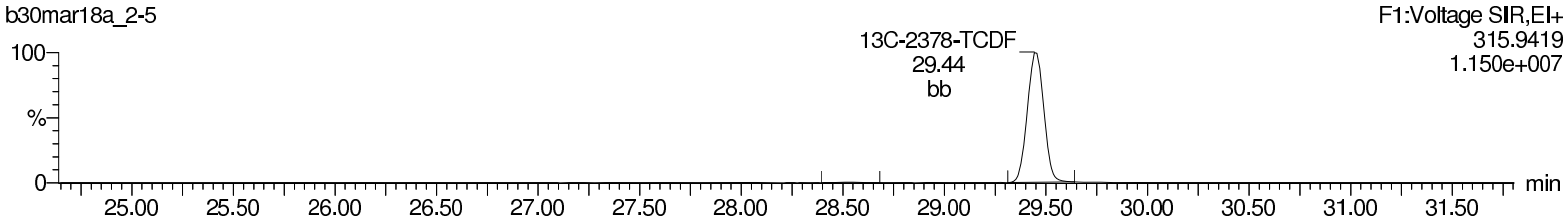
Total-tetrafurans



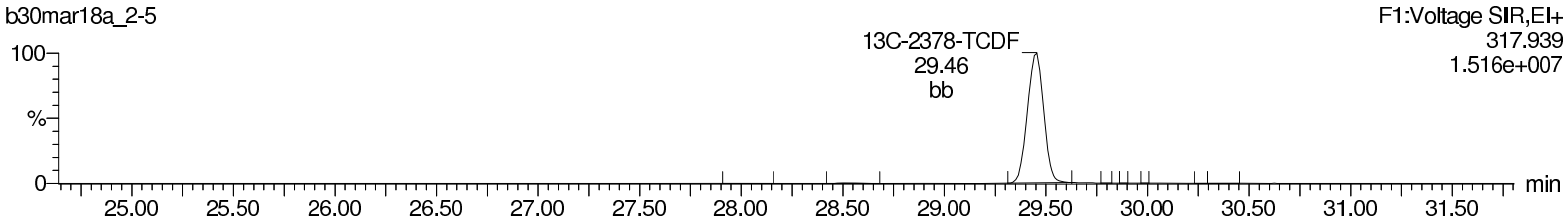
Total-tetrafurans



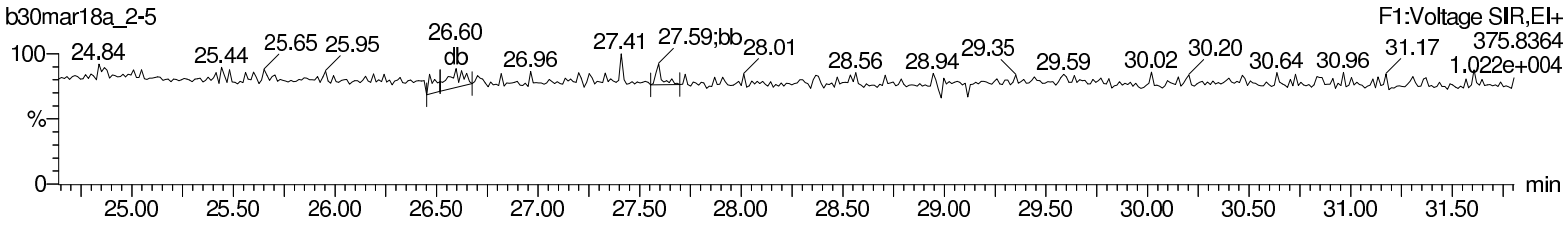
13C-2378-TCDF



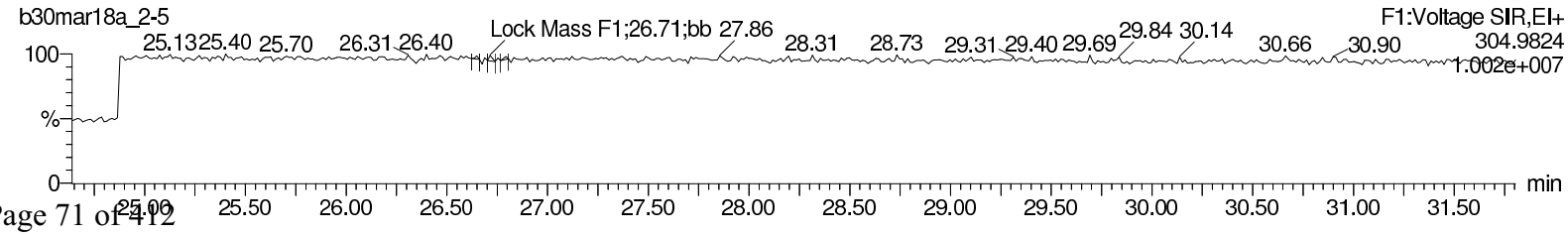
13C-2378-TCDF



HxDPE



Lock Mass F1

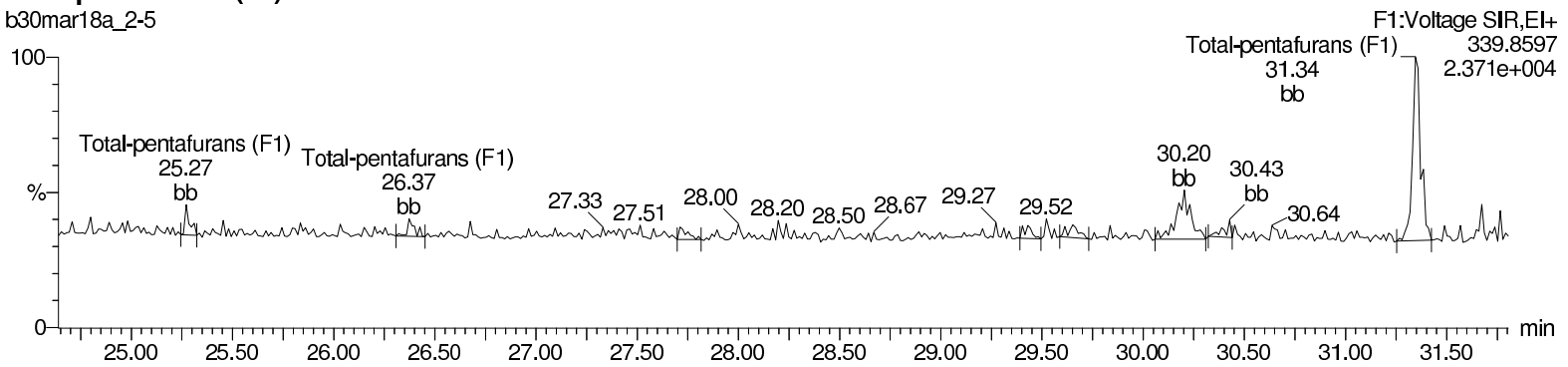


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

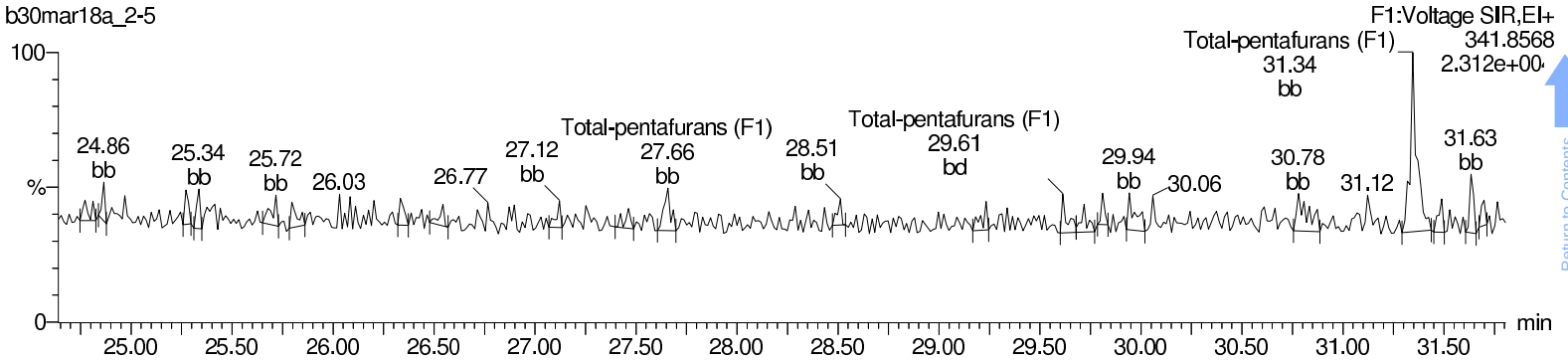
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

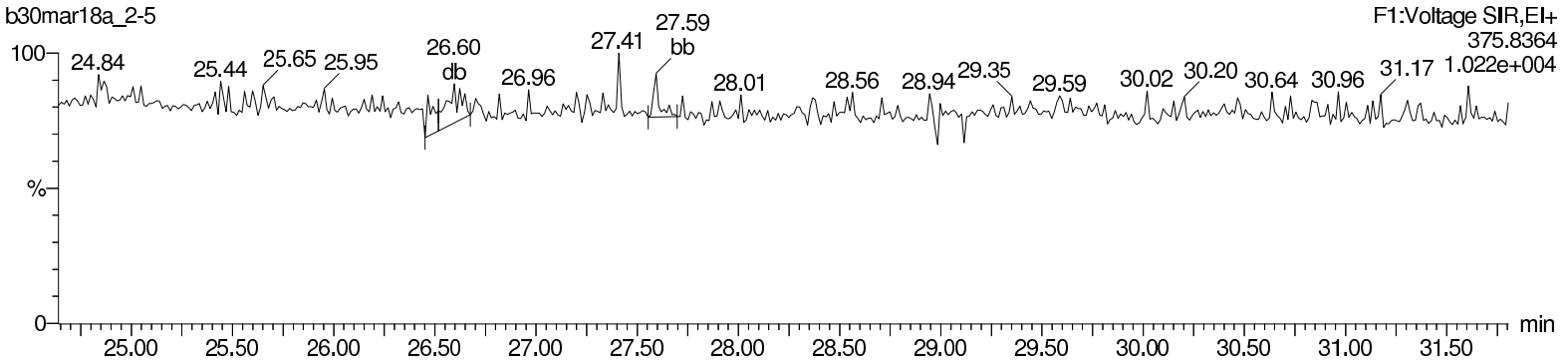
Total-pentafurans (F1)



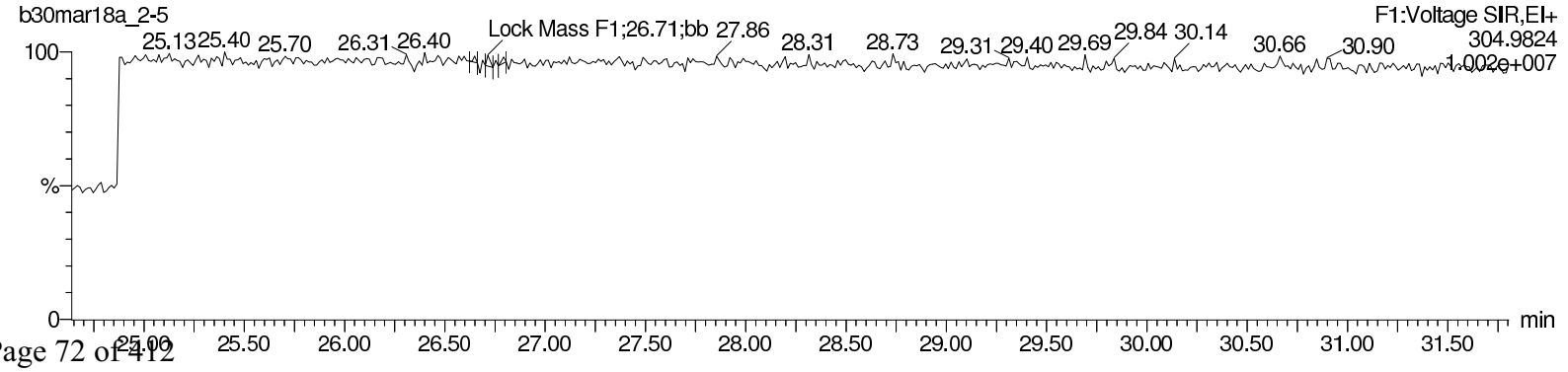
Total-pentafurans (F1)



HxDPE



Lock Mass F1



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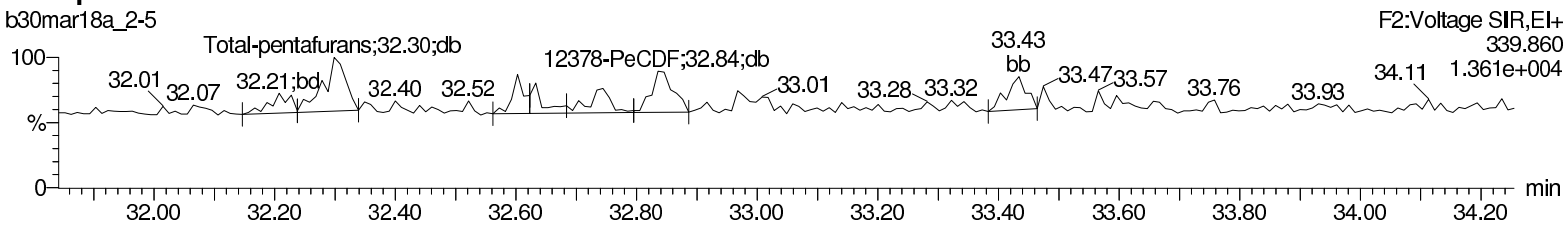
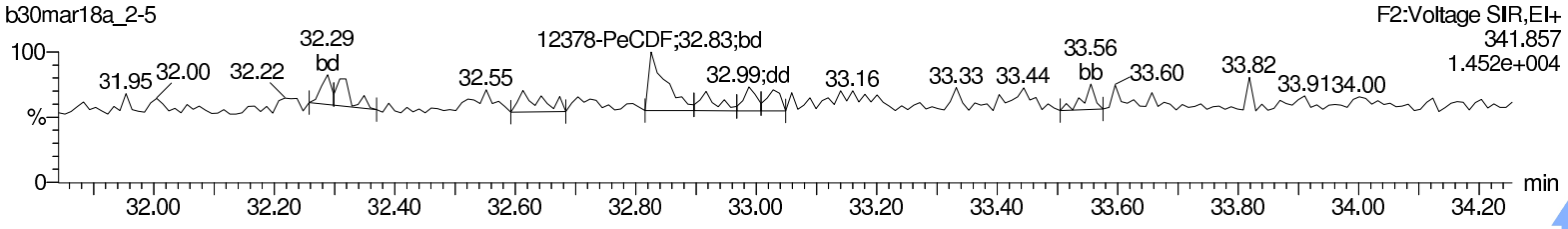
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

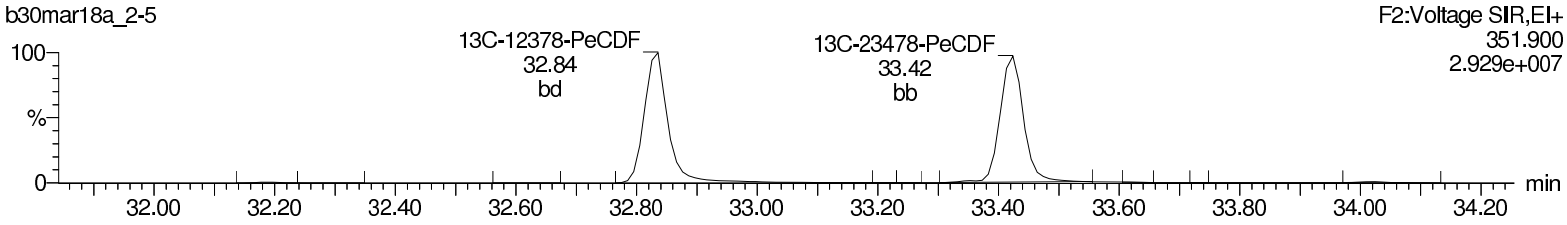
Total-pentafurans



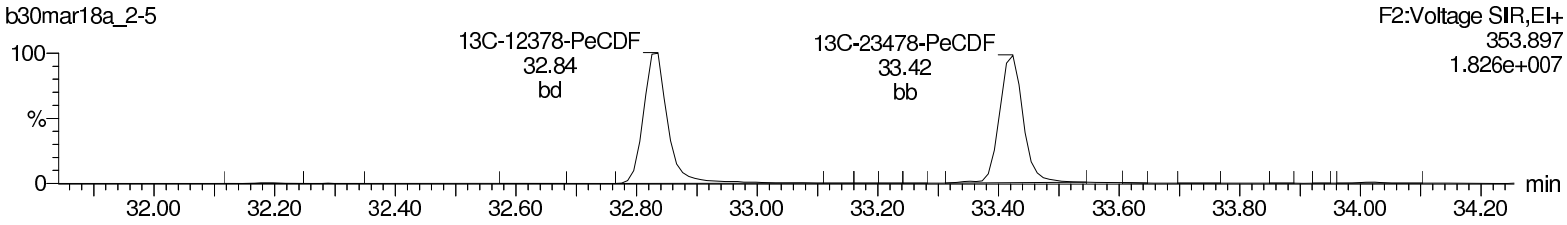
Total-pentafurans



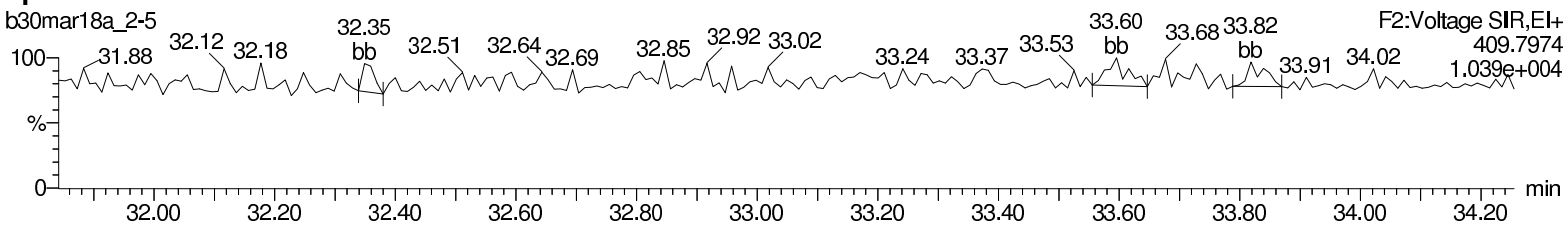
13C-12378-PeCDF



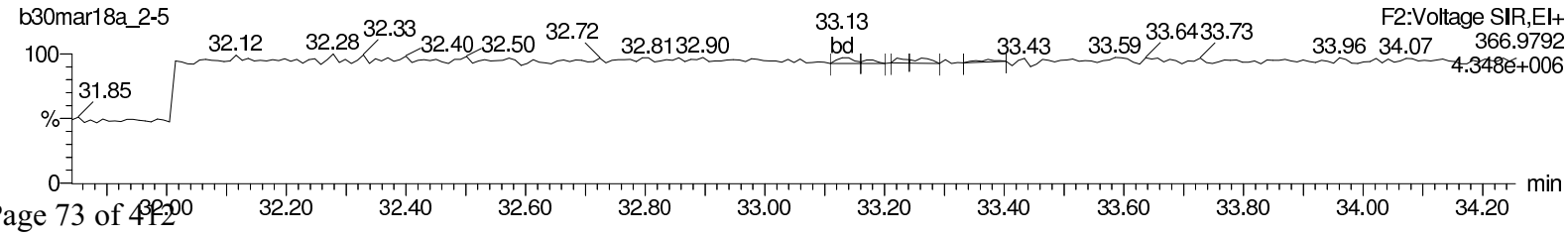
13C-12378-PeCDF



HpDPE



Lock Mass F2

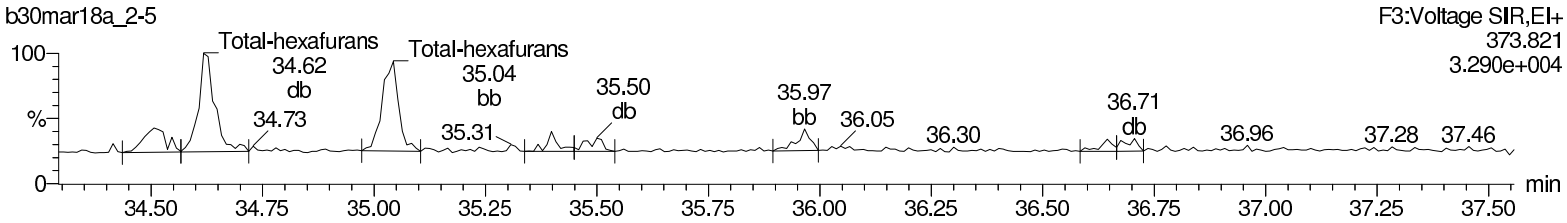


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

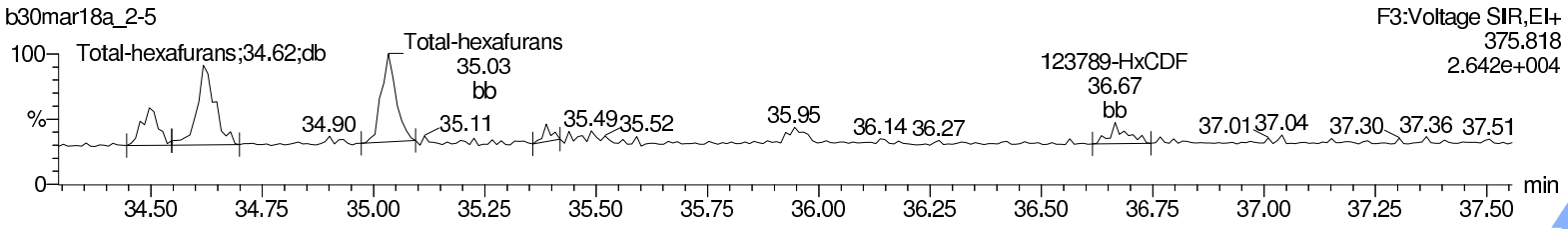
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

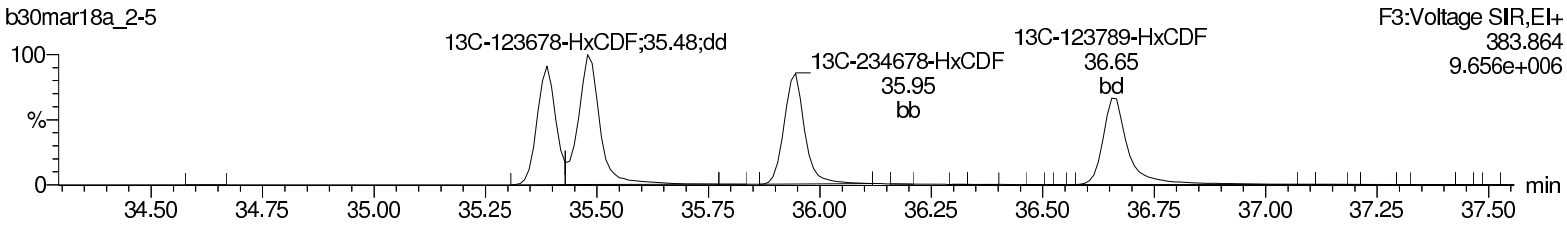
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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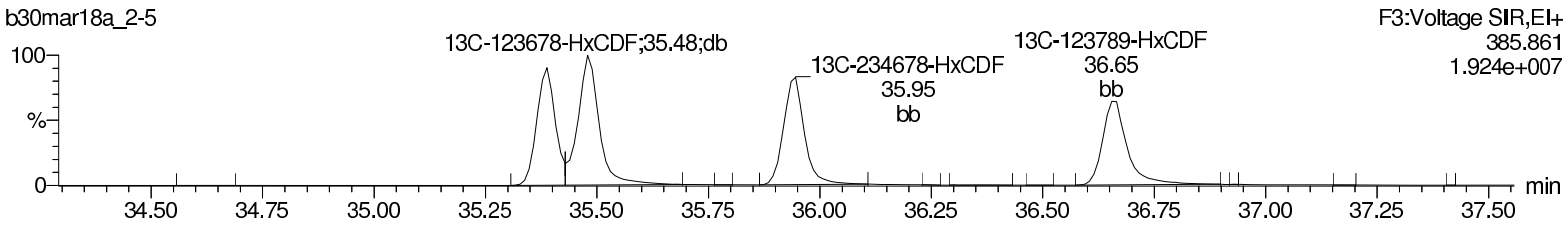
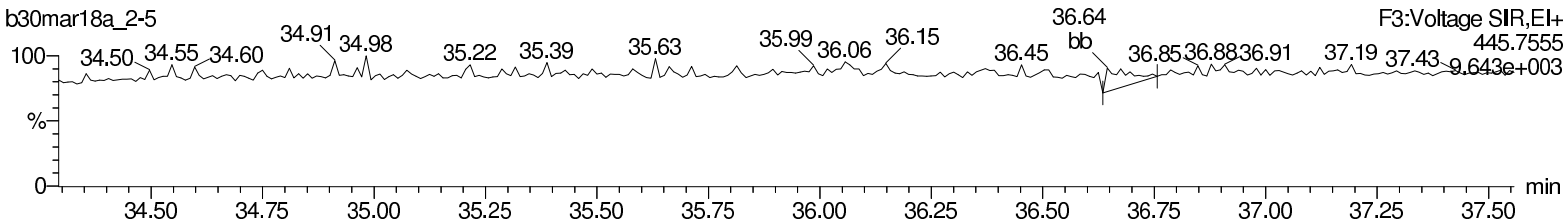
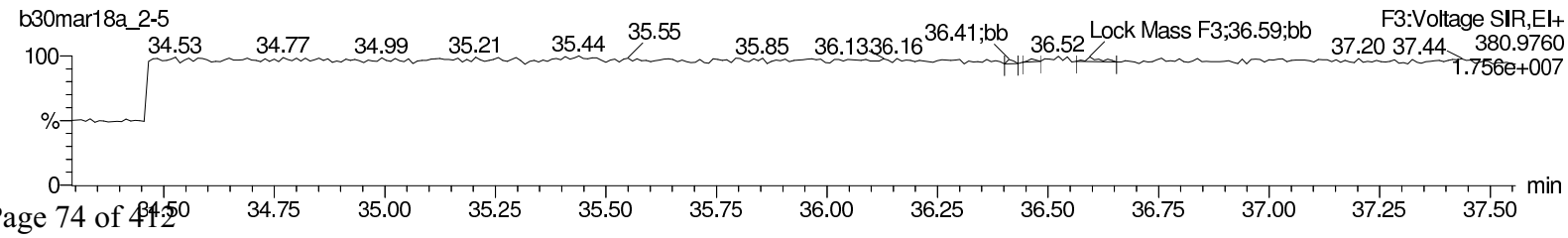


OcDPE



Lock Mass F3

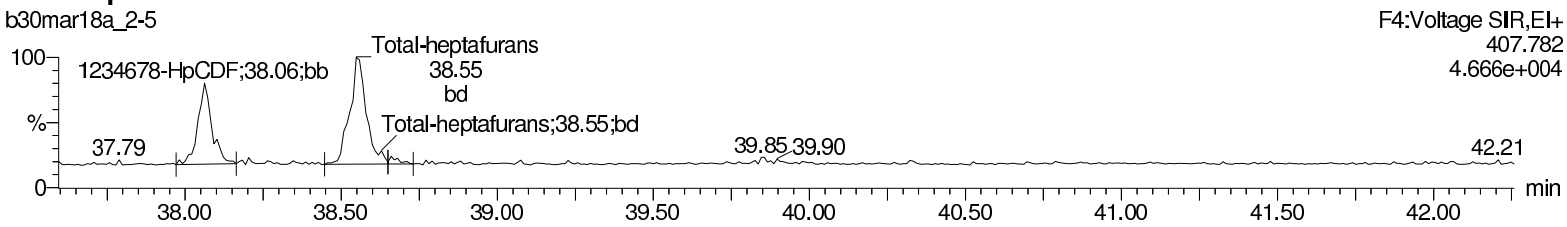


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

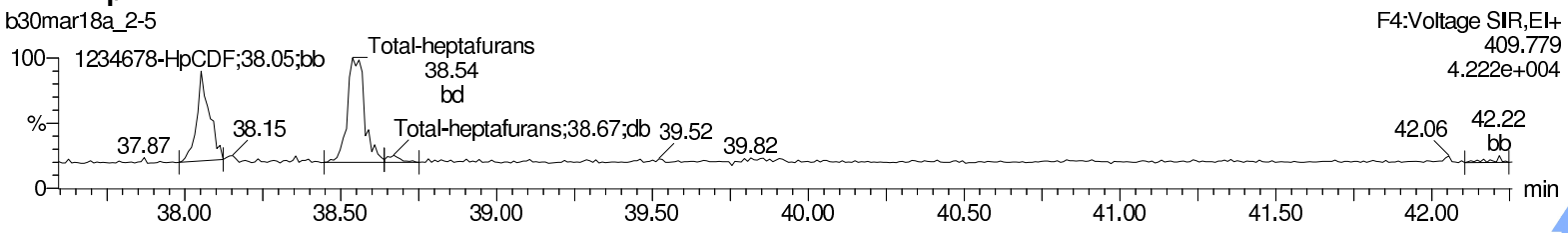
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

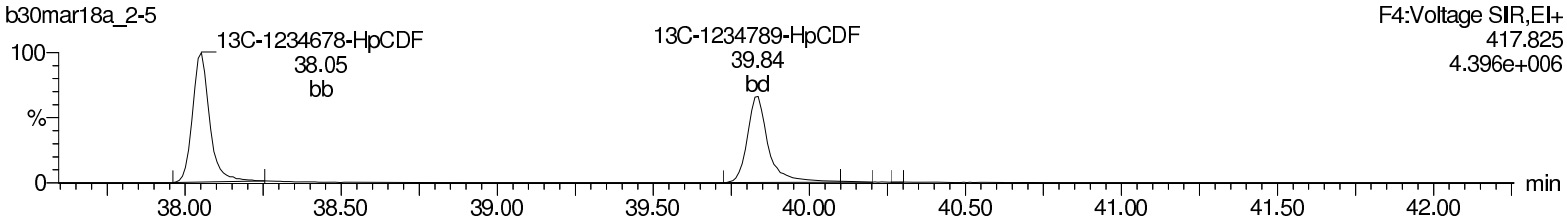
Total-heptafurans



Total-heptafurans



13C-1234678-HpCDF



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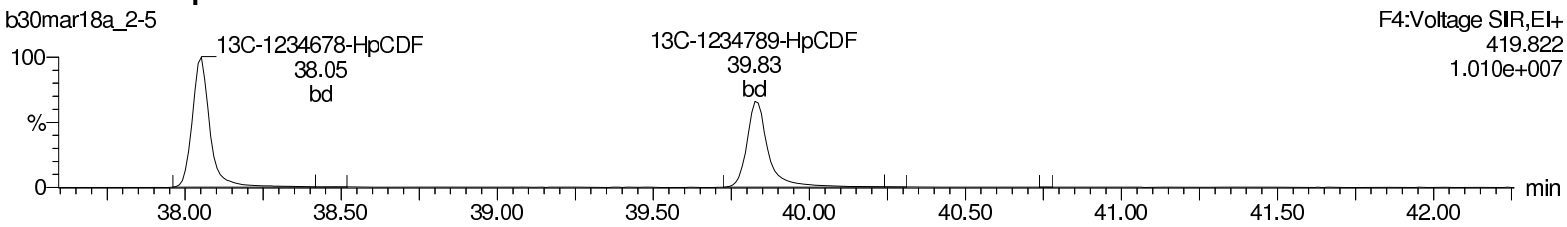
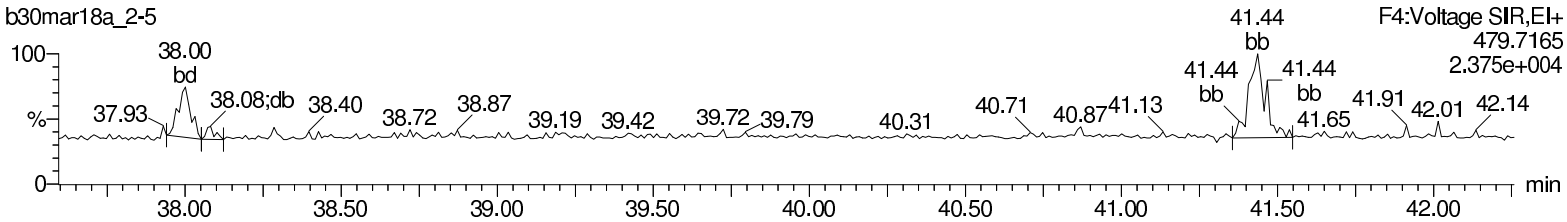
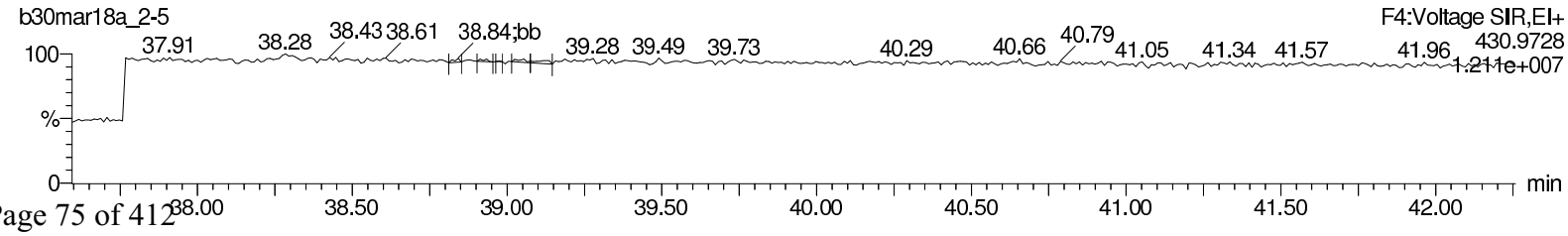


NoDPE



Lock Mass F4

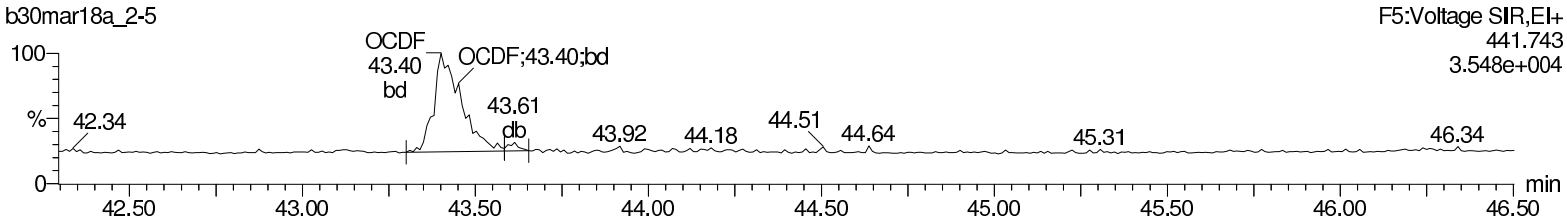


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

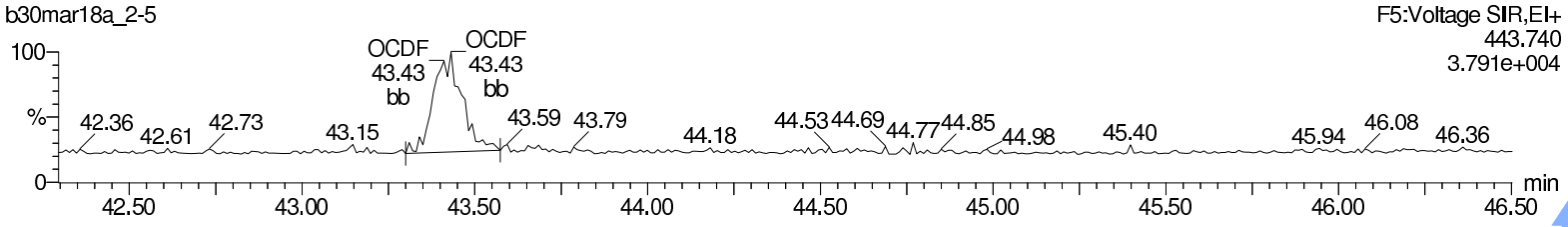
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

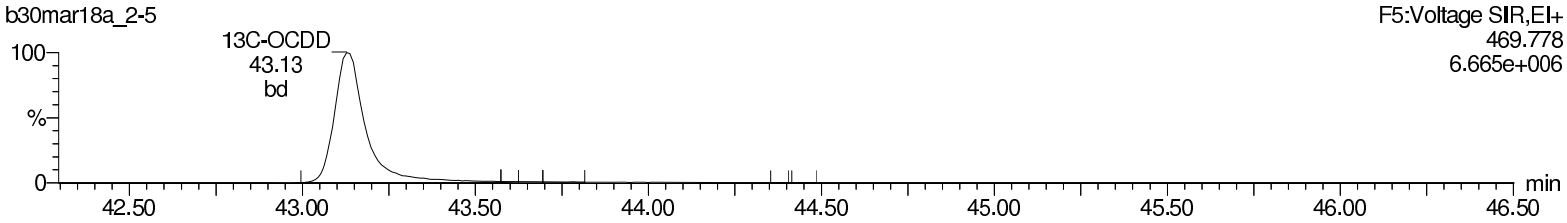
OCDF



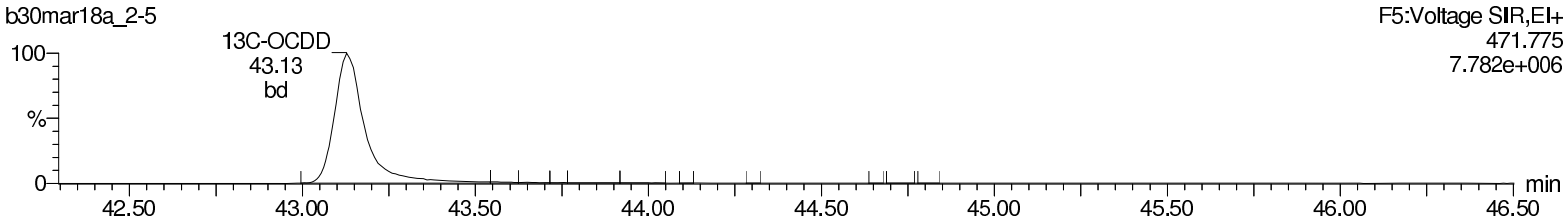
OCDF



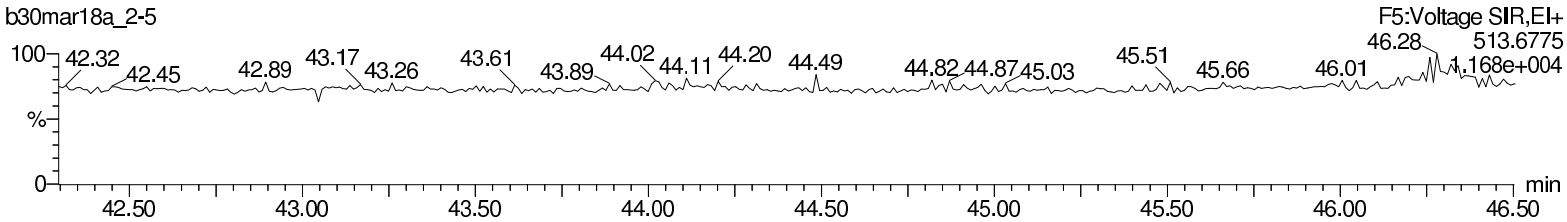
13C-OCDD



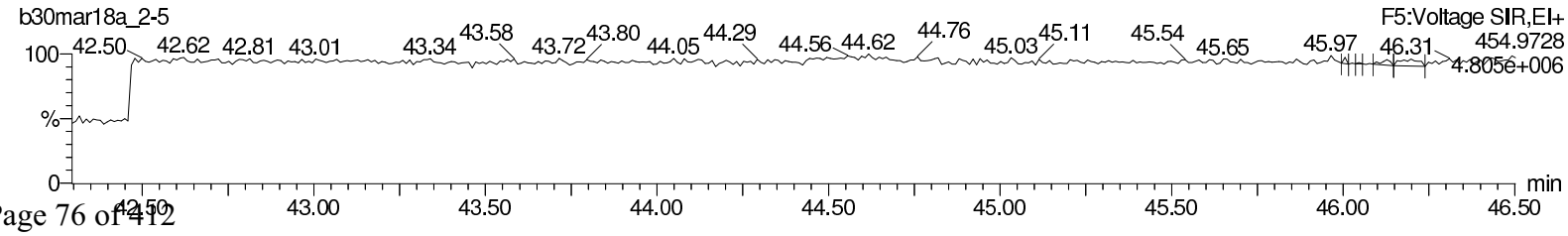
13C-OCDD



DeDPE



Lock Mass F5



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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123003**	**Date Collected:**	**03/22/2018 07:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0002S022**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 22:38**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-6**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1016 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000563	ng/L	0.000563	0.00984
40321-76-4	1,2,3,7,8-PeCDD	JK	0.000846	ng/L	0.0005	0.0492
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00183	ng/L	0.00131	0.0492
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.0037	ng/L	0.00125	0.0492
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.00283	ng/L	0.00131	0.0492
35822-46-9	1,2,3,4,6,7,8-HpCDD		0.0792	ng/L	0.00205	0.0492
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1.08	ng/L	0.00502	0.0984
51207-31-9	2,3,7,8-TCDF	U	0.000486	ng/L	0.000486	0.00984
57117-41-6	1,2,3,7,8-PeCDF	JK	0.000433	ng/L	0.000319	0.0492
57117-31-4	2,3,4,7,8-PeCDF	JK	0.00065	ng/L	0.000301	0.0492
70648-26-9	1,2,3,4,7,8-HxCDF	JK	0.000709	ng/L	0.000463	0.0492
57117-44-9	1,2,3,6,7,8-HxCDF	JK	0.000531	ng/L	0.000465	0.0492
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.000866	ng/L	0.00049	0.0492
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.00063	ng/L	0.00063	0.0492
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.0157	ng/L	0.000754	0.0492
55673-89-7	1,2,3,4,7,8,9-HpCDF	JK	0.00132	ng/L	0.00107	0.0492
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0753	ng/L	0.00168	0.0984
41903-57-5	Total TeCDD	U	0.000563	ng/L	0.000563	0.00984
36088-22-9	Total PeCDD	JK	0.00185	ng/L	0.0005	0.0492
34465-46-8	Total HxCDD	JK	0.0241	ng/L	0.00125	0.0492
37871-00-4	Total HpCDD		0.202	ng/L	0.00205	0.0492
30402-14-3	Total TeCDF	JK	0.000571	ng/L	0.000486	0.00984
30402-15-4	Total PeCDF	JK	0.00886	ng/L	0.000293	0.0492
55684-94-1	Total HxCDF	JK	0.0145	ng/L	0.000463	0.0492
38998-75-3	Total HpCDF	K	0.0524	ng/L	0.000754	0.0492
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00341	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00375	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.69	1.97	ng/L	85.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.43	1.97	ng/L	72.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.54	1.97	ng/L	78.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.63	1.97	ng/L	82.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.68	1.97	ng/L	85.3	(23%-140%)
13C-OCDD		2.94	3.94	ng/L	74.6	(17%-157%)
13C-2,3,7,8-TCDF		1.73	1.97	ng/L	87.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.66	1.97	ng/L	84.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.59	1.97	ng/L	80.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.56	1.97	ng/L	79.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.59	1.97	ng/L	80.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.61	1.97	ng/L	81.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.71	1.97	ng/L	86.9	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123003**	**Date Collected:**	**03/22/2018 07:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0002S022**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 22:38**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-6**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1016 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.51	1.97	ng/L	76.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.57	1.97	ng/L	79.8	(26%-138%)
37Cl-2,3,7,8-TCDD		0.175	0.197	ng/L	88.6	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:07:55 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:08:18 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD							NO		0.0286		1316			1161			
2	12378-PeCDD	3.50e2	1.82e2	5.32e2	33.60	1.000	1.93	YES	0.043	0.0254	9.82e3	1587	6.2	4.46e3	1175	3.8	MM	bb
3	123478-HxCDD	5.57e2	4.26e2	9.83e2	36.08	1.001	1.31	NO	0.093	0.0663	1.40e4	2520	5.6	9.72e3	3155	3.1	bd	bd
4	123678-HxCDD	1.17e3	1.14e3	2.31e3	36.15	1.000	1.03	YES	0.188	0.0635	2.13e4	2520	8.4	2.00e4	3155	6.3	dd	dd
5	123789-HxCDD	8.60e2	7.34e2	1.59e3	36.37	1.006	1.17	NO	0.144	0.0667	1.68e4	2520	6.7	1.20e4	3155	3.8	MM	db
6	1234678-HpCDD	2.08e4	2.00e4	4.07e4	39.23	1.001	1.04	NO	4.023	0.104	2.98e5	2698	110.5	2.85e5	2959	96.2	bd	bb
7	OCDD	1.97e5	2.29e5	4.27e5	43.14	1.000	0.86	NO	55.031	0.255	2.02e6	5183	389.3	2.37e6	2859	830.6	bd	bd
8	2378-TCDF	1.76e2	1.54e2	3.31e2	29.47	1.001	1.14	YES	0.014	0.0247	2.11e3	954	2.2	2.22e3	1781	1.2	bb	bb
9	12378-PeCDF	2.15e2	2.09e2	4.24e2	32.85	1.001	1.03	YES	0.022	0.0162	5.25e3	1211	4.3	6.53e3	1760	3.7	bb	bd
10	23478-PeCDF	3.68e2	3.21e2	6.89e2	33.43	1.001	1.15	YES	0.033	0.0153	1.03e4	1211	8.5	9.73e3	1760	5.5	bb	db
11	123478-HxCDF	2.92e2	1.98e2	4.90e2	35.39	1.000	1.48	YES	0.036	0.0235	8.64e3	1587	5.4	4.76e3	1067	4.5	dd	bb
12	123678-HxCDF	2.51e2	1.61e2	4.12e2	35.51	1.001	1.56	YES	0.027	0.0236	6.32e3	1587	4.0	3.99e3	1067	3.7	db	bb
13	234678-HxCDF	3.81e2	2.47e2	6.28e2	35.94	1.000	1.54	YES	0.044	0.0249	9.31e3	1587	5.9	4.94e3	1067	4.6	bb	bb
14	123789-HxCDF							NO		0.0320		1587			1067			
15	1234678-HpCDF	4.31e3	4.63e3	8.94e3	38.06	1.001	0.93	NO	0.798	0.0383	6.89e4	1169	58.9	8.40e4	1491	56.4	bb	bd
16	1234789-HpCDF	3.50e2	2.80e2	6.30e2	39.82	1.000	1.25	YES	0.067	0.0543	6.48e3	1169	5.5	4.96e3	1491	3.3	MM	MM
17	OCDF	1.42e4	1.58e4	3.00e4	43.40	1.006	0.89	NO	3.824	0.0853	1.54e5	1481	103.8	1.69e5	1240	136.6	bd	bd
18	13C-2378-TCDD	9.68e5	1.24e6	2.21e6	30.39	1.024	0.78	NO	85.609	0.0738	1.06e7	4660	2284.2	1.39e7	4103	3389.6	bb	bb
19	13C-12378-PeCDD	9.66e5	6.16e5	1.58e6	33.60	1.132	1.57	NO	72.785	0.0939	2.10e7	7282	2884.8	1.37e7	2105	6509.5	bb	bb
20	13C-123478-HxCDD	7.03e5	5.62e5	1.26e6	36.06	0.992	1.25	NO	78.336	0.154	1.42e7	9357	1516.5	1.13e7	7630	1487.3	bd	bd
21	13C-123678-HxCDD	8.20e5	6.42e5	1.46e6	36.14	0.994	1.28	NO	82.786	0.141	1.49e7	9357	1594.2	1.20e7	7630	1567.0	dd	db
22	13C-1234678-HpCDD	5.16e5	4.94e5	1.01e6	39.21	1.078	1.05	NO	85.262	0.147	6.91e6	6063	1139.4	6.63e6	5815	1140.5	bd	bd
23	13C-OCDD	8.12e5	8.91e5	1.70e6	43.13	1.186	0.91	NO	149.292	0.139	8.25e6	4885	1688.8	9.29e6	5886	1577.8	bd	bb
24	13C-2378-TCDF	1.16e6	1.49e6	2.65e6	29.44	0.992	0.78	NO	87.730	0.0797	1.31e7	6845	1915.2	1.70e7	4223	4029.3	bb	bb
25	13C-12378-PeCDF	1.43e6	9.40e5	2.37e6	32.83	1.107	1.52	NO	84.372	0.142	3.36e7	9717	3454.9	2.15e7	8589	2500.3	bb	bd
26	13C-23478-PeCDF	1.36e6	8.86e5	2.25e6	33.41	1.126	1.54	NO	80.659	0.143	3.17e7	9717	3261.3	2.06e7	8589	2399.1	db	bb
27	13C-123478-HxCDF	4.61e5	9.08e5	1.37e6	35.38	0.973	0.51	NO	79.252	0.143	9.53e6	8046	1184.5	1.90e7	8799	2154.5	bd	bd
28	13C-123678-HxCDF	5.45e5	1.07e6	1.62e6	35.48	0.976	0.51	NO	80.772	0.124	1.02e7	8046	1261.6	1.99e7	8799	2266.0	db	db
29	13C-234678-HxCDF	4.79e5	9.11e5	1.39e6	35.94	0.988	0.53	NO	81.919	0.146	8.91e6	8046	1107.3	1.71e7	8799	1942.4	bd	bb
30	13C-123789-HxCDF	4.57e5	8.92e5	1.35e6	36.65	1.008	0.51	NO	86.930	0.159	7.36e6	8046	914.4	1.40e7	8799	1588.9	bd	bd
31	13C-1234678-HpCDF	3.18e5	7.04e5	1.02e6	38.04	1.046	0.45	NO	76.514	0.110	4.93e6	3679	1339.5	1.11e7	6342	1757.5	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:07:55 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:08:18 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.58e5	5.89e5	8.47e5	39.83	1.095	0.44	NO	79.777	0.138	3.36e6	3679	914.2	7.39e6	6342	1165.0	bd	bd
33	13C-1234-TCDD	9.86e5	1.27e6	2.26e6	29.67	0.000	0.77	NO	100.000	0.0843	1.13e7	4660	2431.9	1.46e7	4103	3557.3	bb	bb
34	13C-123789-HxCDD	8.87e5	6.86e5	1.57e6	36.36	0.000	1.29	NO	100.000	0.159	1.51e7	9357	1614.4	1.23e7	7630	1606.1	db	bb
35	37Cl-2378-TCDD	2.33e5		2.33e5	30.40	1.025			8.865	0.0140	2.47e6	1689	1461.4				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:07:55 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:08:18 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetradioxins	1.91e2	1.23e2	3.14e2	29.47	1.55	YES	0.016	0.0286	3.66e3	1316	2.8	1.88e3	1161	1.6	db	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	3.50e2	1.82e2	5.32e2	33.60	1.93	YES	0.043	0.0254	9.82e3	1587	6.2	4.46e3	1175	3.8	MM	bb
2	Total-pentadioxins	1.64e2	6.67e1	2.31e2	33.41	2.46	YES	0.018	0.0254	5.26e3	1587	3.3	2.70e3	1175	2.3	bb	bb
3	Total-pentadioxins	5.57e1	6.41e1	1.20e2	33.14	0.87	YES	0.010	0.0254	1.67e3	1587	1.1	2.18e3	1175	1.9	bb	bb
4	Total-pentadioxins	3.46e2	2.96e2	6.42e2	32.99	1.17	YES	0.051	0.0254	5.32e3	1587	3.3	6.36e3	1175	5.4	MM	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-hexadioxins	2.52e2	1.02e2	3.54e2	36.63	2.47	YES	0.031	0.0654	5.24e3	2520	2.1	3.67e3	3155	1.2	bb	bb
2	123789-HxCDD	8.60e2	7.34e2	1.59e3	36.37	1.17	NO	0.144	0.0667	1.68e4	2520	6.7	1.20e4	3155	3.8	MM	db
3	123678-HxCDD	1.17e3	1.14e3	2.31e3	36.15	1.03	YES	0.188	0.0635	2.13e4	2520	8.4	2.00e4	3155	6.3	dd	dd
4	123478-HxCDD	5.57e2	4.26e2	9.83e2	36.08	1.31	NO	0.093	0.0663	1.40e4	2520	5.6	9.72e3	3155	3.1	bd	bd
5	Total-hexadioxins	3.39e3	2.33e3	5.73e3	35.53	1.45	YES	0.506	0.0654	4.48e4	2520	17.8	3.91e4	3155	12.4	db	MM
6	Total-hexadioxins	2.30e2	1.06e2	3.36e2	35.40	2.16	YES	0.030	0.0654	7.93e3	2520	3.1	3.67e3	3155	1.2	dd	db
7	Total-hexadioxins	3.09e2	2.47e2	5.55e2	35.34	1.25	NO	0.049	0.0654	8.47e3	2520	3.4	5.76e3	3155	1.8	bd	bd
8	Total-hexadioxins	1.83e3	1.50e3	3.33e3	34.90	1.22	NO	0.294	0.0654	4.03e4	2520	16.0	3.57e4	3155	11.3	bd	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptadioxins	3.25e4	3.05e4	6.30e4	38.37	1.06	NO	6.225	0.104	5.09e5	2698	188.7	4.74e5	2959	160.3	bd	bb
2	1234678-HpCDD	2.08e4	2.00e4	4.07e4	39.23	1.04	NO	4.023	0.104	2.98e5	2698	110.5	2.85e5	2959	96.2	bd	bb

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:07:55 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:08:18 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	2.47e2	4.60e2	7.07e2	26.15	0.54	YES	0.029	0.0247	8.39e3	954	8.8	6.28e3	1781	3.5	db	db
2	Total-tetrafurans	5.49e1	5.24e1	1.07e2	26.10	1.05	YES	0.004	0.0247	2.34e3	954	2.5	2.10e3	1781	1.2	bd	bd
3	Total-tetrafurans	6.55e1	6.90e1	1.34e2	31.49	0.95	YES	0.006	0.0247	2.11e3	954	2.2	2.01e3	1781	1.1	bb	bb
4	2378-TCDF	1.76e2	1.54e2	3.31e2	29.47	1.14	YES	0.014	0.0247	2.11e3	954	2.2	2.22e3	1781	1.2	bb	bb
5	Total-tetrafurans	6.48e1	8.16e1	1.46e2	28.51	0.79	NO	0.006	0.0247	2.15e3	954	2.2	2.11e3	1781	1.2	bb	bd
6	Total-tetrafurans	9.17e1	1.17e2	2.09e2	28.09	0.78	NO	0.009	0.0247	1.94e3	954	2.0	3.62e3	1781	2.0	db	bb
7	Total-tetrafurans	7.97e1	8.68e1	1.67e2	27.30	0.92	YES	0.007	0.0247	1.79e3	954	1.9	2.50e3	1781	1.4	db	bb
8	Total-tetrafurans	2.89e2	2.96e2	5.85e2	27.16	0.98	YES	0.024	0.0247	4.14e3	954	4.3	3.19e3	1781	1.8	MM	MM
9	Total-tetrafurans	1.25e2	1.78e2	3.03e2	26.83	0.70	NO	0.012	0.0247	3.37e3	954	3.5	3.30e3	1781	1.9	bb	bd

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	3.05e3	2.06e3	5.11e3	31.36	1.48	NO	0.253	0.0149	5.10e4	1221	41.8	3.64e4	1592	22.9	bb	bb
2	Total-pentafurans (F1)	6.56e2	1.01e2	7.57e2	30.16	6.50	YES	0.037	0.0149	7.69e3	1221	6.3	4.30e3	1592	2.7	bb	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	23478-PeCDF	3.68e2	3.21e2	6.89e2	33.43	1.15	YES	0.033	0.0153	1.03e4	1211	8.5	9.73e3	1760	5.5	bb	db
2	Total-pentafurans	2.03e2	1.58e2	3.61e2	33.00	1.28	YES	0.018	0.0157	4.84e3	1211	4.0	4.03e3	1760	2.3	bb	bb
3	12378-PeCDF	2.15e2	2.09e2	4.24e2	32.85	1.03	YES	0.022	0.0162	5.25e3	1211	4.3	6.53e3	1760	3.7	bb	bd
4	Total-pentafurans	2.93e2	2.00e2	4.93e2	32.62	1.46	NO	0.024	0.0157	1.13e4	1211	9.3	5.46e3	1760	3.1	bb	bb
5	Total-pentafurans	1.07e3	5.65e2	1.63e3	32.30	1.89	YES	0.081	0.0157	2.06e4	1211	17.0	1.19e4	1760	6.8	db	bb

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:07:55 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:08:18 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	234678-HxCDF	3.81e2	2.47e2	6.28e2	35.94	1.54	YES	0.044	0.0249	9.31e3	1587	5.9	4.94e3	1067	4.6	bb	bb
2	123678-HxCDF	2.51e2	1.61e2	4.12e2	35.51	1.56	YES	0.027	0.0236	6.32e3	1587	4.0	3.99e3	1067	3.7	db	bb
3	123478-HxCDF	2.92e2	1.98e2	4.90e2	35.39	1.48	YES	0.036	0.0235	8.64e3	1587	5.4	4.76e3	1067	4.5	dd	bb
4	Total-hexafurans	2.25e3	1.63e3	3.88e3	35.02	1.38	NO	0.277	0.0258	5.12e4	1587	32.2	3.39e4	1067	31.7	bb	bb
5	Total-hexafurans	2.02e3	1.82e3	3.83e3	34.62	1.11	NO	0.273	0.0258	4.71e4	1587	29.7	3.90e4	1067	36.5	db	bb
6	Total-hexafurans	5.60e2	5.57e2	1.12e3	34.50	1.01	YES	0.080	0.0258	1.26e4	1587	8.0	1.53e4	1067	14.3	bd	bb

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	9.06e3	9.44e3	1.85e4	38.54	0.96	NO	1.796	0.0456	1.46e5	1169	125.4	1.48e5	1491	99.2	bd	bd
2	Total-heptafurans	1.02e2	1.21e2	2.23e2	38.37	0.84	YES	0.022	0.0456	3.60e3	1169	3.1	3.73e3	1491	2.5	bb	bb
3	1234678-HpCDF	4.31e3	4.63e3	8.94e3	38.06	0.93	NO	0.798	0.0383	6.89e4	1169	58.9	8.40e4	1491	56.4	bb	bd
4	1234789-HpCDF	3.50e2	2.80e2	6.30e2	39.82	1.25	YES	0.067	0.0543	6.48e3	1169	5.5	4.96e3	1491	3.3	MM	MM
5	Total-heptafurans	1.15e2	1.45e2	2.61e2	38.67	0.79	YES	0.025	0.0456	5.91e3	1169	5.1	6.72e3	1491	4.5	db	dd

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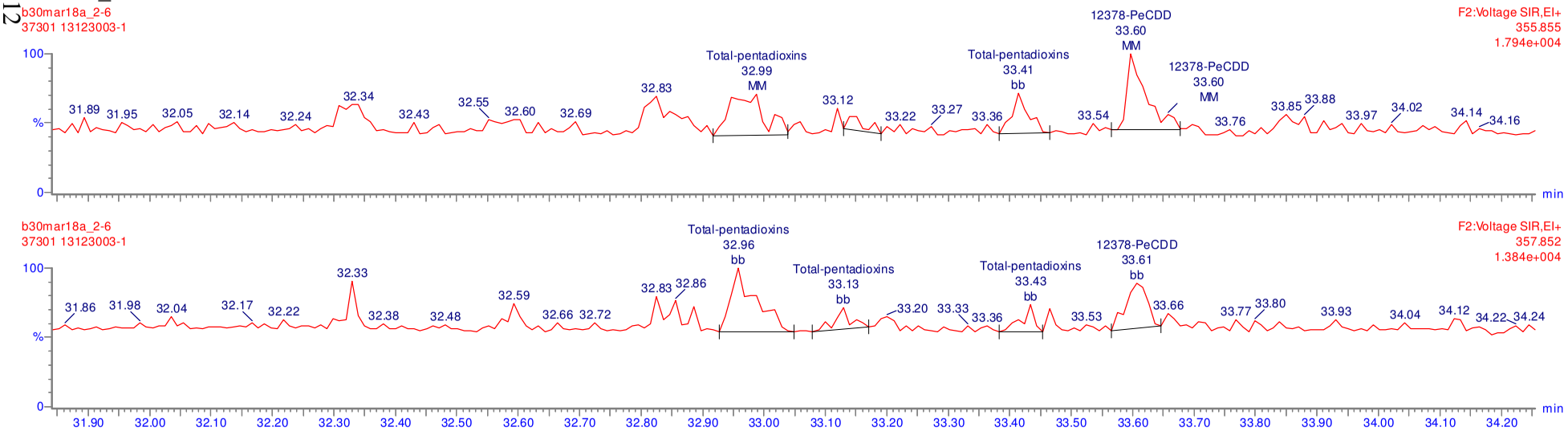
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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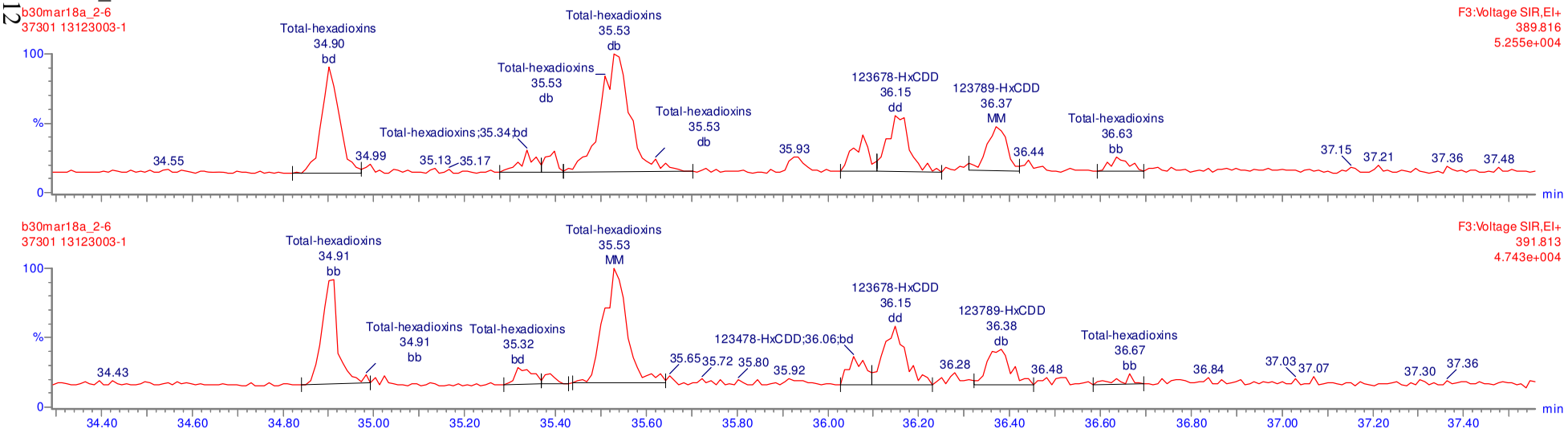
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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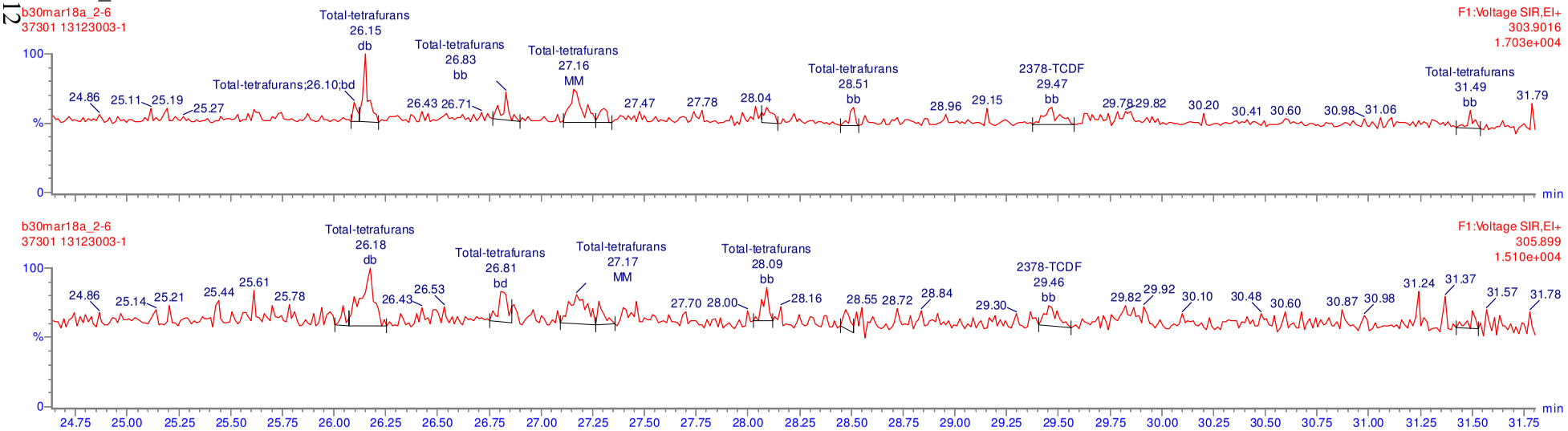
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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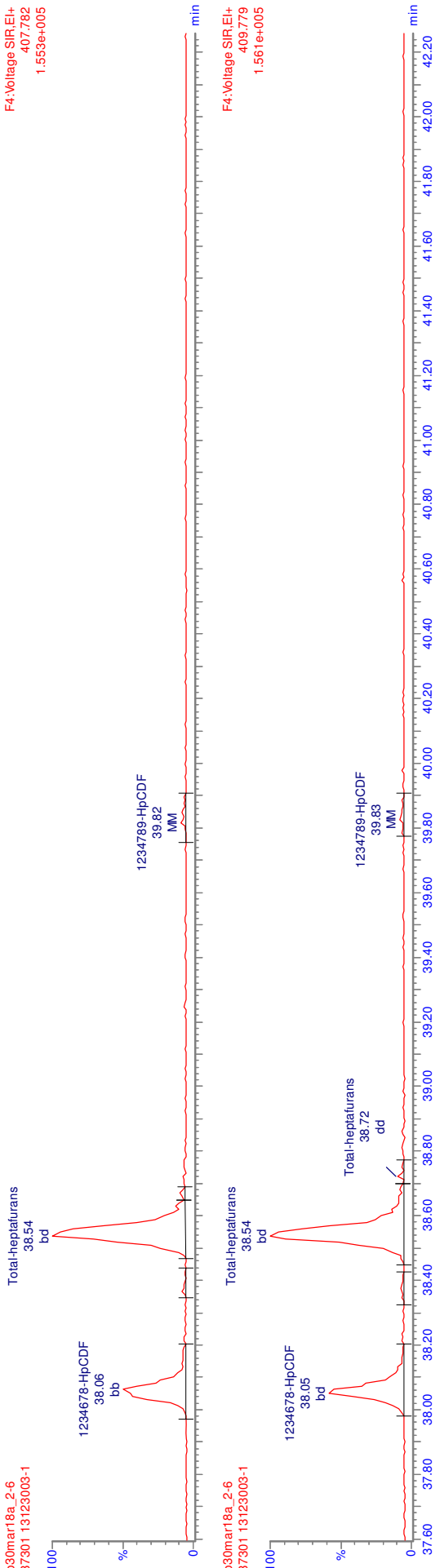

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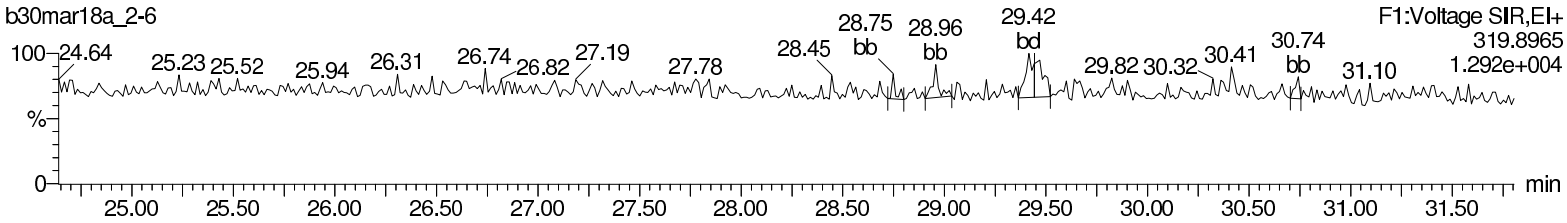
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

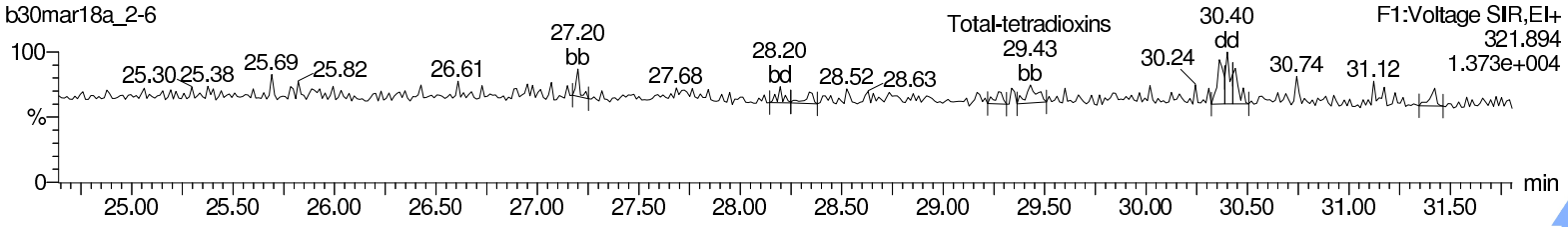
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

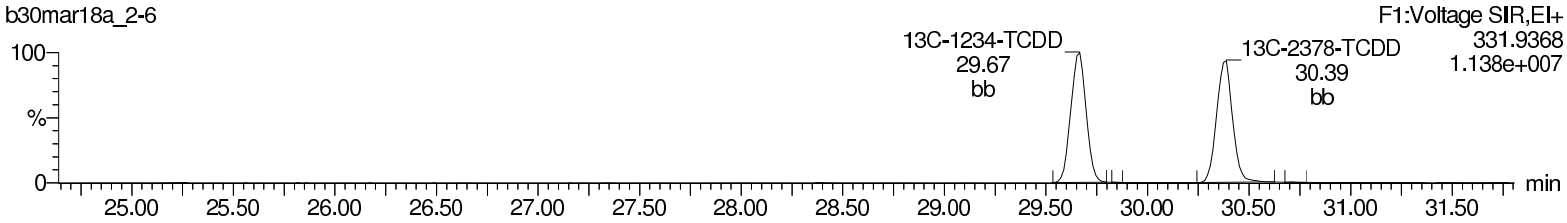
Total-tetradioxins



Total-tetradioxins



13C-2378-TCDD



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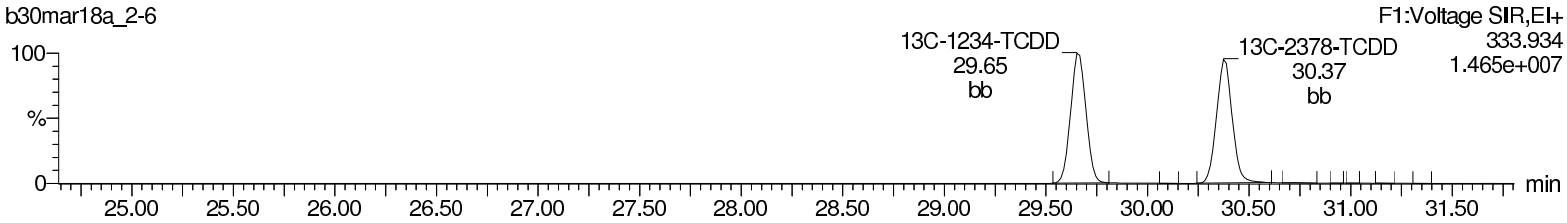
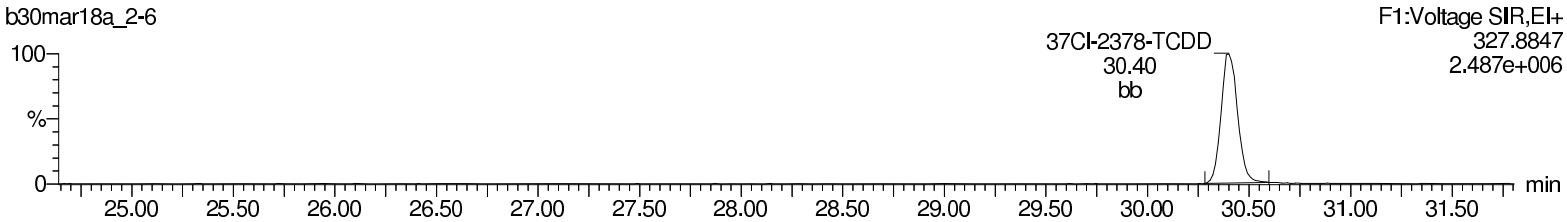
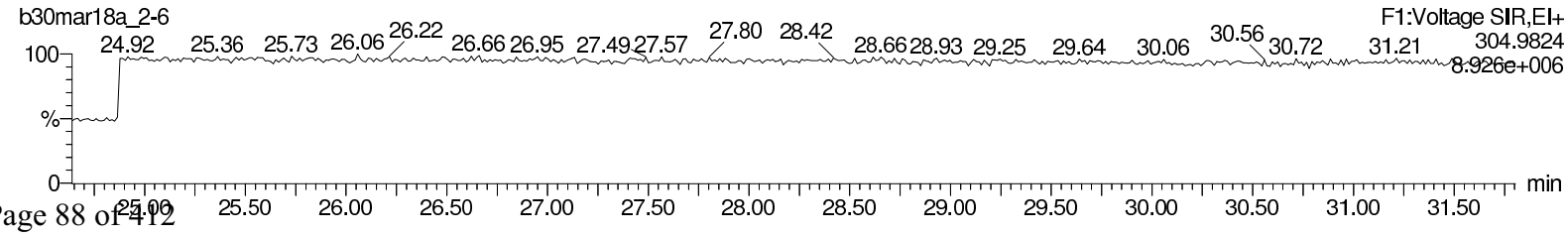


37Cl-2378-TCDD



Lock Mass F1



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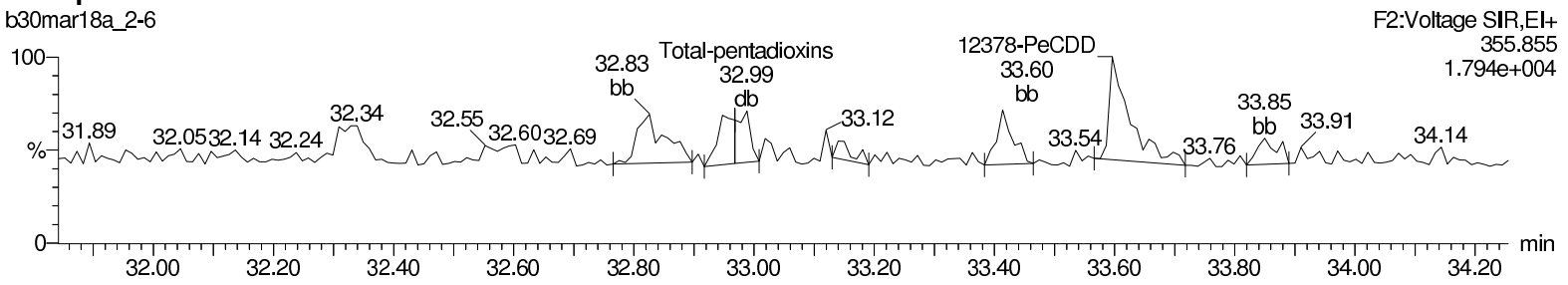
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

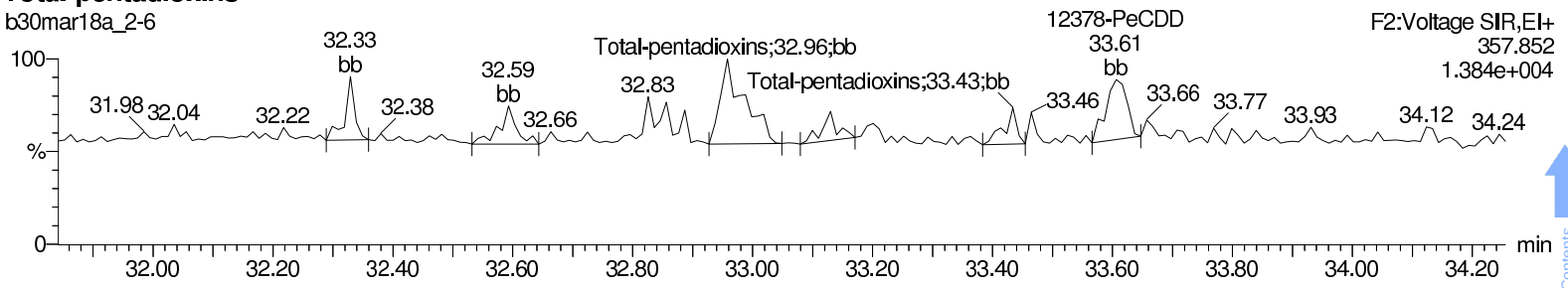
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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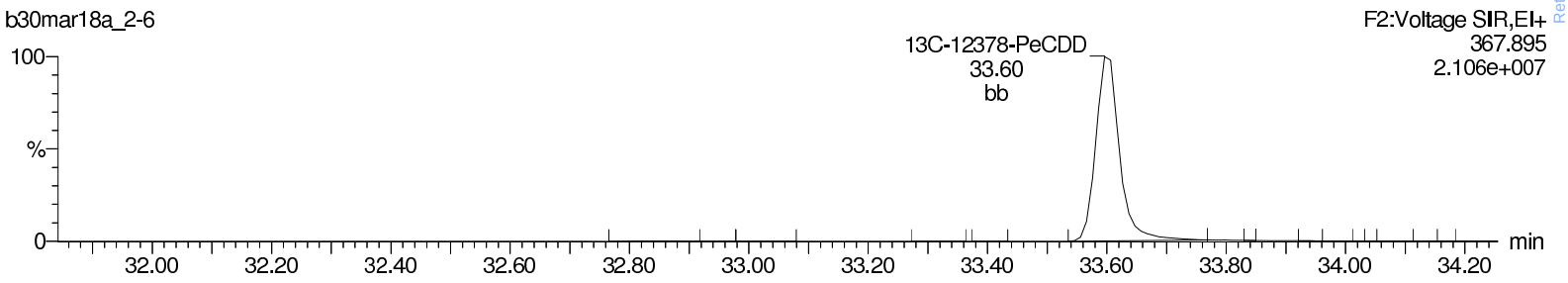

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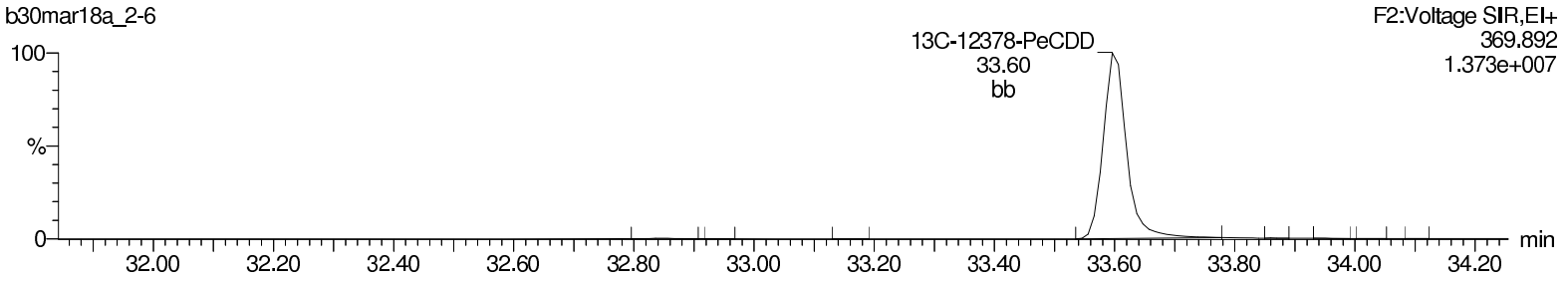
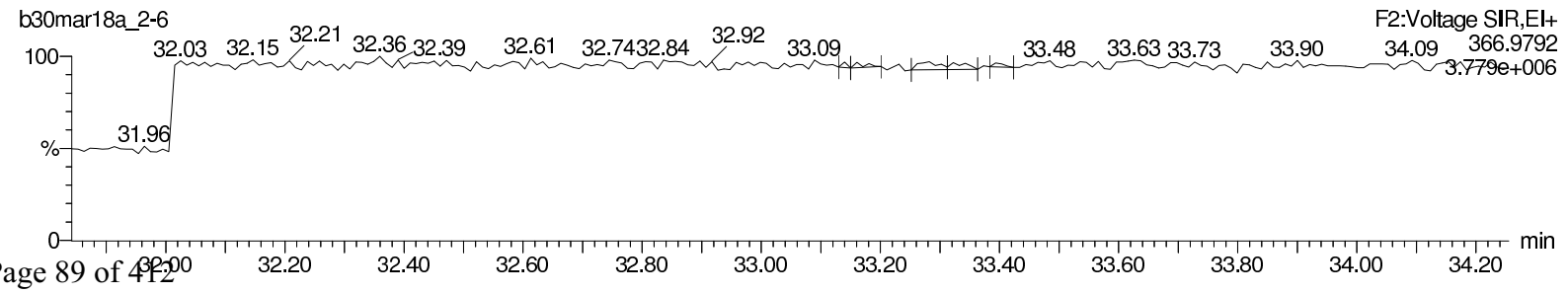


Lock Mass F2



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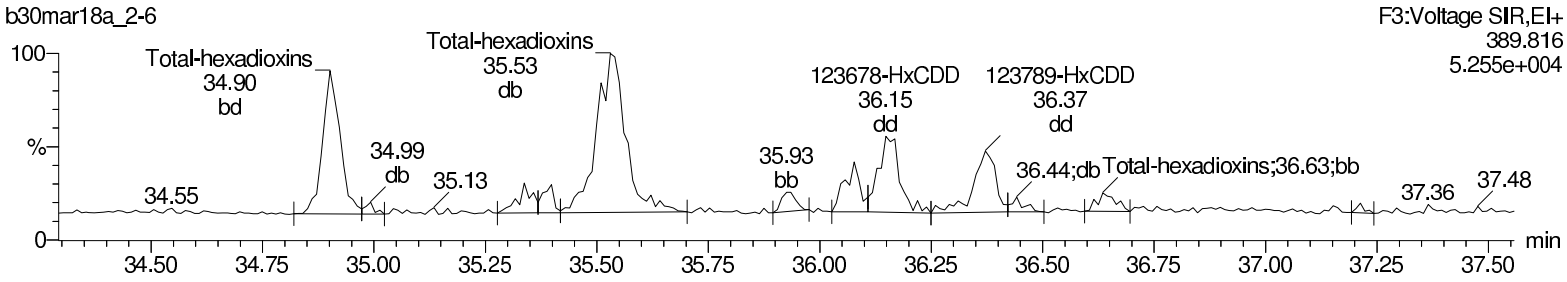
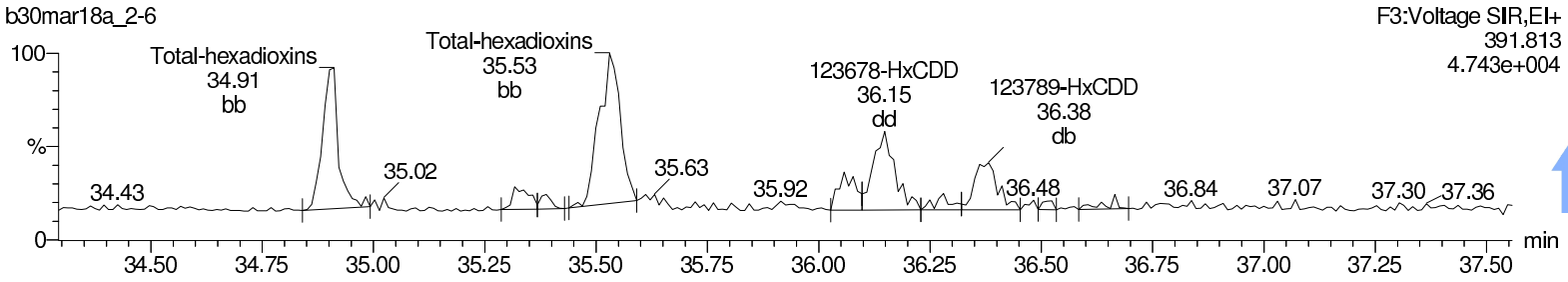
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

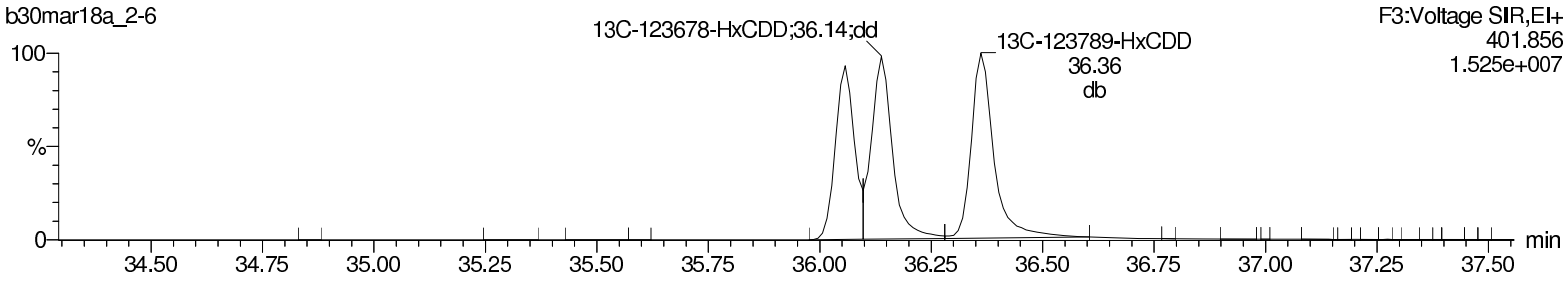
Total-hexadioxins



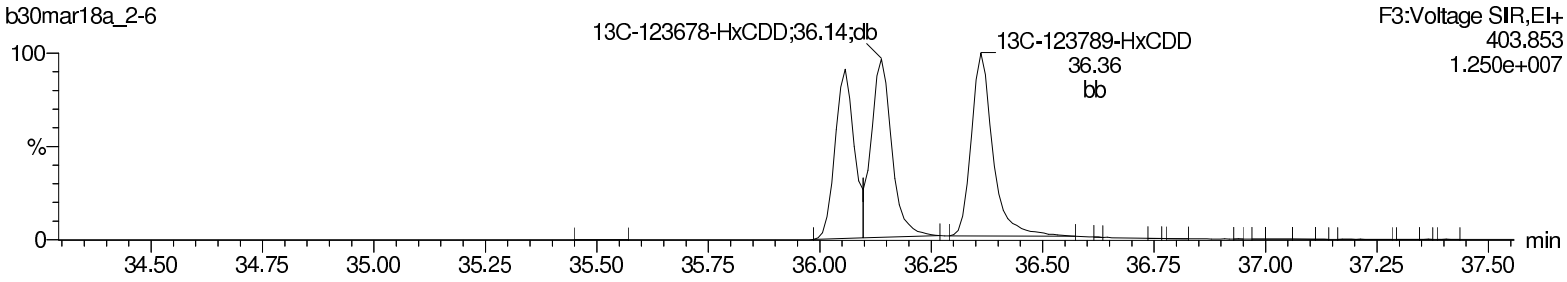
Total-hexadioxins



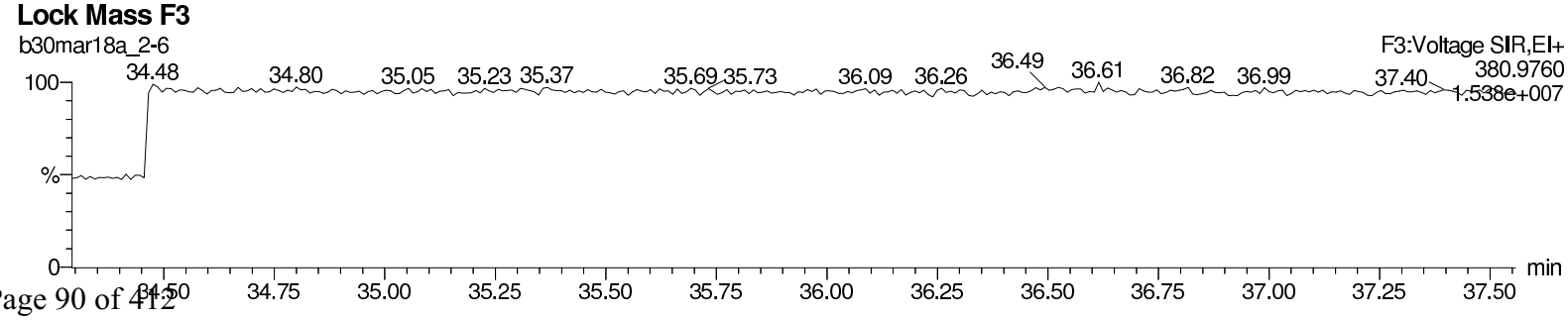
13C-123478-HxCDD



13C-123478-HxCDD



Lock Mass F3



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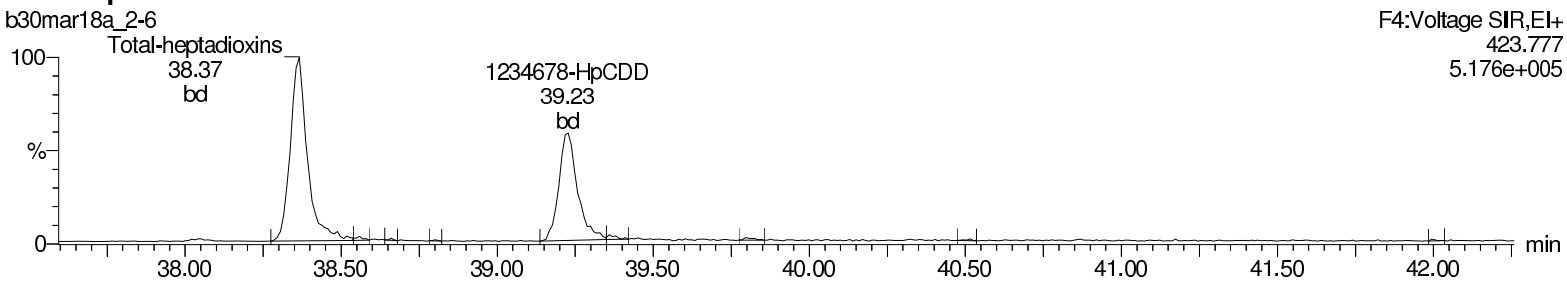
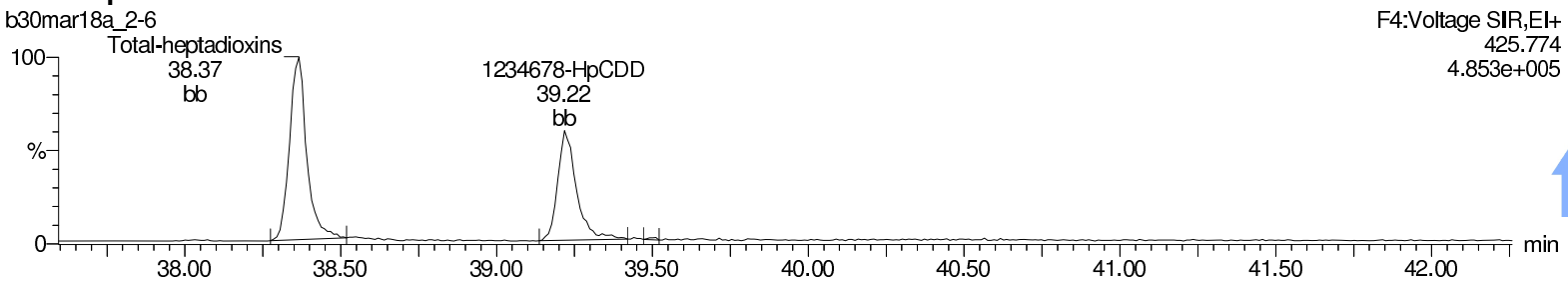
Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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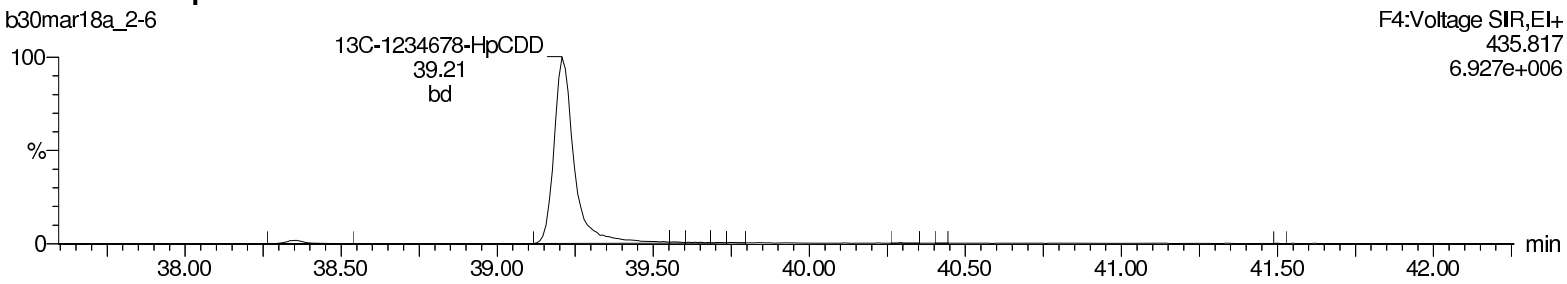

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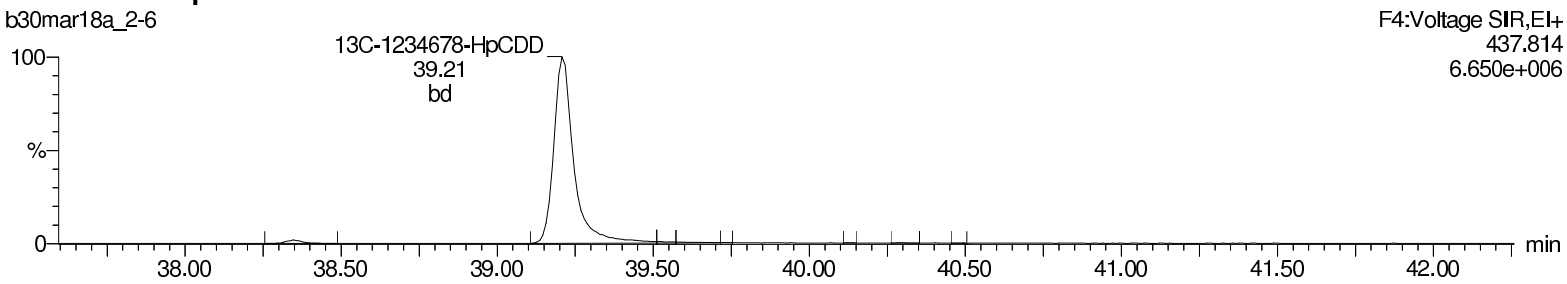
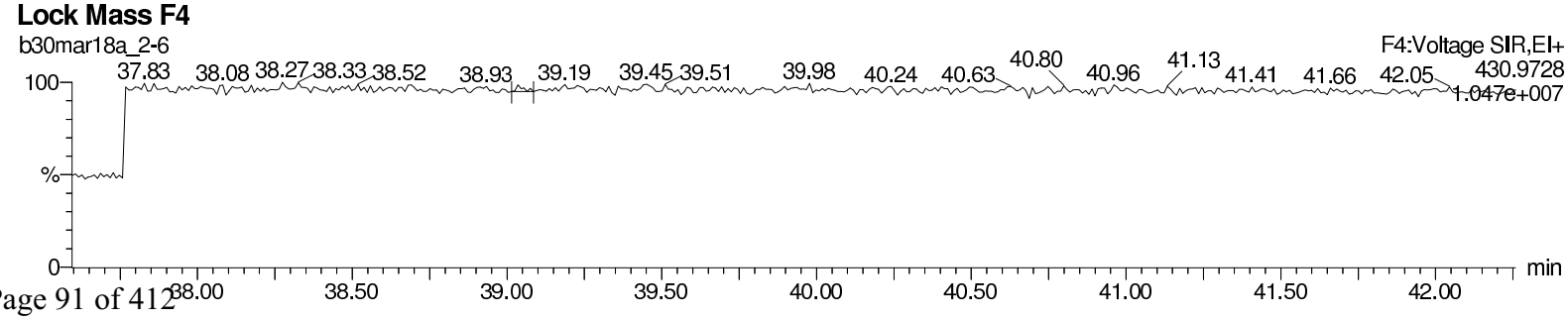


Lock Mass F4



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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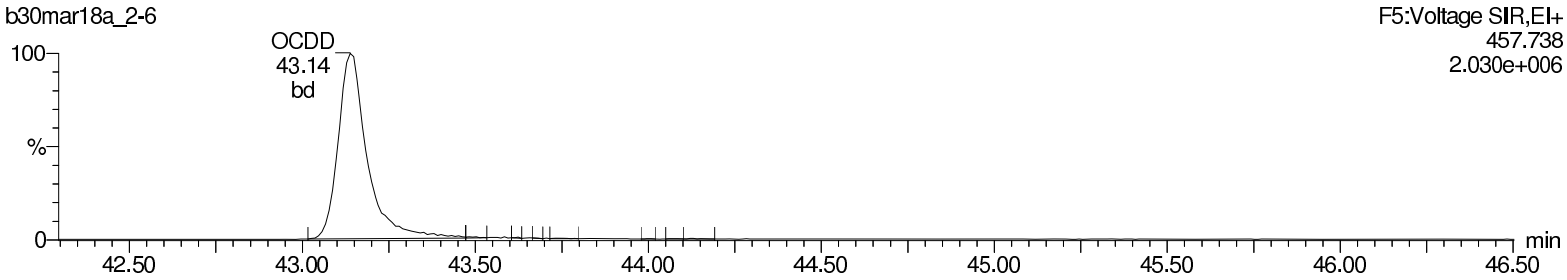
Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



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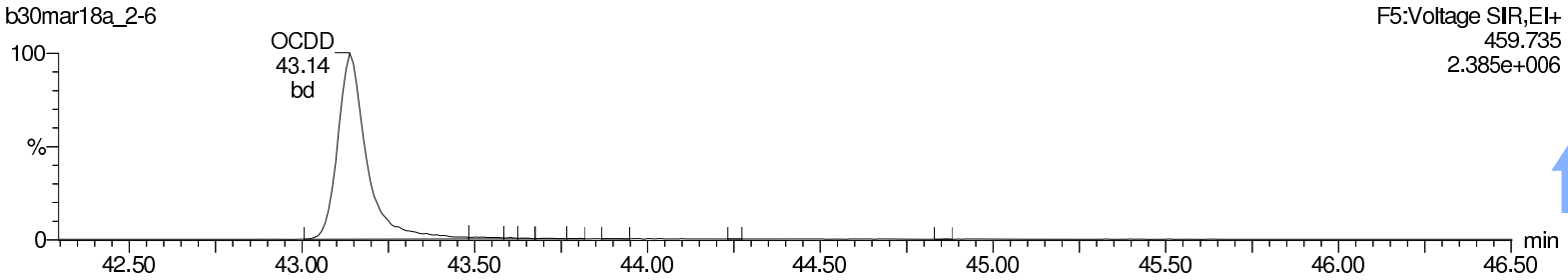

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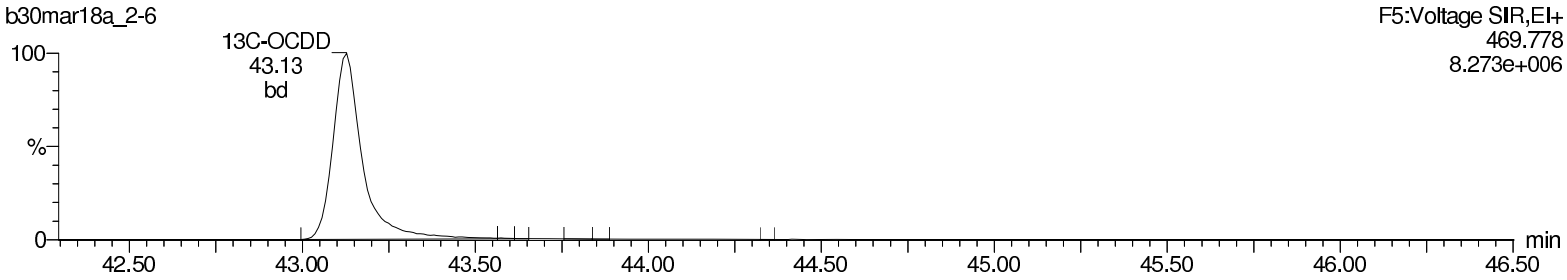

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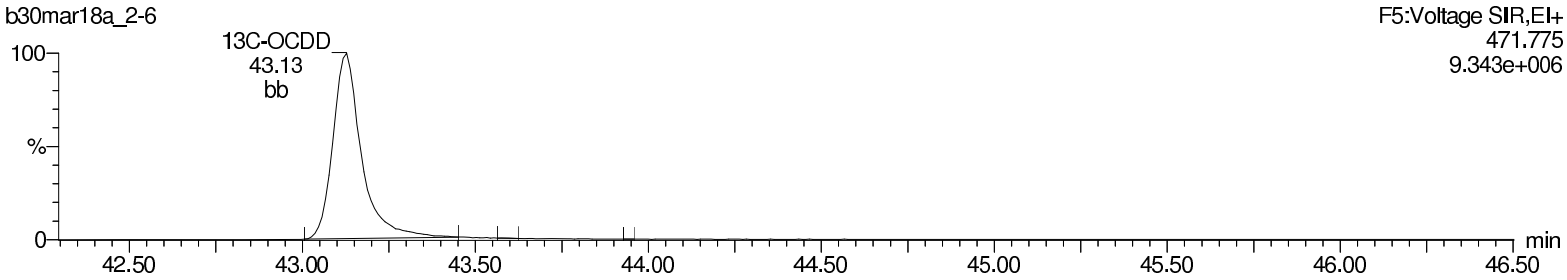
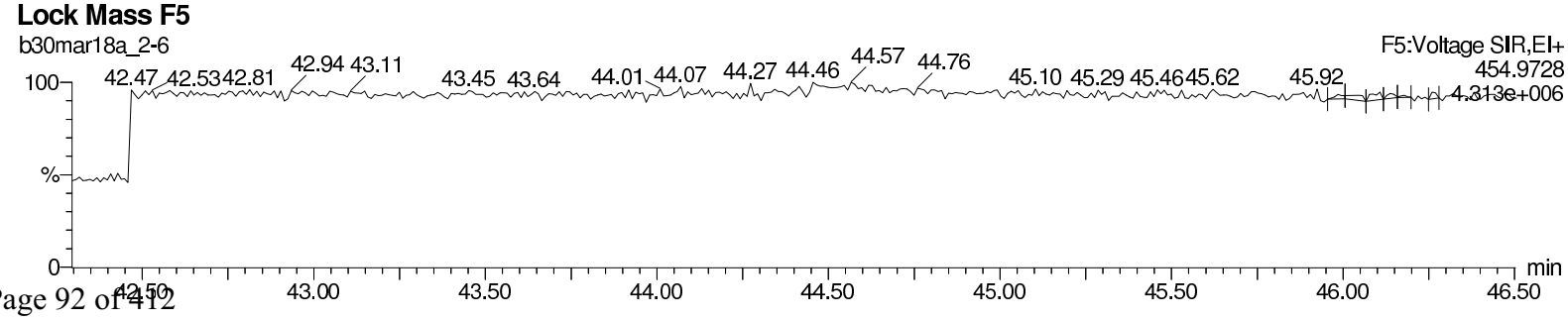


Lock Mass F5



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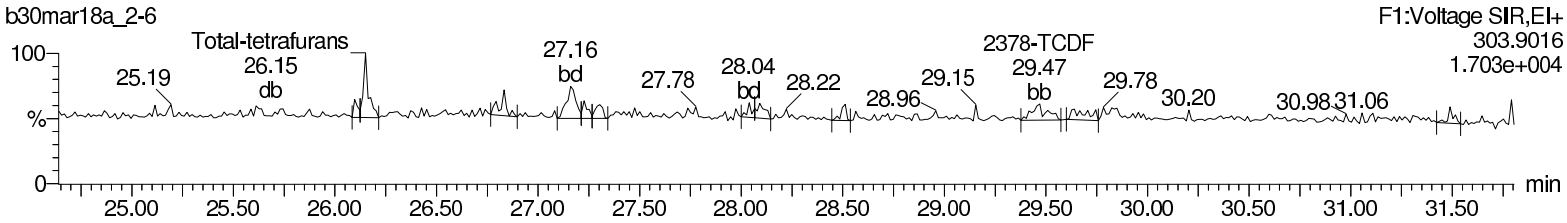
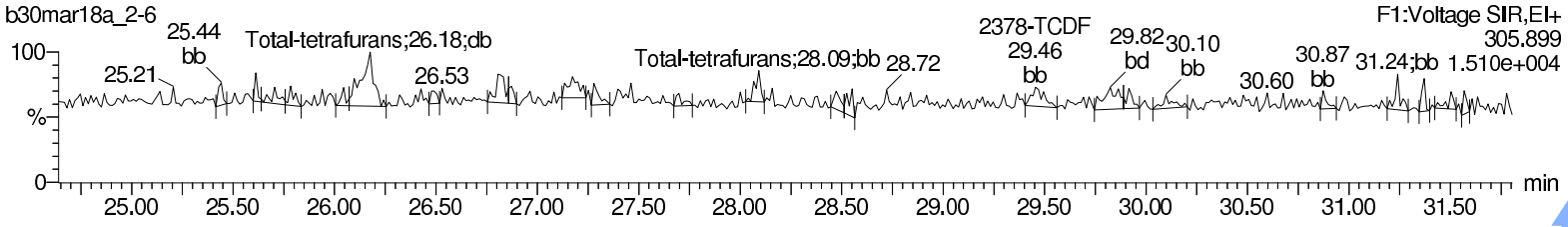
Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

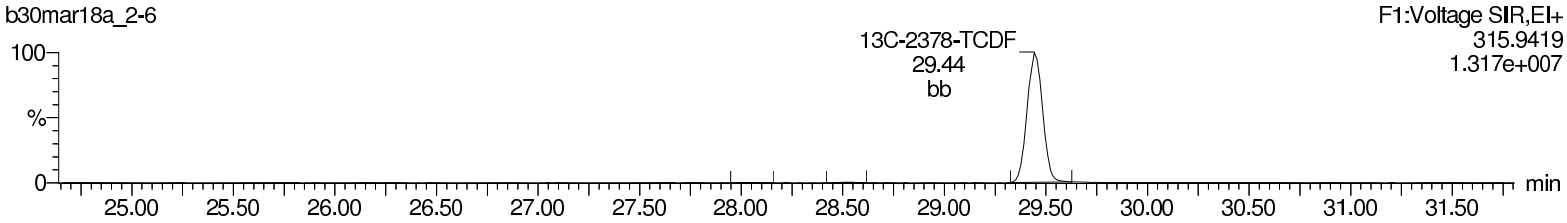
Total-tetrafurans



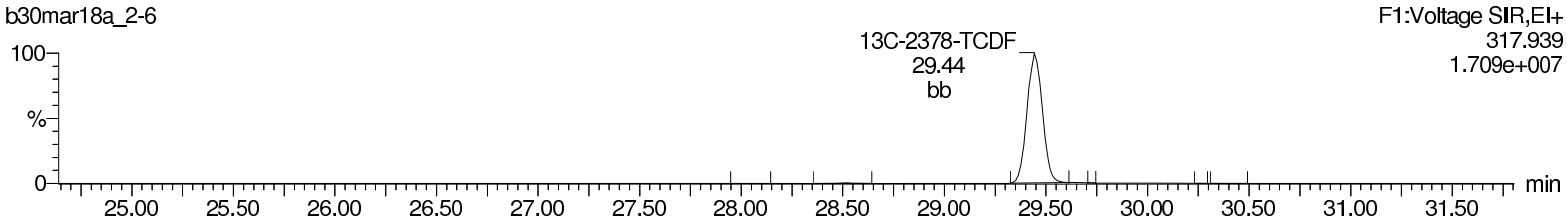
Total-tetrafurans



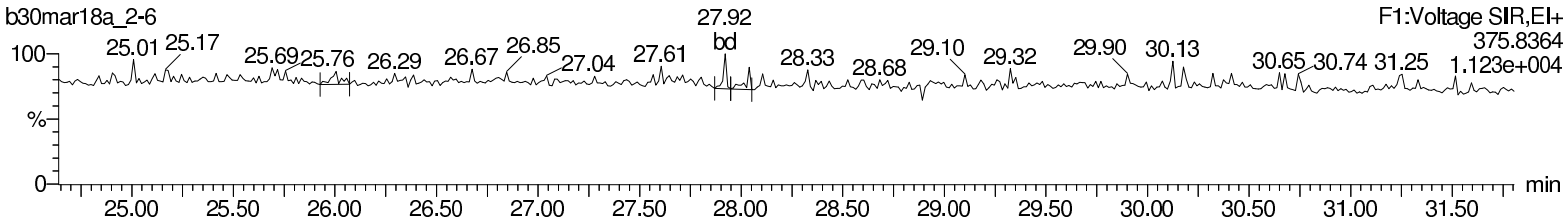
13C-2378-TCDF



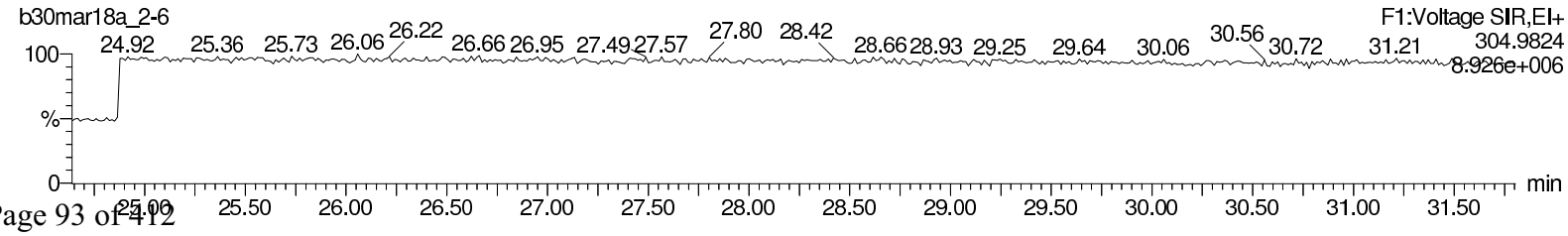
13C-2378-TCDF



HxDPE



Lock Mass F1



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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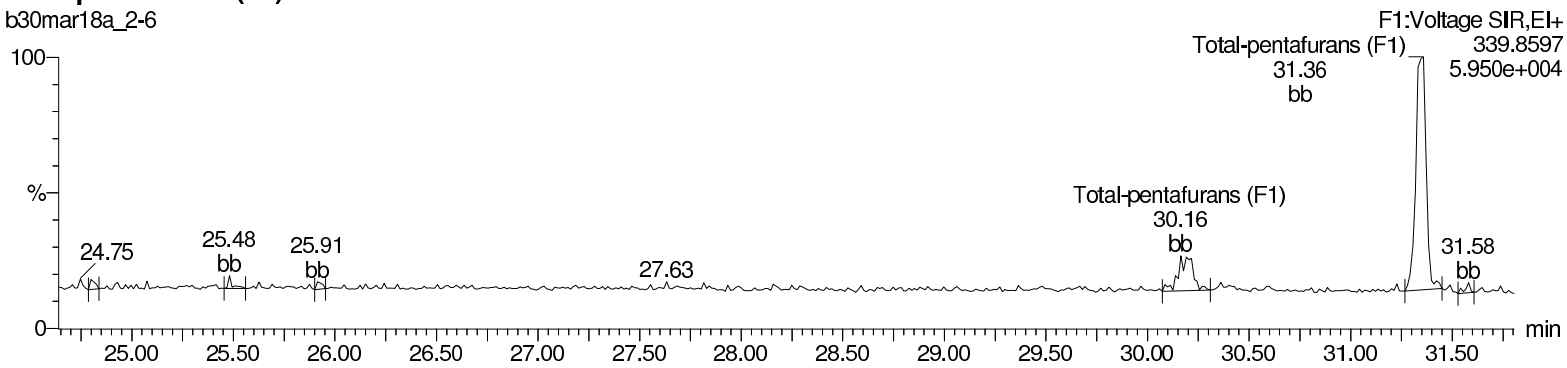
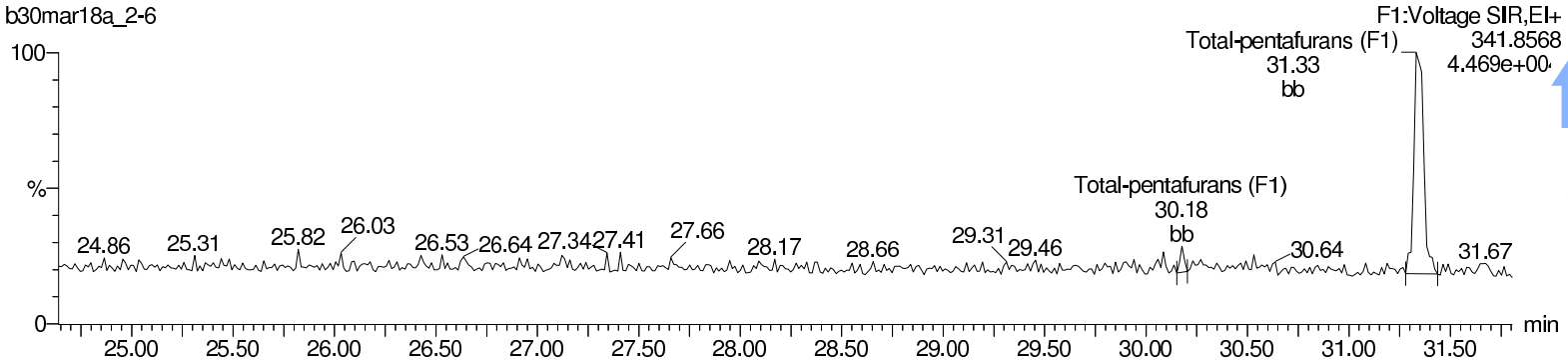
Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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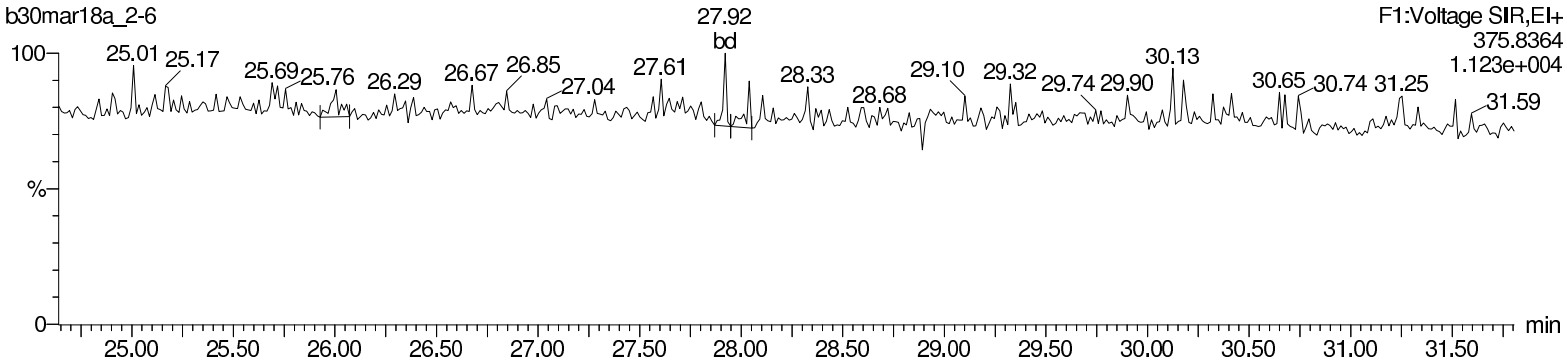
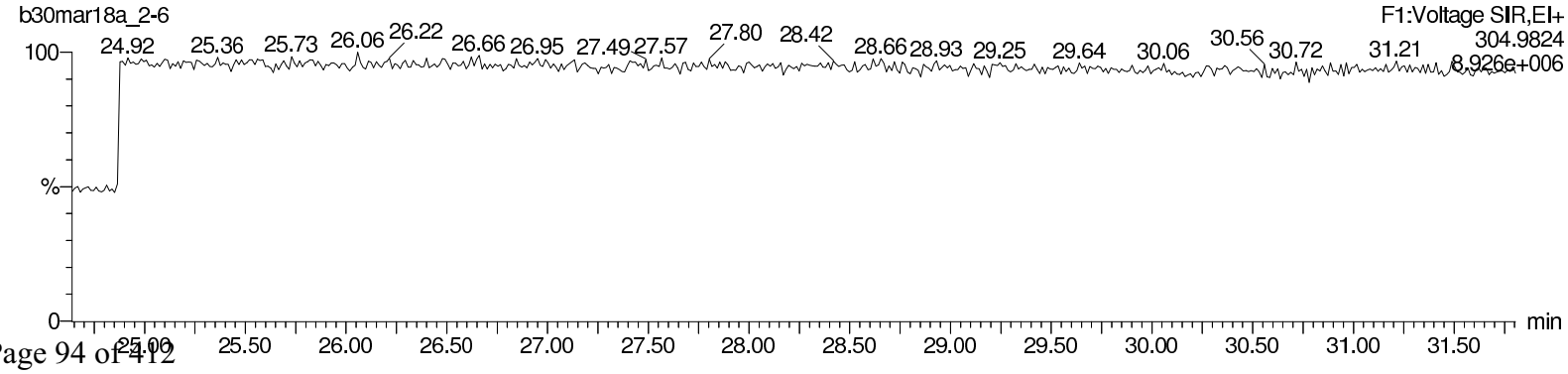


Lock Mass F1



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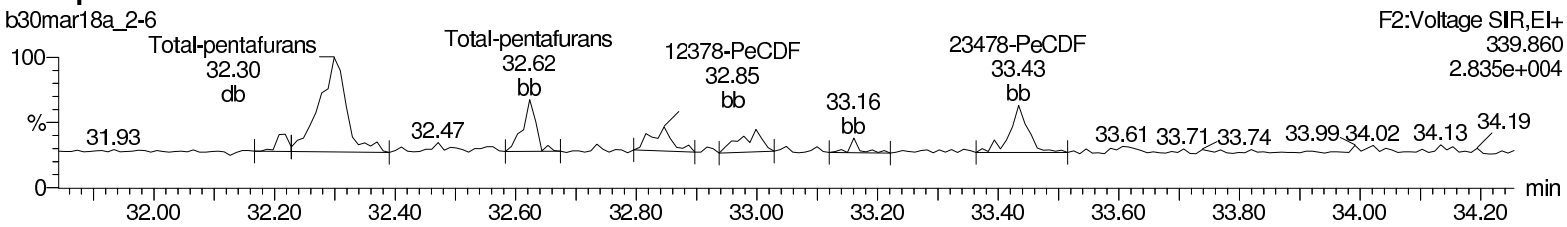
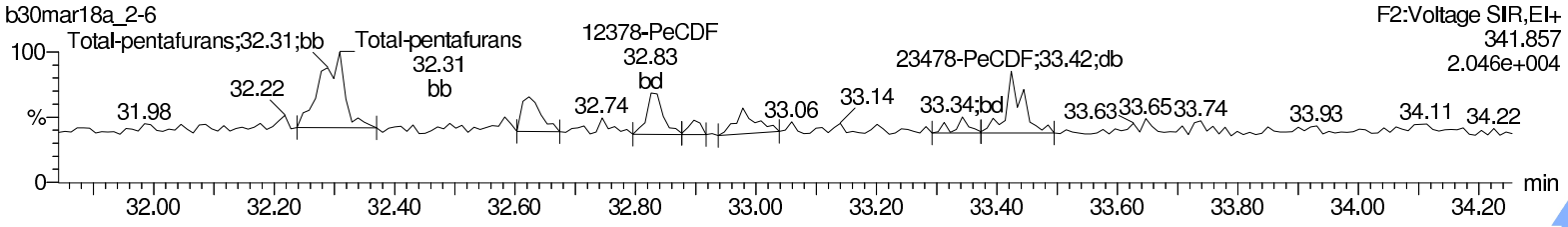
Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

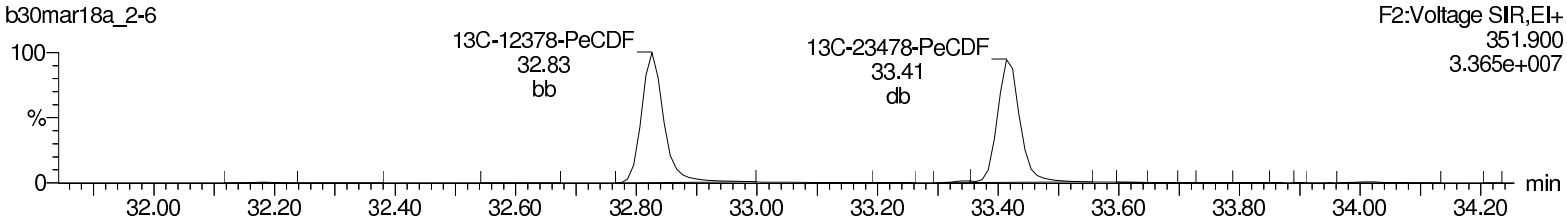
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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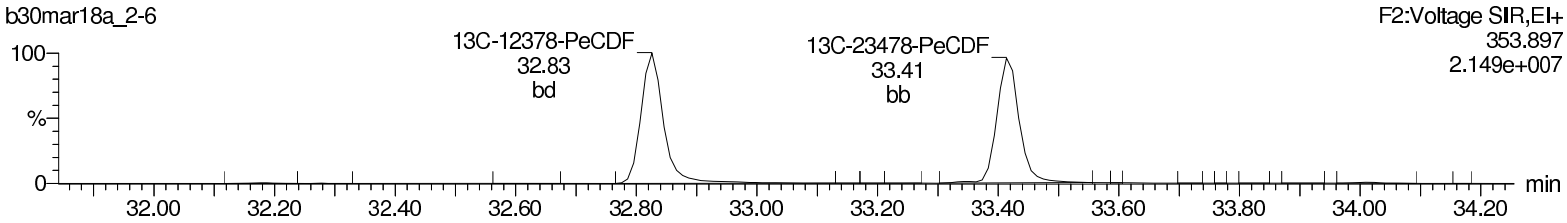
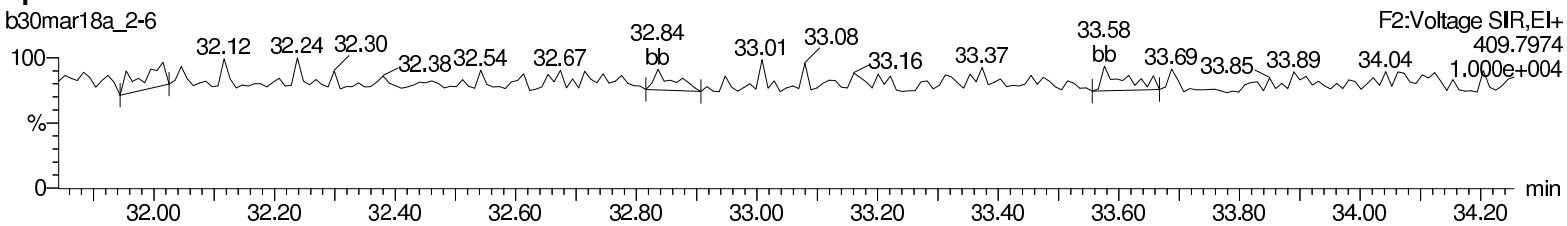
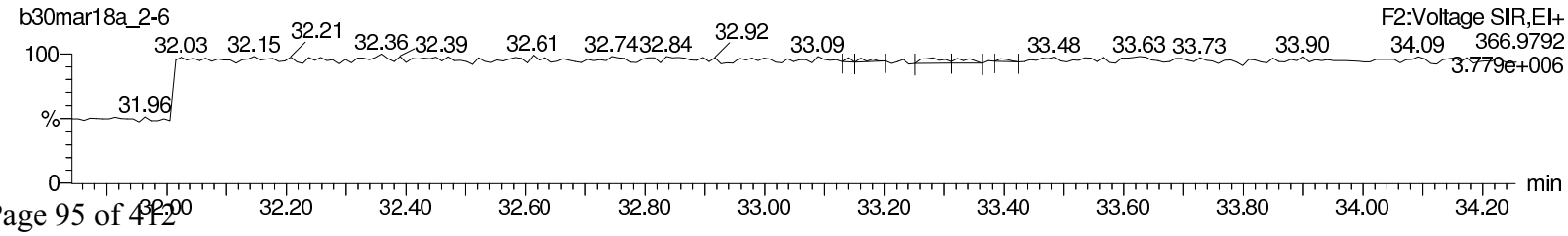


HpDPE



Lock Mass F2



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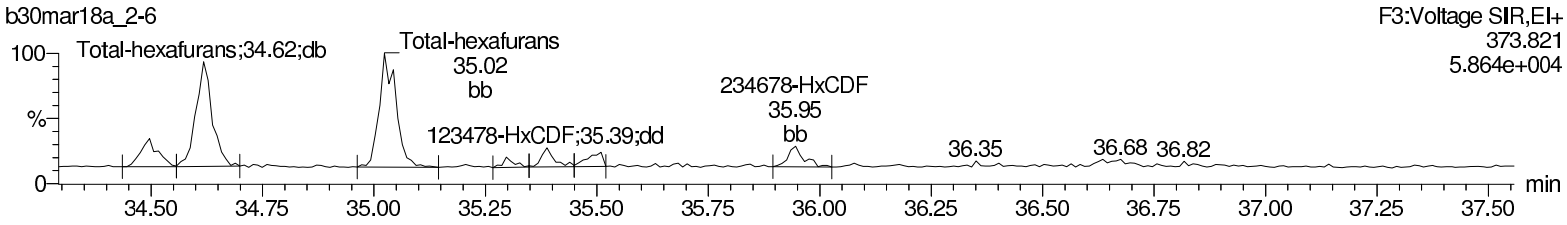
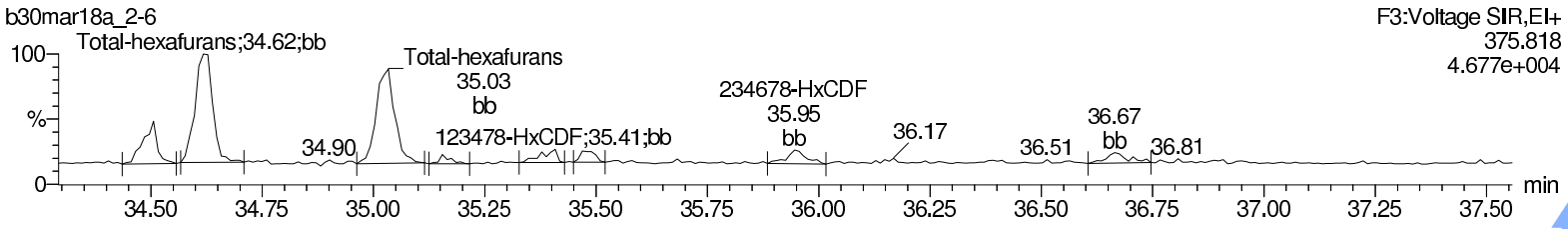
Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

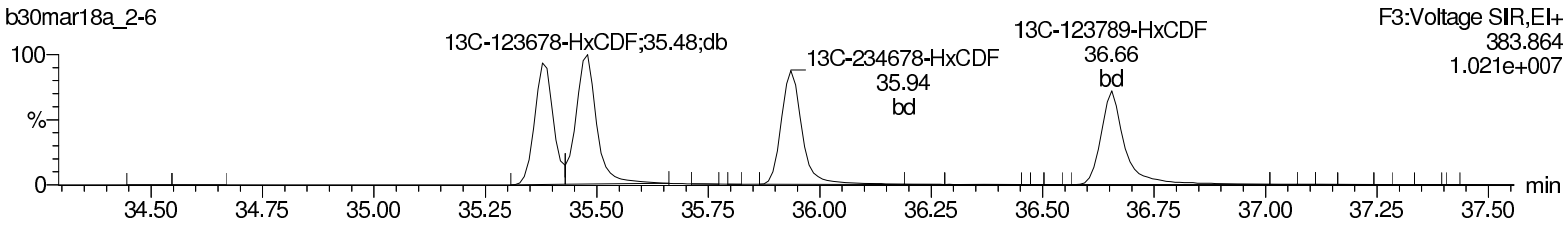
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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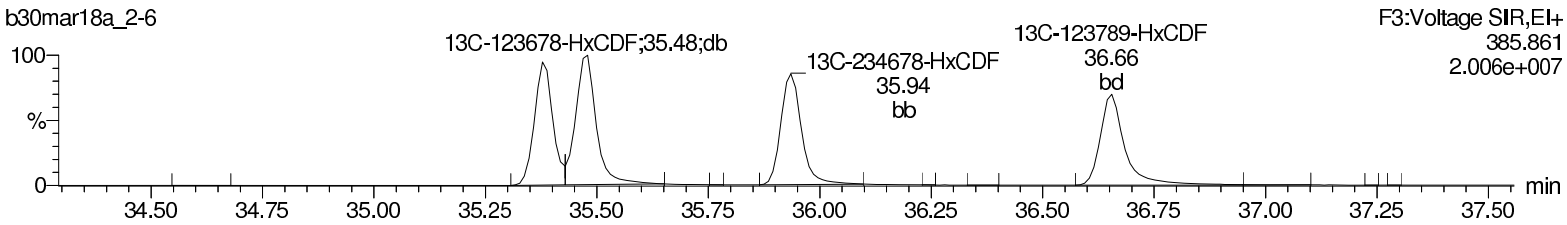

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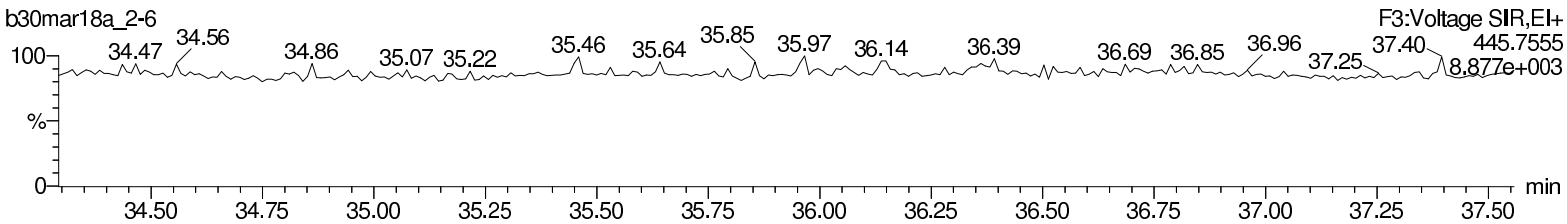
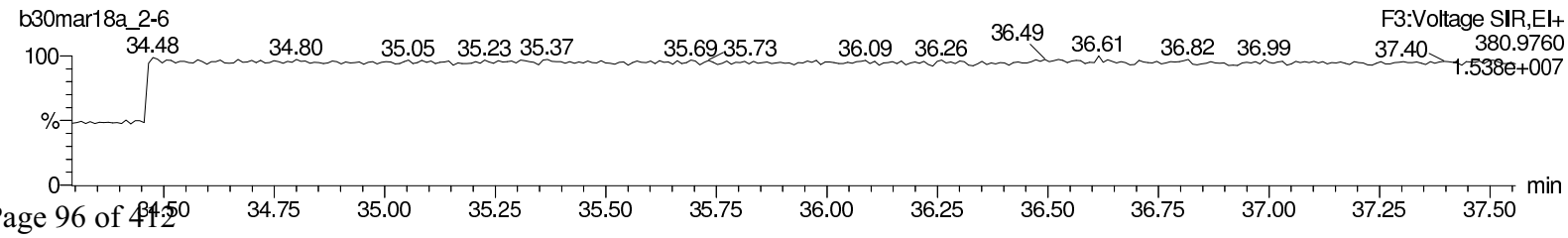


Lock Mass F3



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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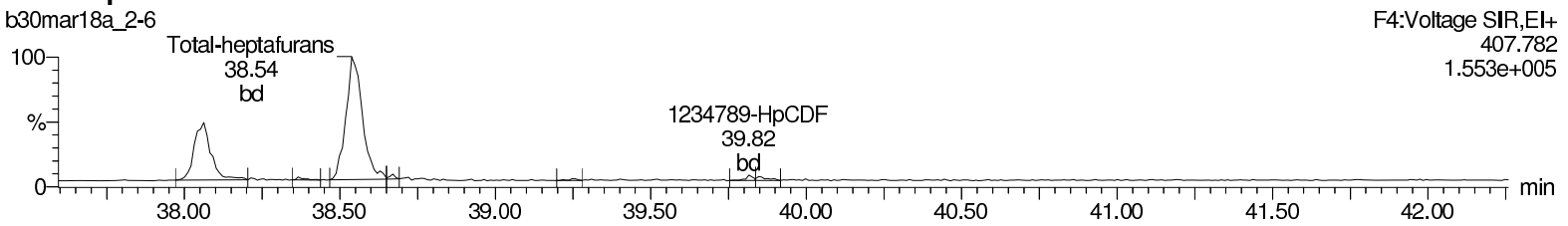
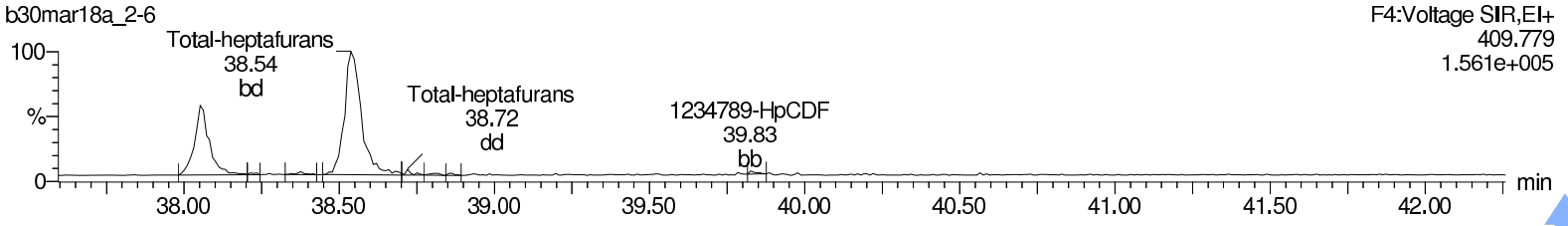
Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

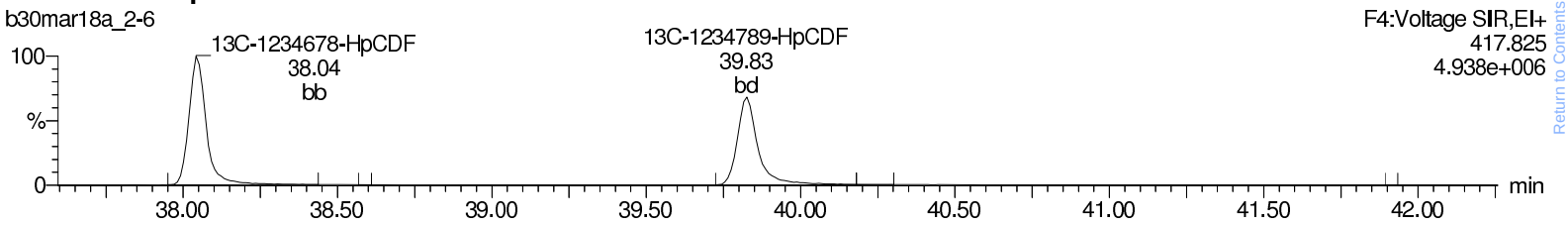
Total-heptafurans



Total-heptafurans



13C-1234678-HpCDF



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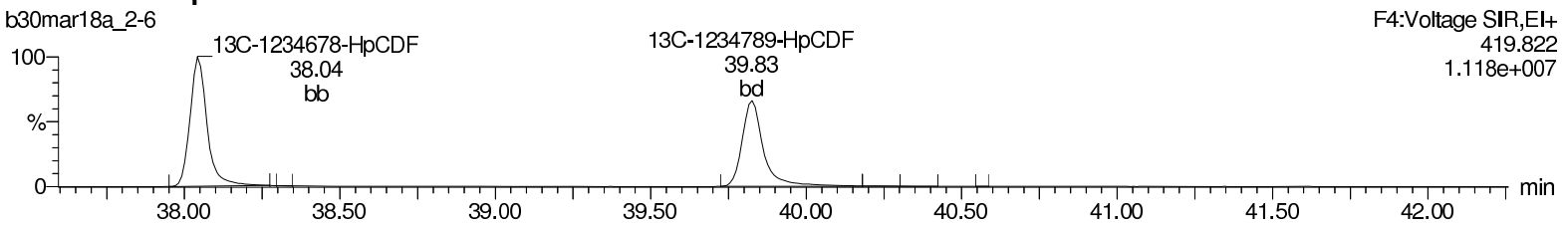

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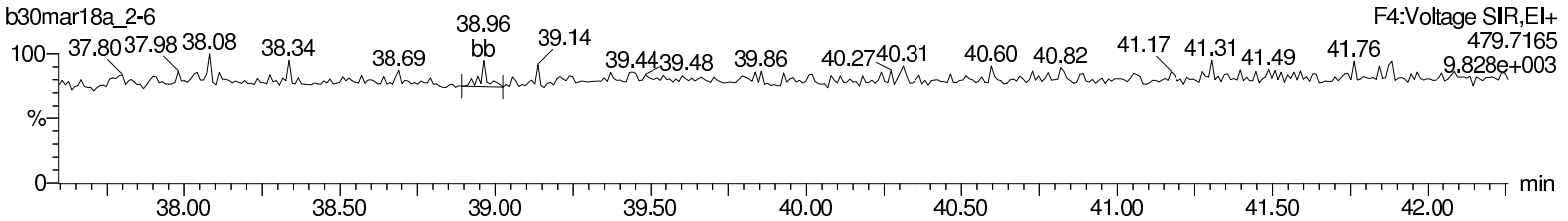
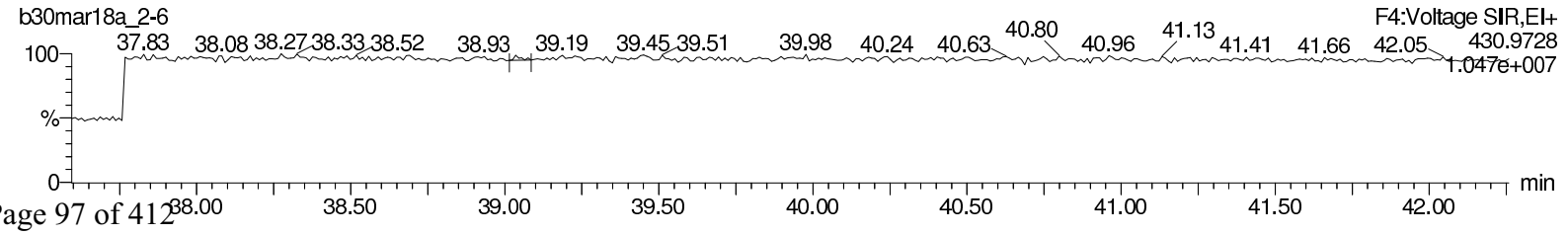


Lock Mass F4



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

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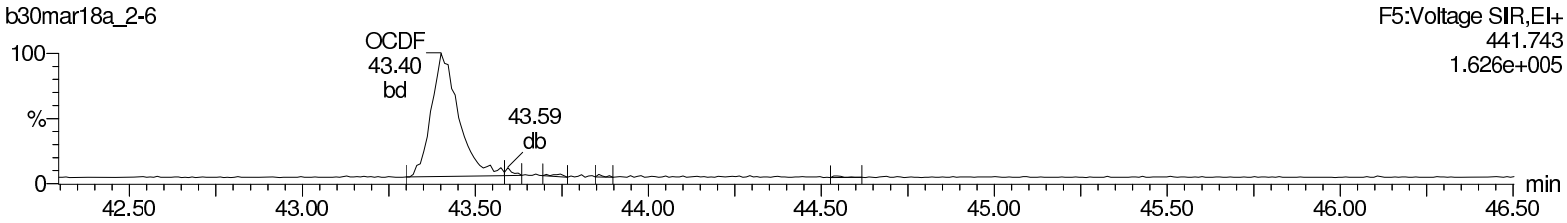
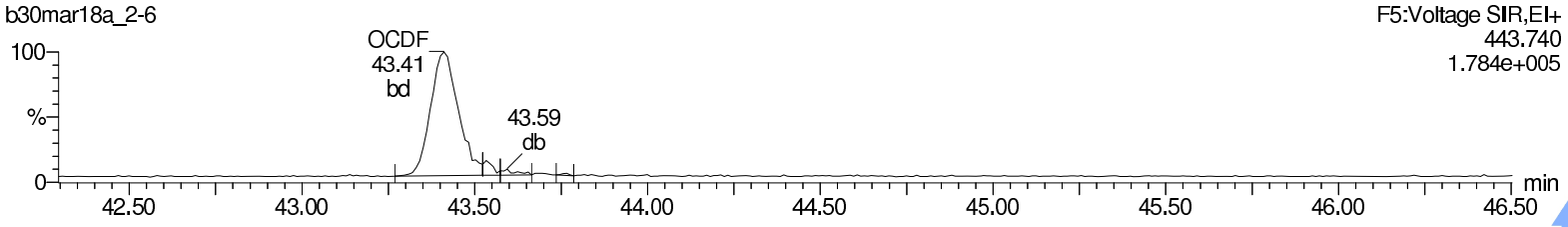
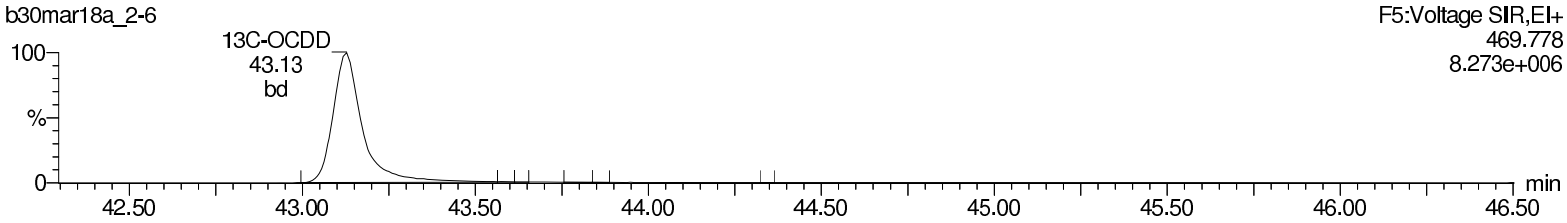


OCDF



13C-OCDD



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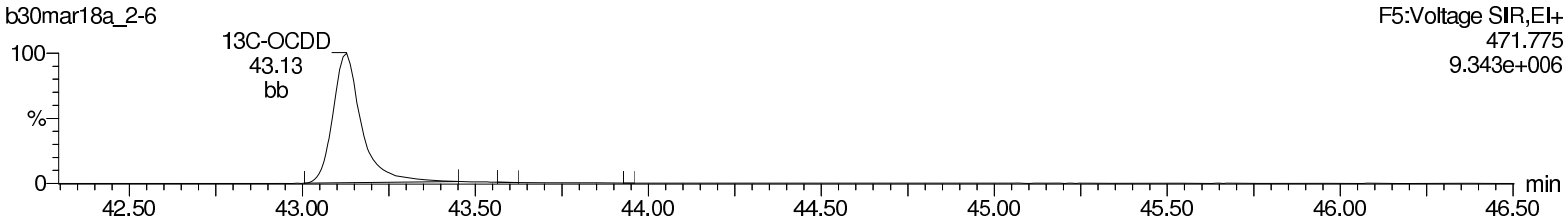
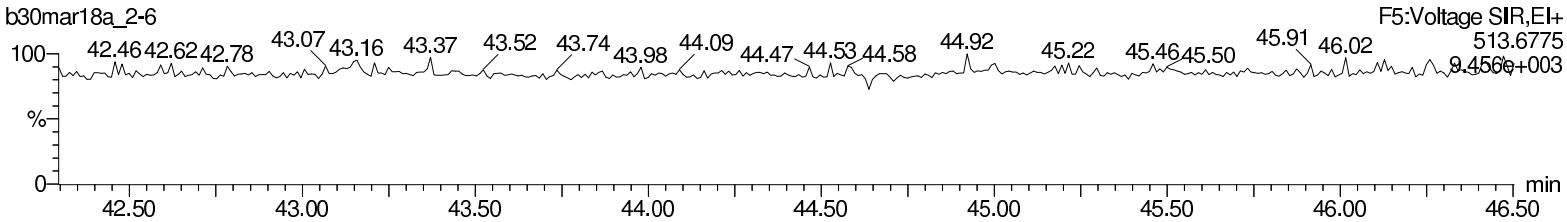
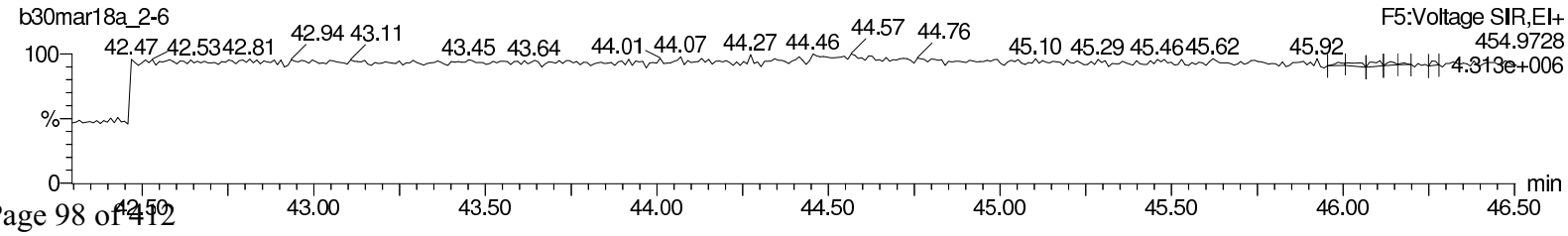


DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123004**	**Date Collected:**	**03/22/2018 09:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0007S010**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 23:26**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-7**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1029.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000616	ng/L	0.000616	0.00972
40321-76-4	1,2,3,7,8-PeCDD	U	0.000478	ng/L	0.000478	0.0486
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000764	ng/L	0.000764	0.0486
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000738	ng/L	0.000738	0.0486
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000773	ng/L	0.000773	0.0486
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0187	ng/L	0.00133	0.0486
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.251	ng/L	0.00274	0.0972
51207-31-9	2,3,7,8-TCDF	U	0.000447	ng/L	0.000447	0.00972
57117-41-6	1,2,3,7,8-PeCDF	U	0.000424	ng/L	0.000424	0.0486
57117-31-4	2,3,4,7,8-PeCDF	U	0.000367	ng/L	0.000367	0.0486
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000455	ng/L	0.000455	0.0486
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000441	ng/L	0.000441	0.0486
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000466	ng/L	0.000466	0.0486
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.000622	ng/L	0.000622	0.0486
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00394	ng/L	0.000484	0.0486
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000698	ng/L	0.000698	0.0486
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0145	ng/L	0.00168	0.0972
41903-57-5	Total TeCDD	U	0.000616	ng/L	0.000616	0.00972
36088-22-9	Total PeCDD	U	0.000478	ng/L	0.000478	0.0486
34465-46-8	Total HxCDD	JK	0.00455	ng/L	0.000738	0.0486
37871-00-4	Total HpCDD		0.052	ng/L	0.00133	0.0486
30402-14-3	Total TeCDF	U	0.000447	ng/L	0.000447	0.00972
30402-15-4	Total PeCDF	JK	0.00101	ng/L	0.000293	0.0486
55684-94-1	Total HxCDF	JK	0.00243	ng/L	0.000441	0.0486
38998-75-3	Total HpCDF	J	0.0118	ng/L	0.000484	0.0486
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000306	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00115	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.81	1.94	ng/L	93.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.52	1.94	ng/L	78.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.63	1.94	ng/L	83.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.70	1.94	ng/L	87.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.74	1.94	ng/L	89.5	(23%-140%)
13C-OCDD		2.93	3.89	ng/L	75.4	(17%-157%)
13C-2,3,7,8-TCDF		1.89	1.94	ng/L	97.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.75	1.94	ng/L	89.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.71	1.94	ng/L	87.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.65	1.94	ng/L	85.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.69	1.94	ng/L	87.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.71	1.94	ng/L	87.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.77	1.94	ng/L	91.1	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123004**	**Date Collected:**	**03/22/2018 09:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0007S010**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 23:26**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-7**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1029.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.57	1.94	ng/L	80.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.60	1.94	ng/L	82.1	(26%-138%)
37Cl-2,3,7,8-TCDD		0.179	0.194	ng/L	92.2	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:10:49 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:11:09 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	8.13e1	1.19e2	2.00e2	30.45	1.003	0.69	NO	0.011	0.0317	2.03e3	1176	1.7	2.65e3	1109	2.4	bd	db
2	12378-PeCDD	6.43e1	6.83e1	1.33e2	33.60	1.000	0.94	YES	0.012	0.0246	1.89e3	1508	1.3	1.29e3	778	1.7	bb	bb
3	123478-HxCDD							NO		0.0393		1325			1485			
4	123678-HxCDD							NO		0.0380		1325			1485			
5	123789-HxCDD							NO		0.0398		1325			1485			
6	1234678-HpCDD	4.41e3	4.14e3	8.55e3	39.22	1.000	1.07	NO	0.963	0.0682	6.46e4	1354	47.7	5.77e4	1772	32.5	bd	bb
7	OCDD	3.89e4	4.55e4	8.43e4	43.14	1.000	0.86	NO	12.891	0.141	4.04e5	1271	318.2	4.22e5	2363	178.6	bd	bd
8	2378-TCDF							NO		0.0230		853			1259			
9	12378-PeCDF	1.38e2	1.62e2	3.00e2	32.82	1.000	0.85	YES	0.017	0.0218	3.36e3	1566	2.1	4.03e3	1605	2.5	bb	bb
10	23478-PeCDF	9.93e1	1.08e2	2.08e2	33.42	1.000	0.92	YES	0.011	0.0189	2.10e3	1566	1.3	2.75e3	1605	1.7	bb	bd
11	123478-HxCDF							NO		0.0234		1220			971			
12	123678-HxCDF							NO		0.0227		1220			971			
13	234678-HxCDF	1.52e2	1.02e2	2.54e2	35.93	1.000	1.49	YES	0.020	0.0240	2.04e3	1220	1.7	2.54e3	971	2.6	MM	MM
14	123789-HxCDF	1.72e2	8.95e1	2.61e2	36.65	1.000	1.92	YES	0.023	0.0320	3.48e3	1220	2.8	2.30e3	971	2.4	bb	bb
15	1234678-HpCDF	9.84e2	1.02e3	2.00e3	38.06	1.001	0.97	NO	0.203	0.0249	1.26e4	745	16.9	1.45e4	680	21.3	bb	bb
16	1234789-HpCDF							NO		0.0359		745			680			
17	OCDF	2.24e3	2.70e3	4.94e3	43.41	1.007	0.83	NO	0.746	0.0867	2.21e4	1322	16.7	3.40e4	947	35.9	bd	bb
18	13C-2378-TCDD	8.71e5	1.14e6	2.01e6	30.38	1.024	0.76	NO	93.037	0.0771	8.76e6	4061	2156.5	1.16e7	2718	4260.9	bb	bb
19	13C-12378-PeCDD	8.71e5	5.55e5	1.43e6	33.60	1.133	1.57	NO	78.249	0.0932	1.79e7	3769	4761.5	1.13e7	3129	3616.8	bb	bb
20	13C-123478-HxCDD	6.25e5	5.05e5	1.13e6	36.05	0.992	1.24	NO	83.692	0.151	1.18e7	8451	1396.1	9.55e6	4552	2097.9	bd	bd
21	13C-123678-HxCDD	7.14e5	5.80e5	1.29e6	36.13	0.994	1.23	NO	87.657	0.138	1.22e7	8451	1438.1	1.00e7	4552	2206.7	db	db
22	13C-1234678-HpCDD	4.53e5	4.33e5	8.86e5	39.21	1.079	1.05	NO	89.515	0.170	5.84e6	5156	1133.1	5.60e6	5604	1000.1	bd	bd
23	13C-OCDD	6.71e5	7.66e5	1.44e6	43.12	1.186	0.88	NO	150.724	0.151	6.63e6	4778	1386.7	7.43e6	4406	1686.7	bd	bd
24	13C-2378-TCDF	1.08e6	1.39e6	2.47e6	29.43	0.992	0.78	NO	97.351	0.110	1.09e7	5977	1817.6	1.42e7	5367	2653.4	bb	bb
25	13C-12378-PeCDF	1.28e6	8.34e5	2.11e6	32.82	1.107	1.53	NO	89.813	0.179	2.68e7	11526	2328.4	1.72e7	5578	3076.3	bb	bd
26	13C-23478-PeCDF	1.25e6	8.01e5	2.05e6	33.41	1.127	1.56	NO	87.782	0.180	2.76e7	11526	2396.2	1.73e7	5578	3108.1	bb	bb
27	13C-123478-HxCDF	4.13e5	8.16e5	1.23e6	35.38	0.973	0.51	NO	85.152	0.128	7.89e6	5265	1499.3	1.54e7	6553	2343.1	bd	bd
28	13C-123678-HxCDF	4.95e5	9.63e5	1.46e6	35.47	0.976	0.51	NO	87.172	0.111	8.78e6	5265	1667.4	1.75e7	6553	2666.1	db	db
29	13C-234678-HxCDF	4.25e5	8.21e5	1.25e6	35.93	0.988	0.52	NO	87.886	0.130	7.54e6	5265	1432.1	1.46e7	6553	2225.7	bb	bb
30	13C-123789-HxCDF	3.96e5	7.86e5	1.18e6	36.65	1.008	0.50	NO	91.103	0.143	6.02e6	5265	1142.8	1.20e7	6553	1825.4	bb	bb
31	13C-1234678-HpCDF	2.78e5	6.24e5	9.01e5	38.03	1.046	0.44	NO	80.734	0.134	4.02e6	4174	963.9	9.30e6	5362	1735.0	bd	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:10:49 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:11:09 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.21e5	5.08e5	7.29e5	39.82	1.095	0.44	NO	82.114	0.168	2.71e6	4174	649.9	6.09e6	5362	1136.0	bd	bd
33	13C-1234-TCDD	8.18e5	1.08e6	1.89e6	29.65	0.000	0.76	NO	100.000	0.0881	8.31e6	4061	2046.1	1.09e7	2718	3995.5	bb	bb
34	13C-123789-HxCDD	7.25e5	5.89e5	1.31e6	36.35	0.000	1.23	NO	100.000	0.155	1.16e7	8451	1369.9	9.48e6	4552	2081.9	bd	bd
35	37Cl-2378-TCDD	2.03e5		2.03e5	30.39	1.025			9.216	0.0126	2.11e6	1123	1879.3				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:10:49 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:11:09 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	8.13e1	1.19e2	2.00e2	30.45	0.69	NO	0.011	0.0317	2.03e3	1176	1.7	2.65e3	1109	2.4	bd	db
2	Total-tetradioxins	1.45e2	1.01e2	2.46e2	29.46	1.44	YES	0.014	0.0317	2.85e3	1176	2.4	1.27e3	1109	1.1	db	bb
3	Total-tetradioxins	6.74e1	1.14e2	1.82e2	26.25	0.59	YES	0.010	0.0317	2.28e3	1176	1.9	2.05e3	1109	1.8	bb	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	6.43e1	6.83e1	1.33e2	33.60	0.94	YES	0.012	0.0246	1.89e3	1508	1.3	1.29e3	778	1.7	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-hexadioxins	5.63e2	4.81e2	1.04e3	34.89	1.17	NO	0.104	0.0390	1.21e4	1325	9.1	8.25e3	1485	5.6	bb	bb
2	Total-hexadioxins	2.71e2	8.05e1	3.52e2	35.93	3.37	YES	0.035	0.0390	8.19e3	1325	6.2	3.33e3	1485	2.2	bb	bb
3	Total-hexadioxins	7.82e2	5.23e2	1.31e3	35.51	1.50	YES	0.130	0.0390	1.09e4	1325	8.2	1.06e4	1485	7.2	MM	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	1234678-HpCDD	4.41e3	4.14e3	8.55e3	39.22	1.07	NO	0.963	0.0682	6.46e4	1354	47.7	5.77e4	1772	32.5	bd	bb
2	Total-heptadioxins	7.73e3	7.49e3	1.52e4	38.37	1.03	NO	1.713	0.0682	1.15e5	1354	85.0	1.15e5	1772	64.8	bb	bb
3	Total-heptadioxins	4.76e2	2.54e2	7.30e2	38.03	1.87	YES	0.082	0.0682	9.79e3	1354	7.2	6.66e3	1772	3.8	bb	bb

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	7.33e1	7.62e1	1.50e2	29.64	0.96	YES	0.007	0.0230	2.77e3	853	3.2	2.42e3	1259	1.9	bb	dd

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:10:49 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:11:09 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	4.31e2	5.07e2	9.38e2	31.32	0.85	YES	0.052	0.0151	9.26e3	839	11.0	6.06e3	1529	4.0	bb	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	23478-PeCDF	9.93e1	1.08e2	2.08e2	33.42	0.92	YES	0.011	0.0189	2.10e3	1566	1.3	2.75e3	1605	1.7	bb	bd
2	12378-PeCDF	1.38e2	1.62e2	3.00e2	32.82	0.85	YES	0.017	0.0218	3.36e3	1566	2.1	4.03e3	1605	2.5	bb	bb
3	Total-pentafurans	6.40e1	8.75e1	1.51e2	32.61	0.73	YES	0.008	0.0202	2.10e3	1566	1.3	1.89e3	1605	1.2	db	bb
4	Total-pentafurans	2.51e2	1.39e2	3.89e2	32.28	1.81	YES	0.021	0.0202	4.46e3	1566	2.8	3.89e3	1605	2.4	bb	db

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDF	1.72e2	8.95e1	2.61e2	36.65	1.92	YES	0.023	0.0320	3.48e3	1220	2.8	2.30e3	971	2.4	bb	bb
2	234678-HxCDF	1.52e2	1.02e2	2.54e2	35.93	1.49	YES	0.020	0.0240	2.04e3	1220	1.7	2.54e3	971	2.6	MM	MM
3	Total-hexafurans	3.78e2	3.81e2	7.59e2	35.02	0.99	YES	0.061	0.0252	8.49e3	1220	7.0	7.61e3	971	7.8	bb	bb
4	Total-hexafurans	4.31e2	3.70e2	8.01e2	34.62	1.17	NO	0.064	0.0252	9.75e3	1220	8.0	7.41e3	971	7.6	bb	bb
5	Total-hexafurans	7.18e1	5.70e1	1.29e2	34.51	1.26	NO	0.010	0.0252	2.91e3	1220	2.4	3.67e3	971	3.8	db	db
6	Total-hexafurans	5.26e1	6.50e1	1.18e2	34.47	0.81	YES	0.009	0.0252	2.03e3	1220	1.7	2.06e3	971	2.1	bd	bd

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	1.86e3	1.76e3	3.62e3	38.54	1.06	NO	0.403	0.0298	2.67e4	745	35.8	2.56e4	680	37.7	bb	bb
2	1234678-HpCDF	9.84e2	1.02e3	2.00e3	38.06	0.97	NO	0.203	0.0249	1.26e4	745	16.9	1.45e4	680	21.3	bb	bb

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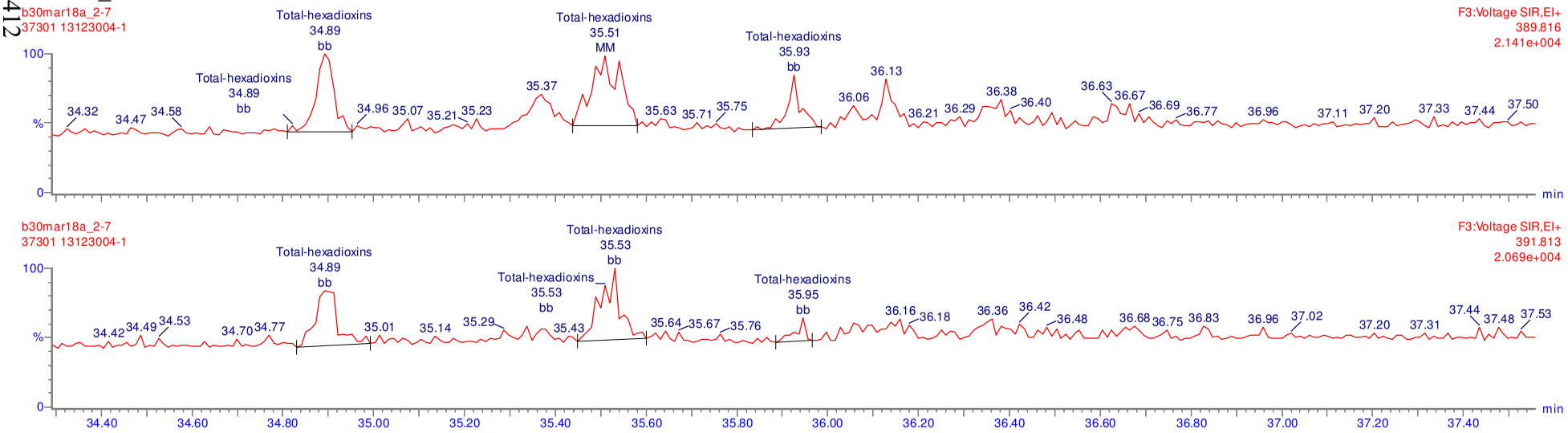
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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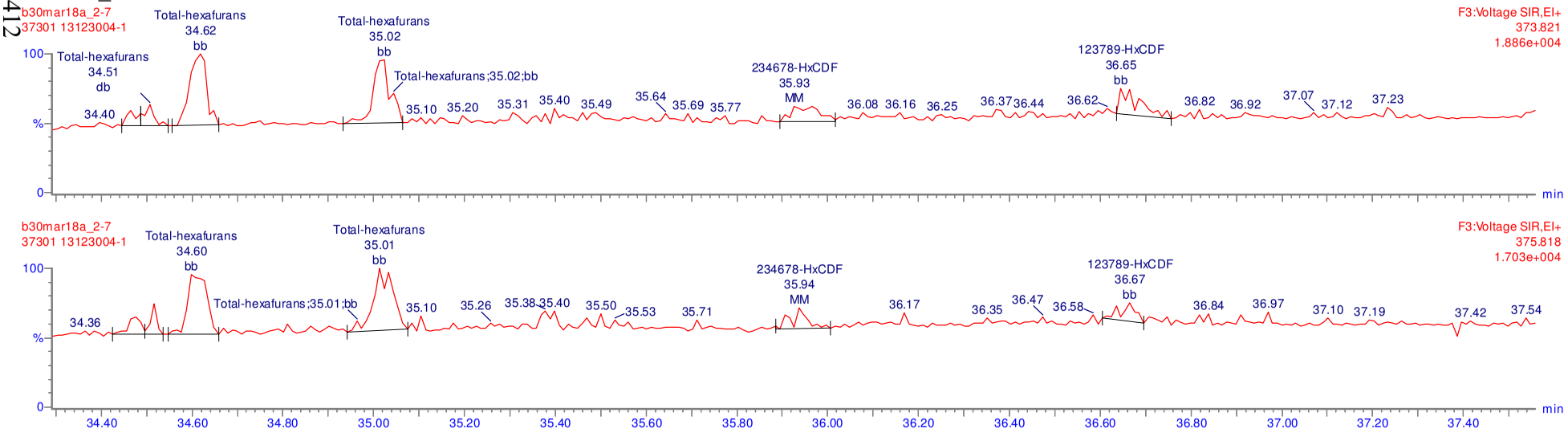
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

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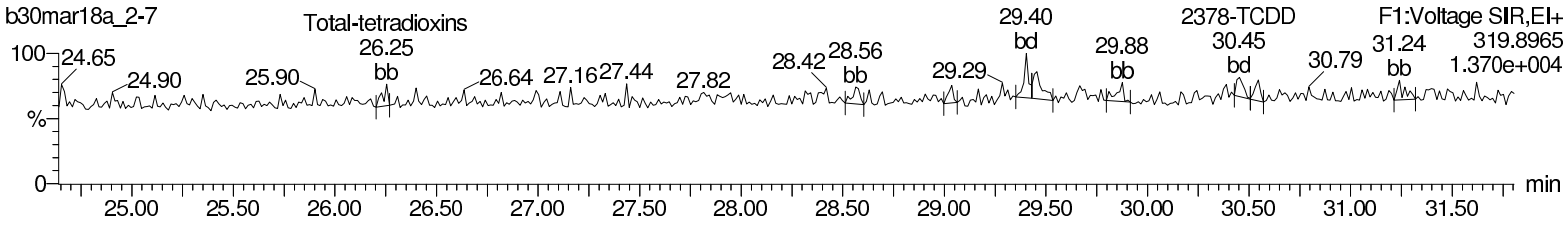

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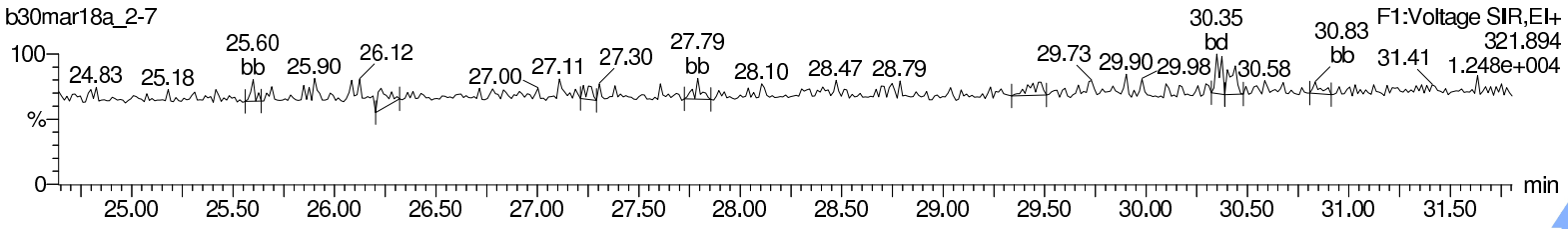

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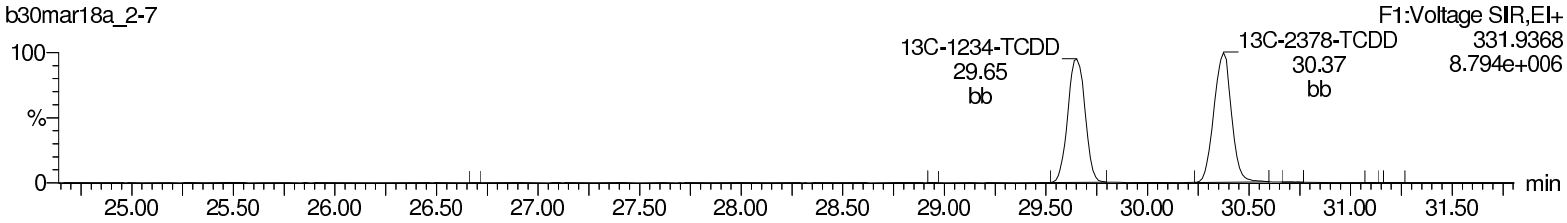

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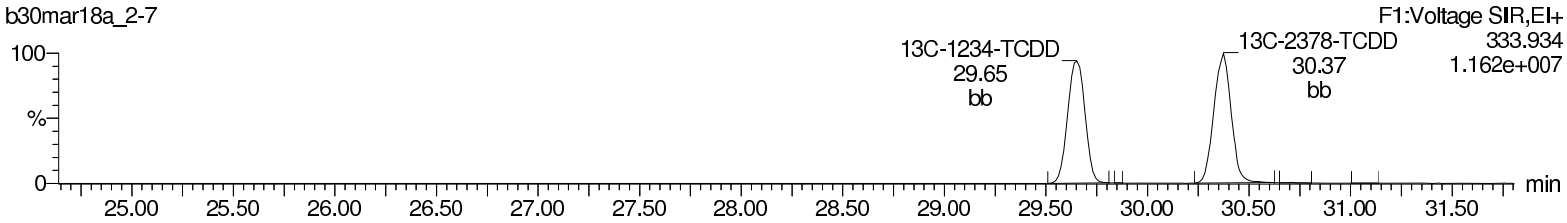

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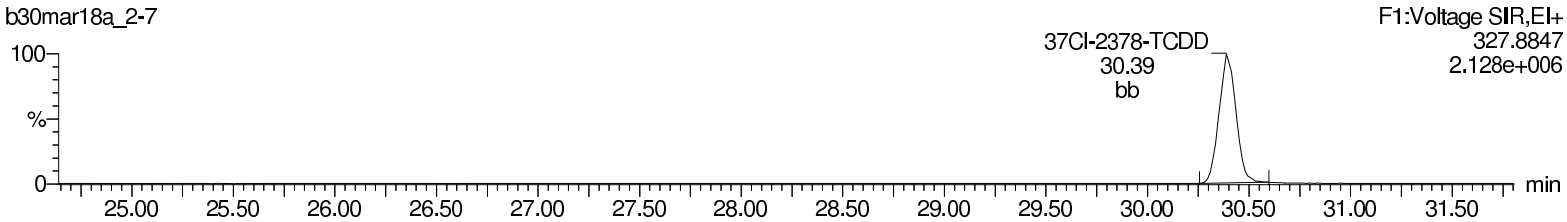

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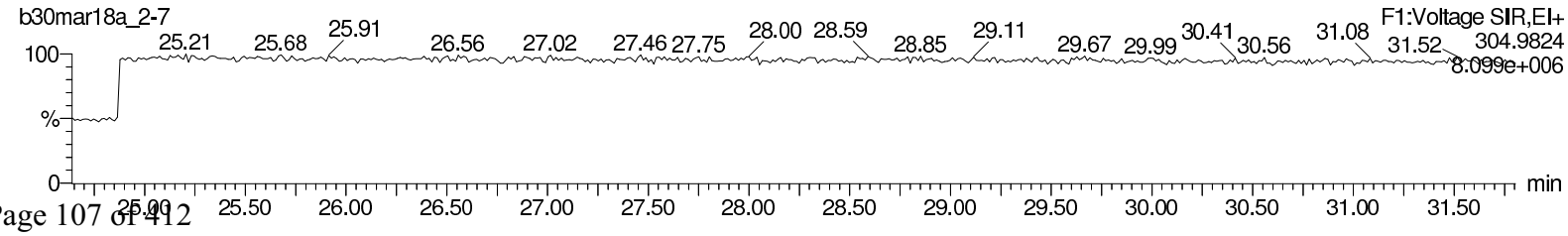

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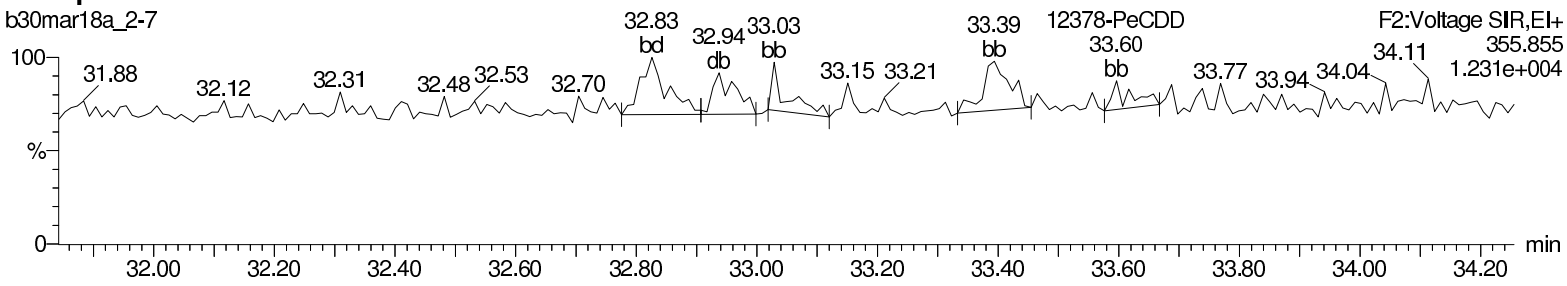
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



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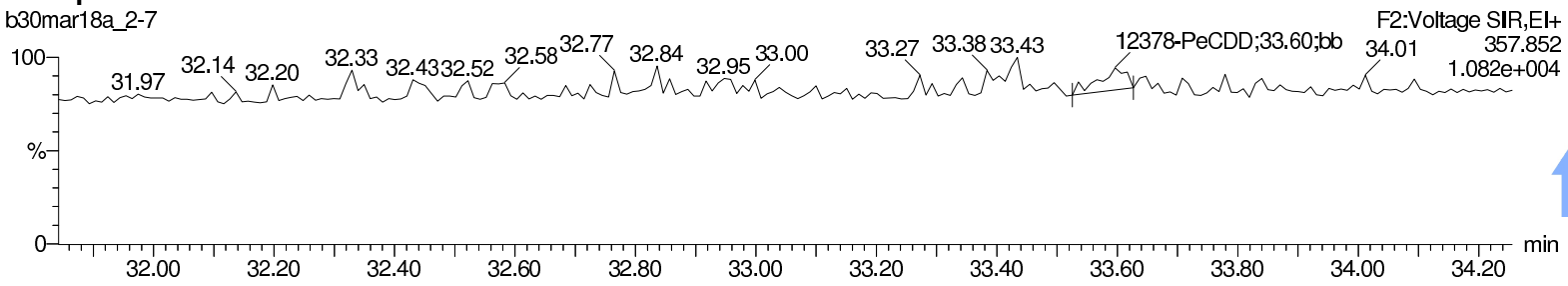

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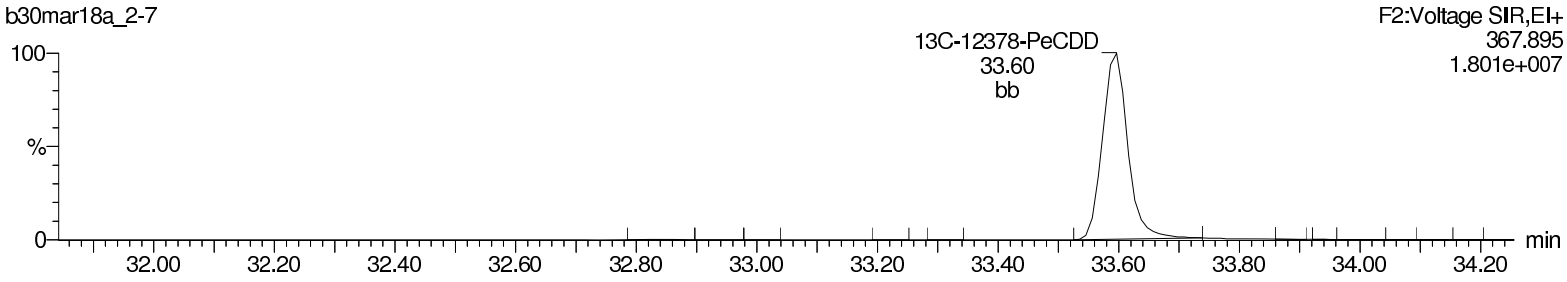

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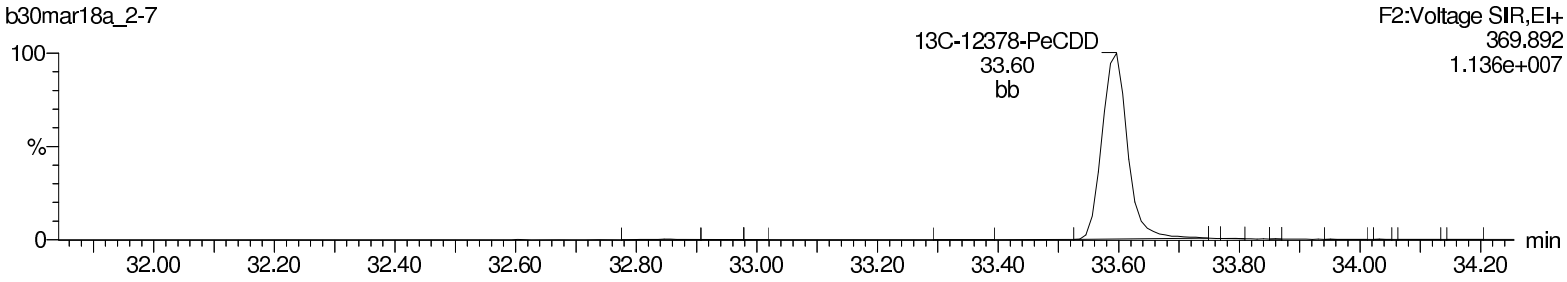

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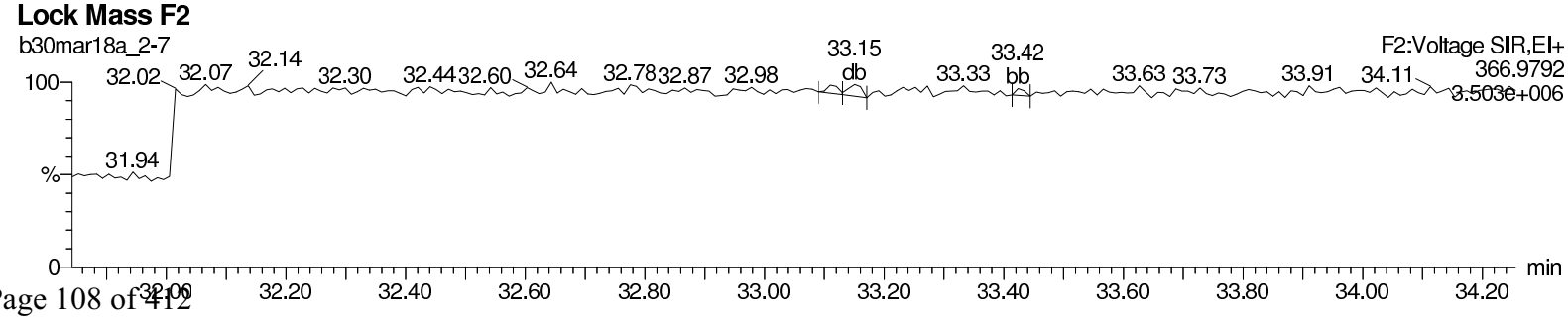

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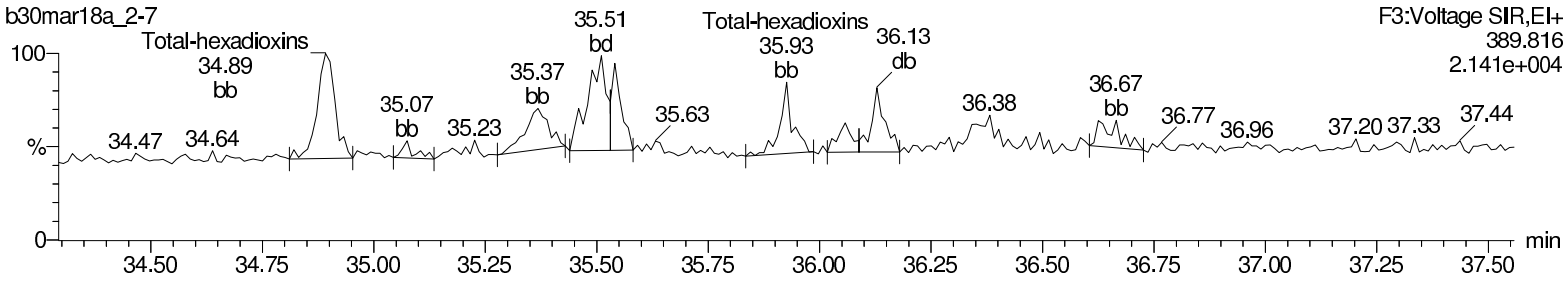
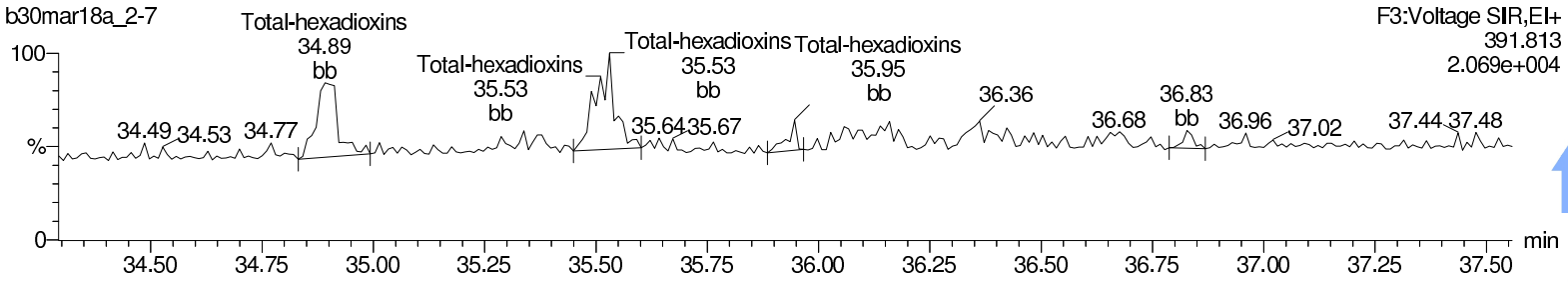
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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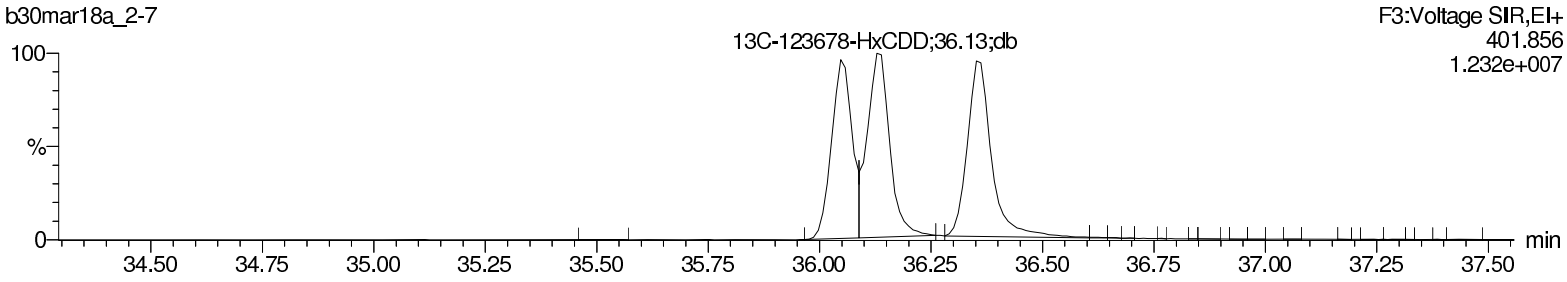

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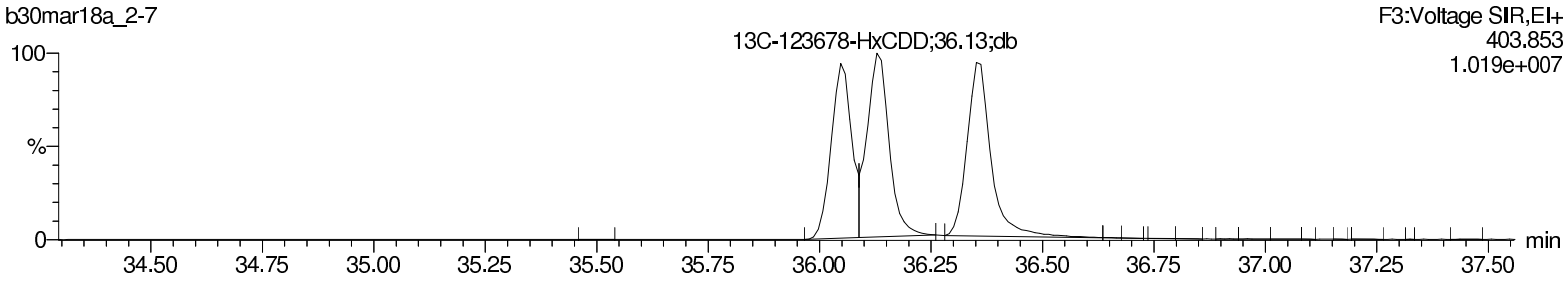

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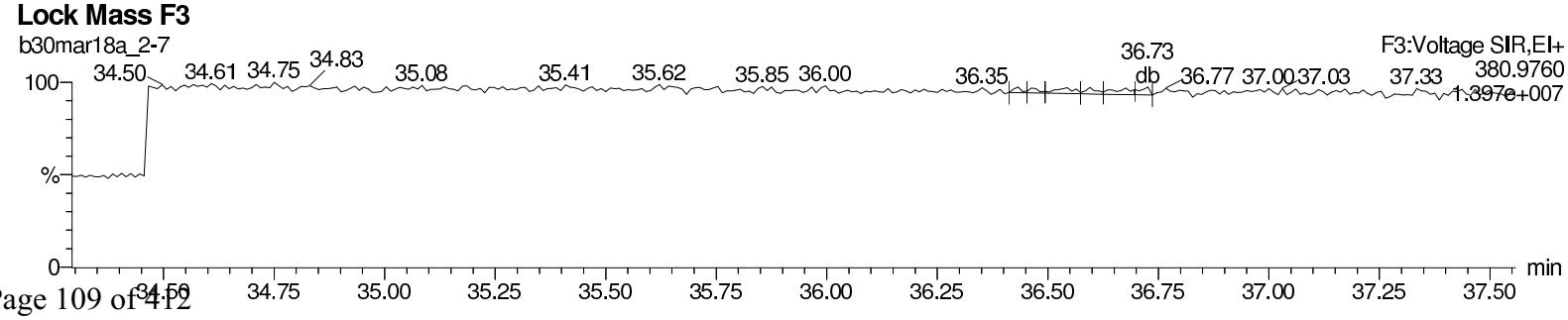

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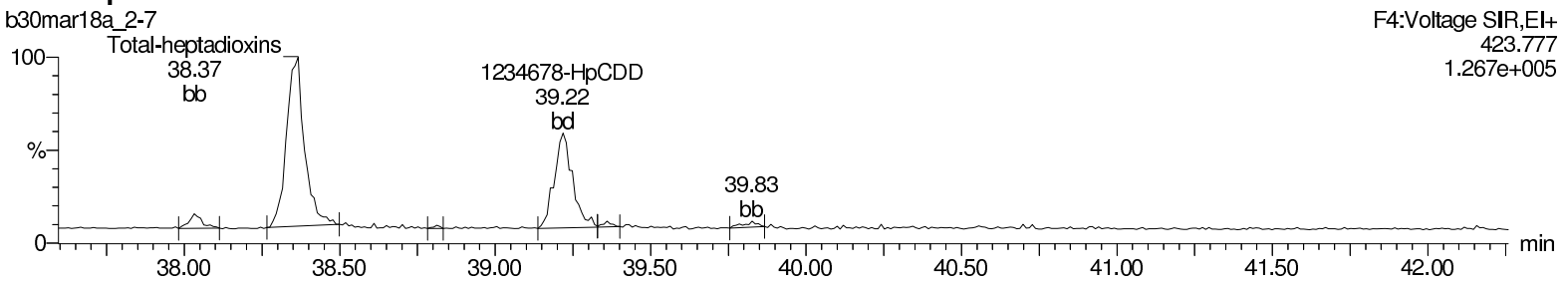
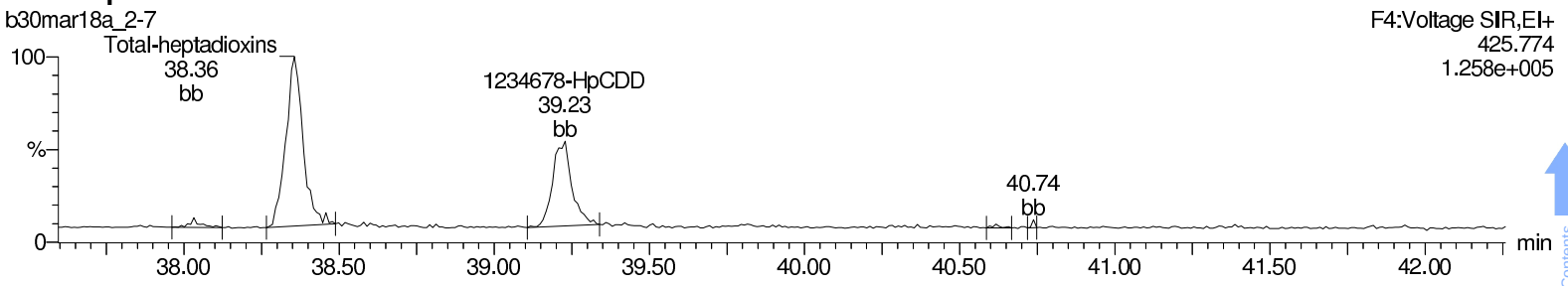
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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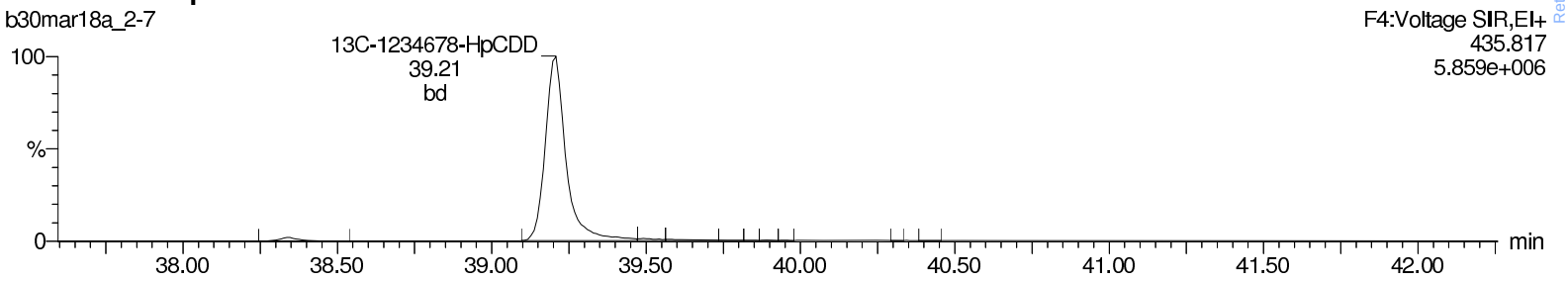

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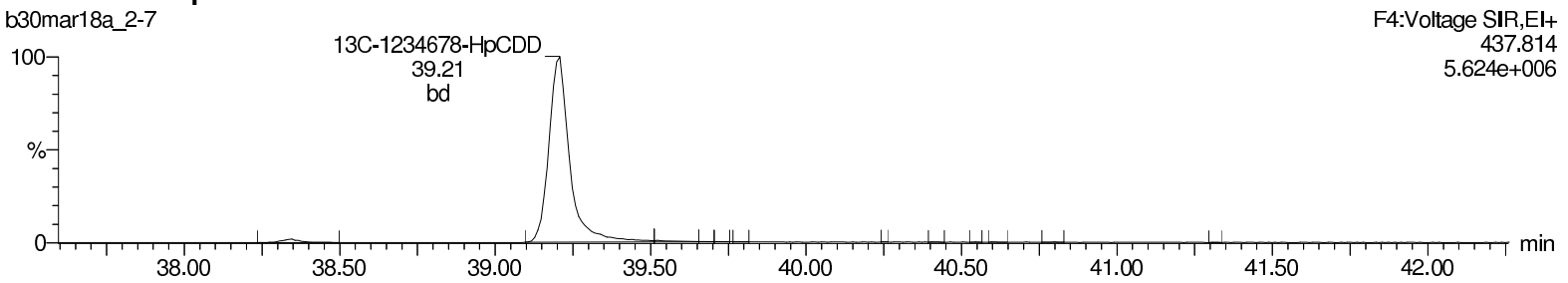

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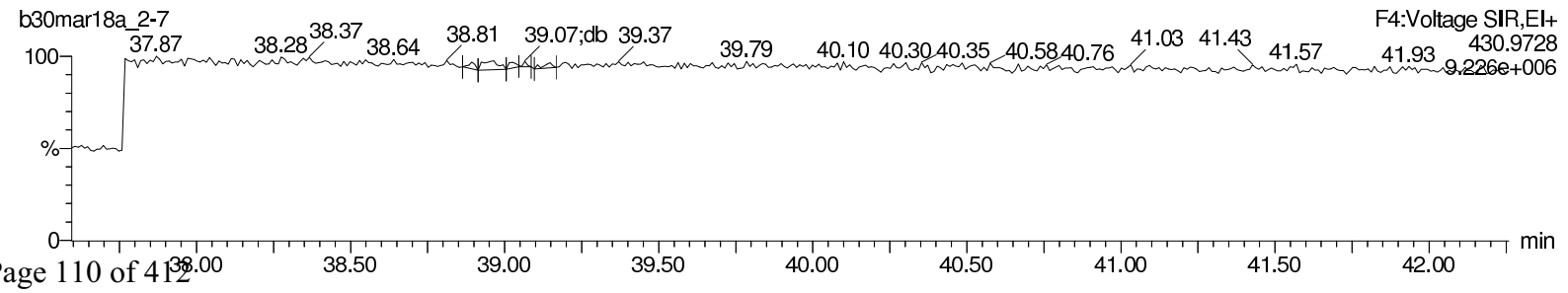

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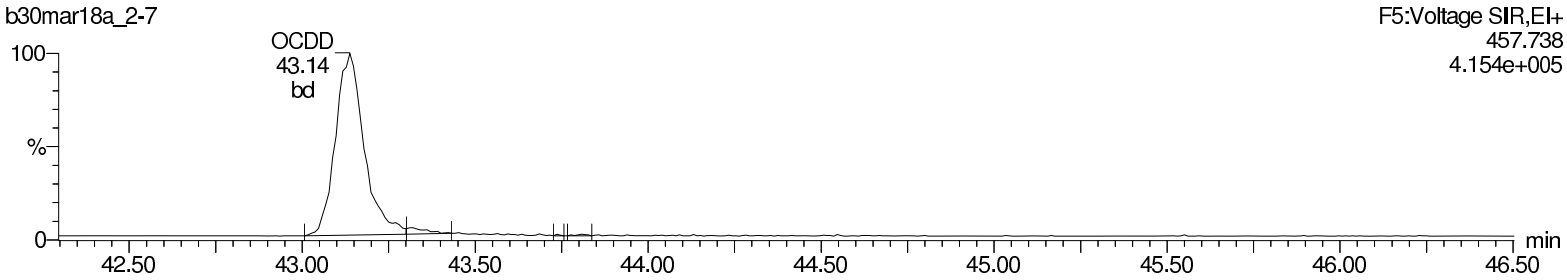
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



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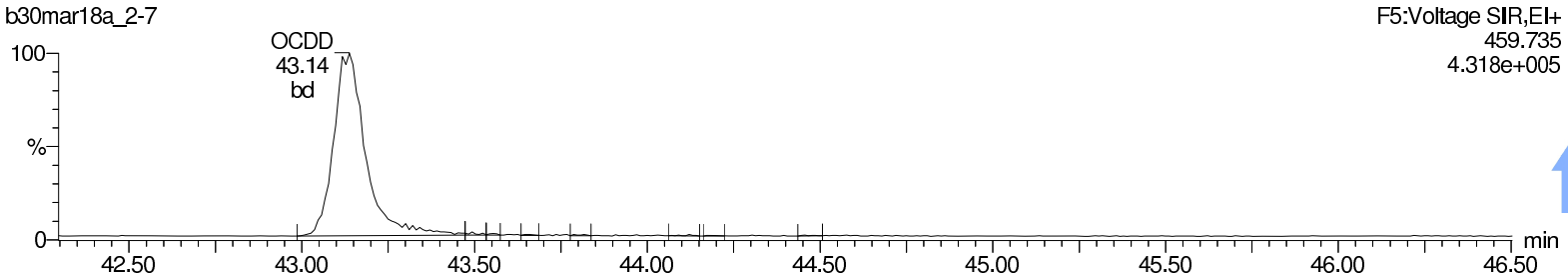

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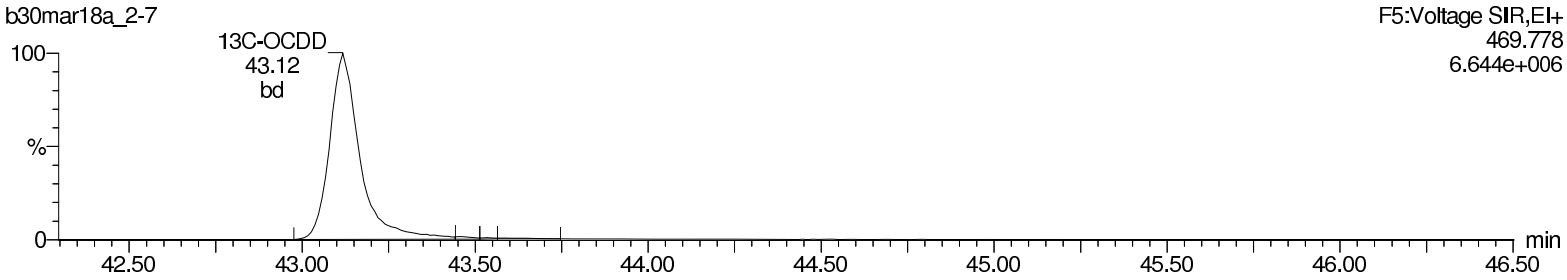

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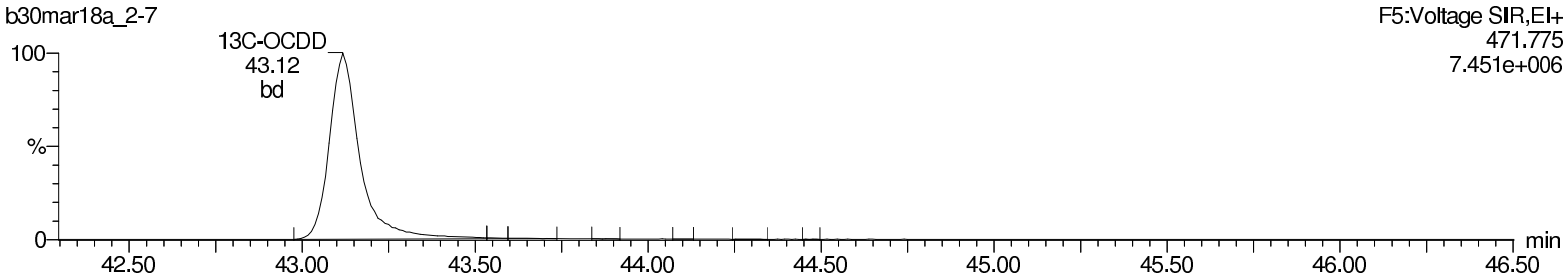

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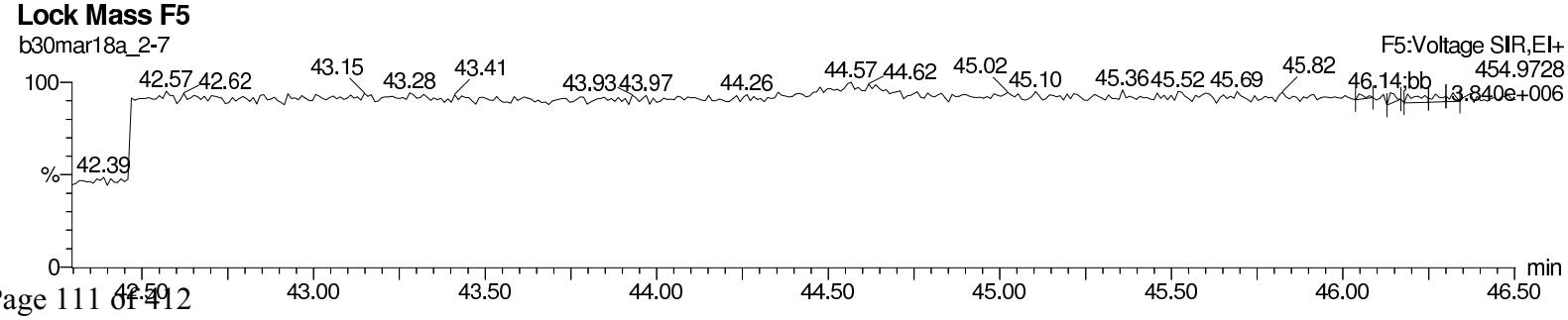

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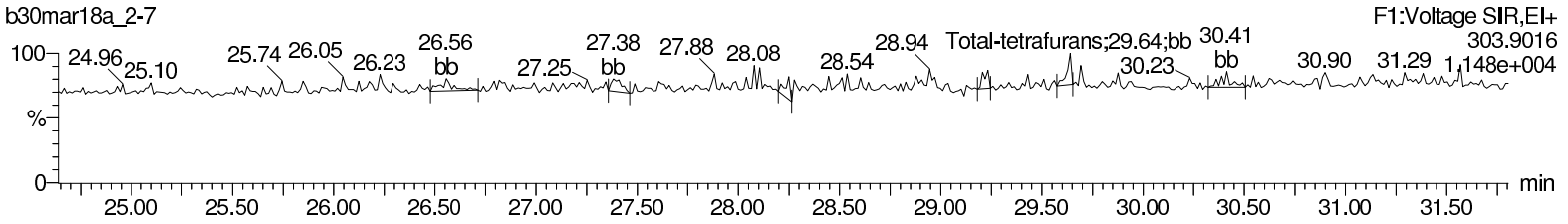
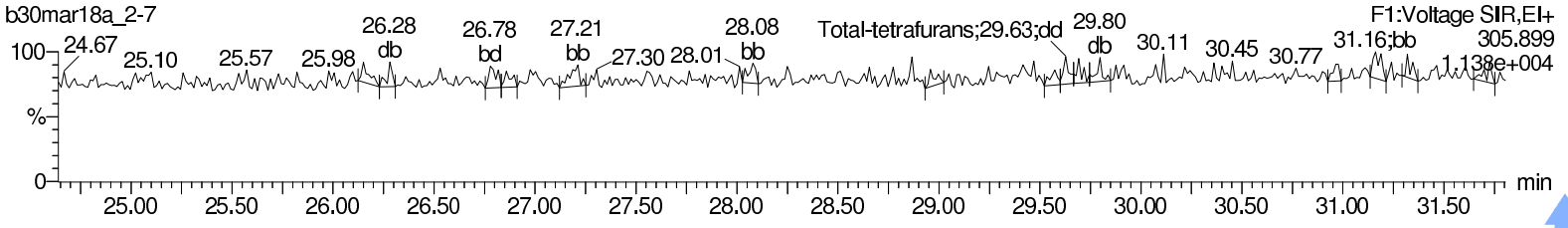
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-tetrafurans



Total-tetrafurans



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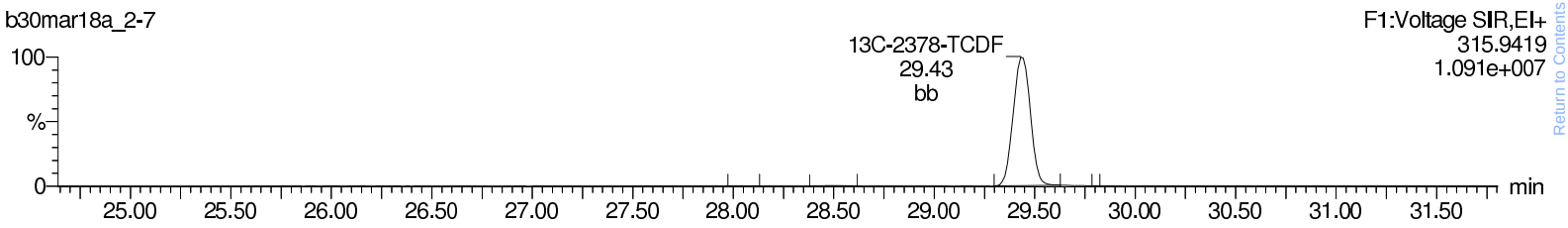

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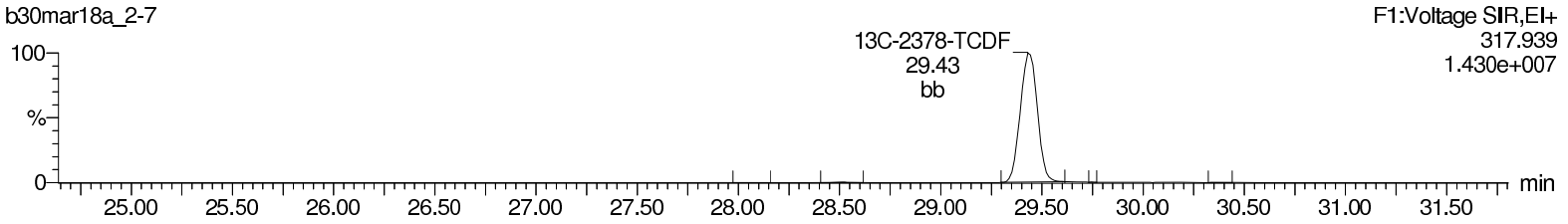

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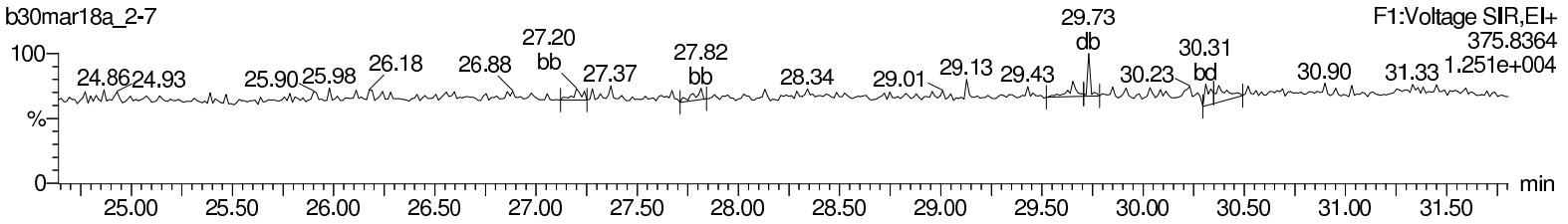

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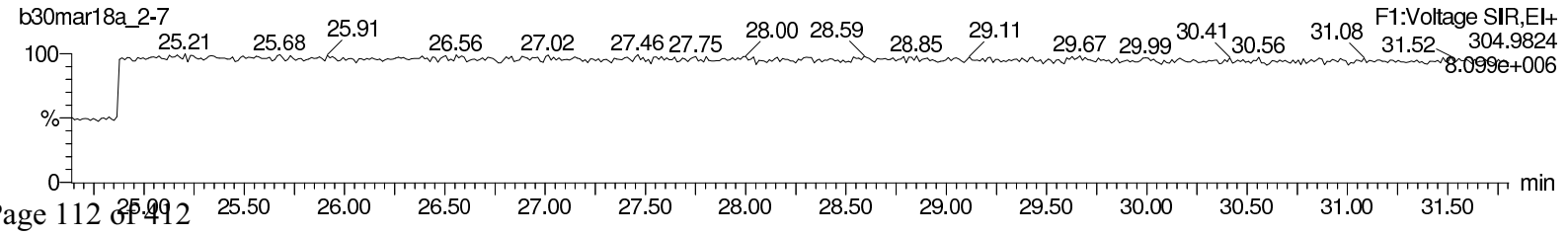

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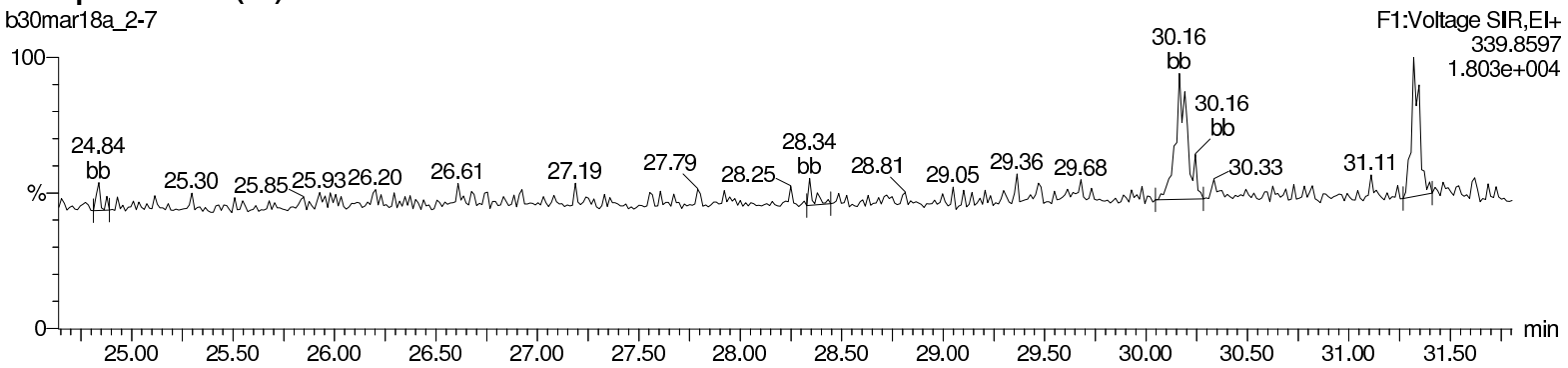
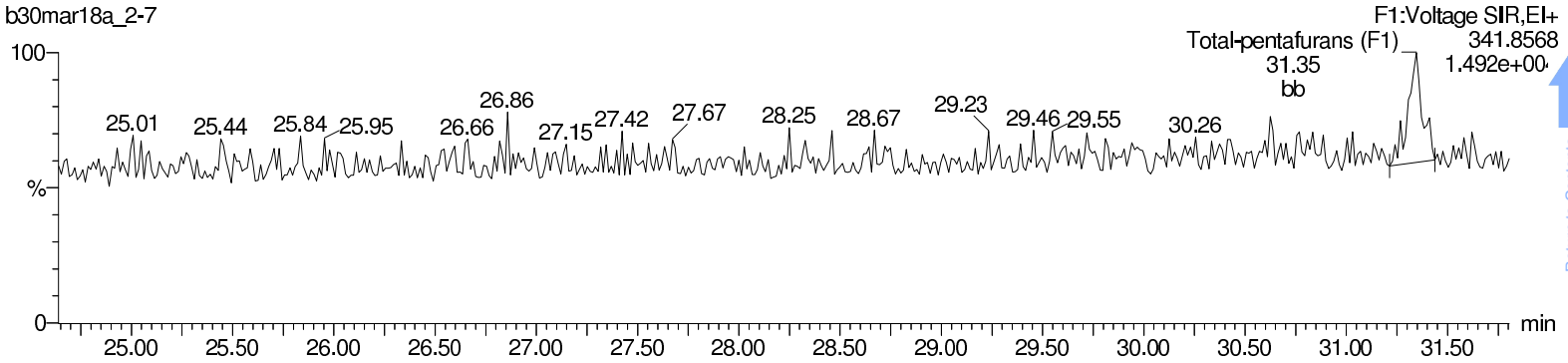
Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

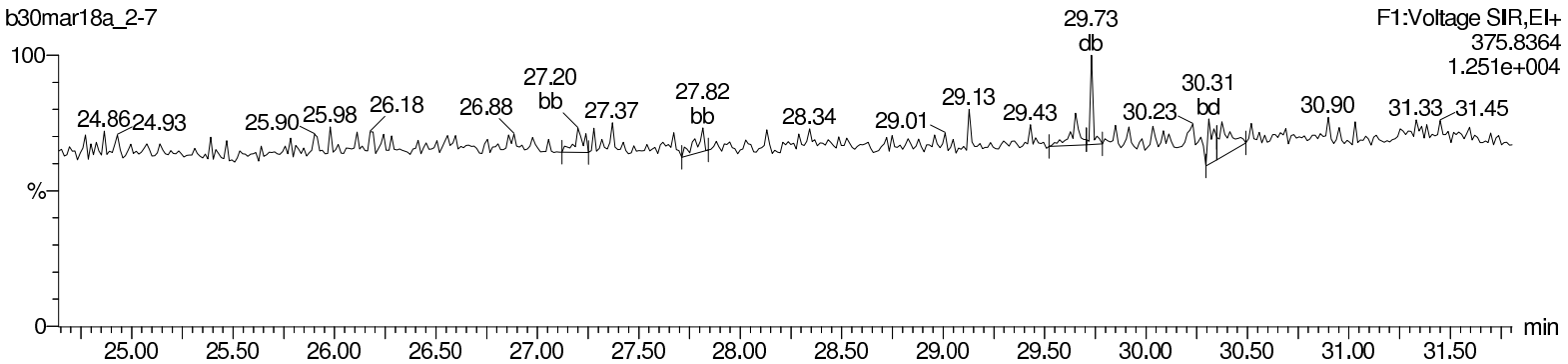
Total-pentafurans (F1)



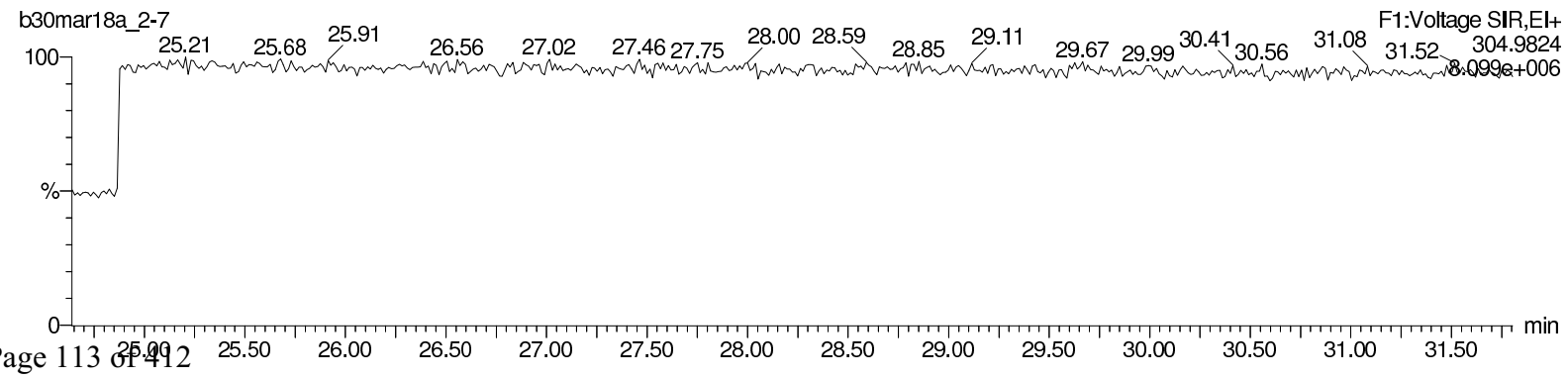
Total-pentafurans (F1)



HxDPE



Lock Mass F1

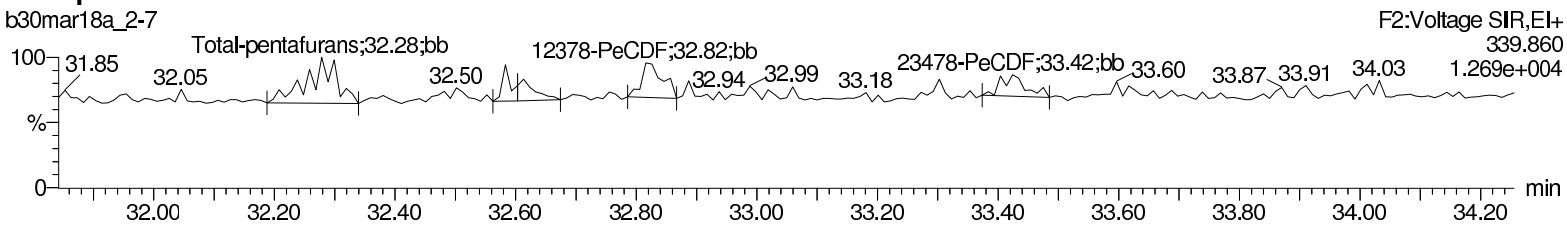


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

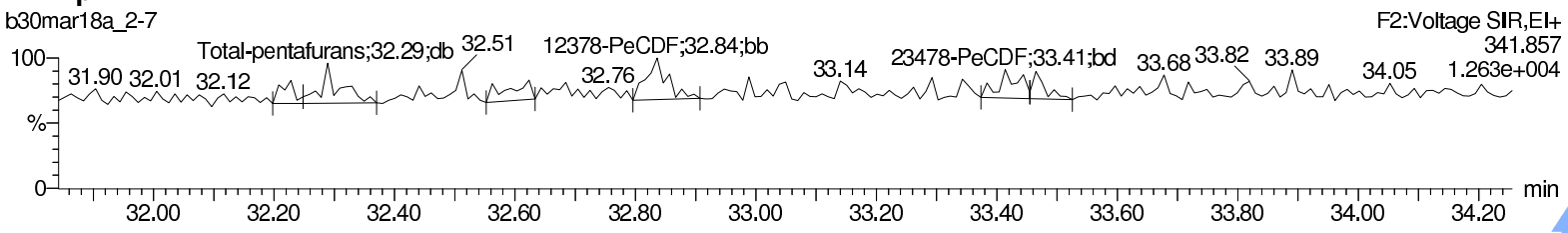
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

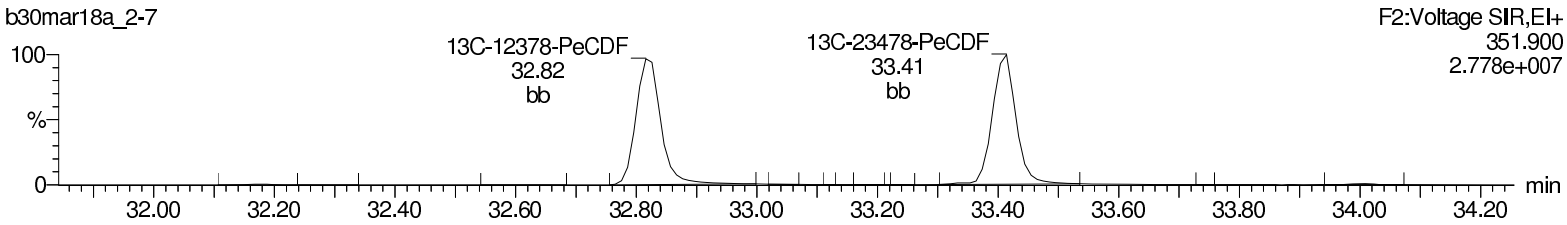
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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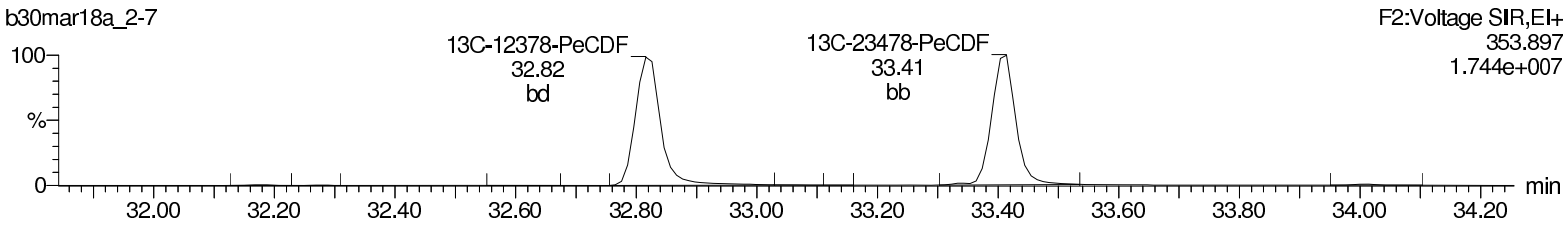
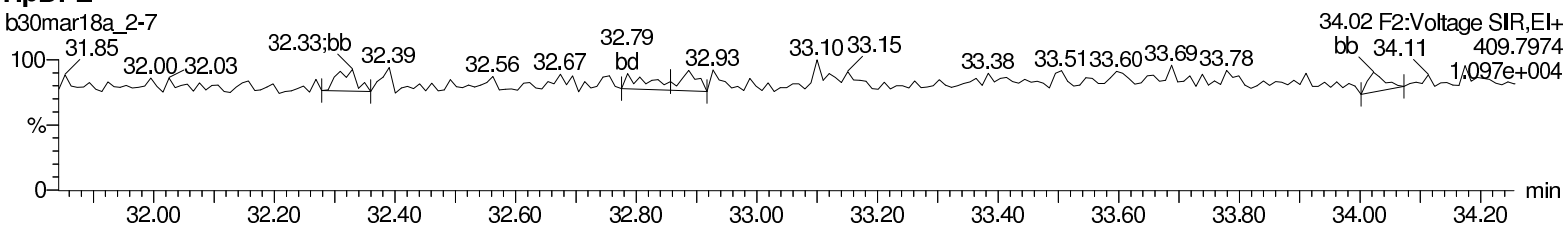
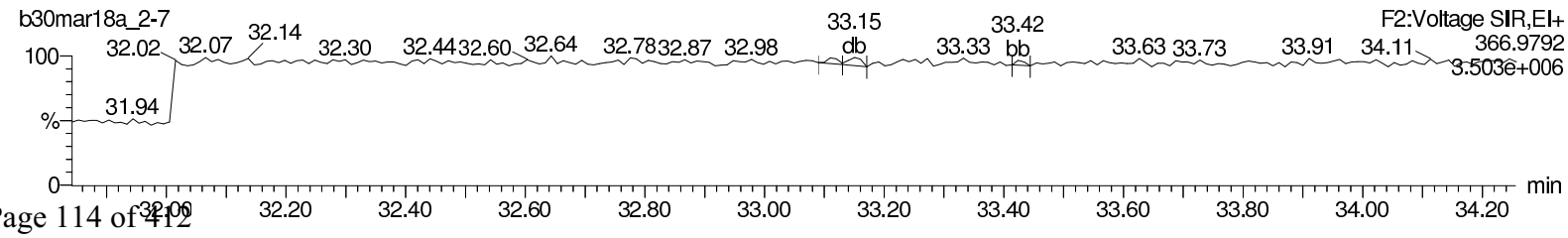


HpDPE



Lock Mass F2

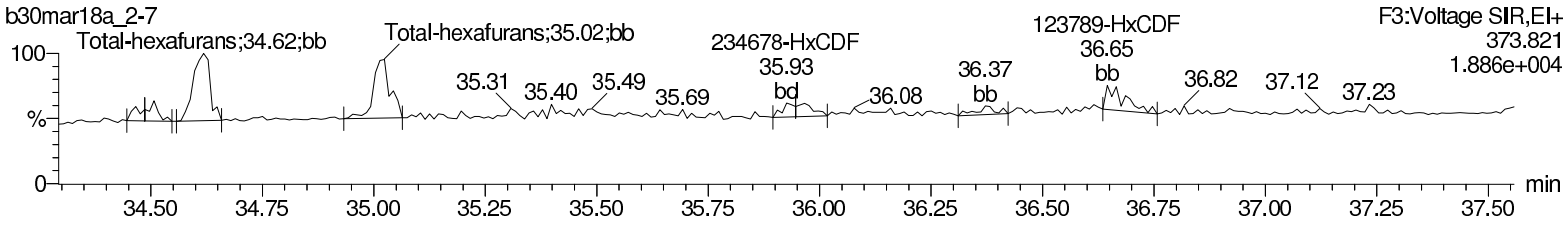


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

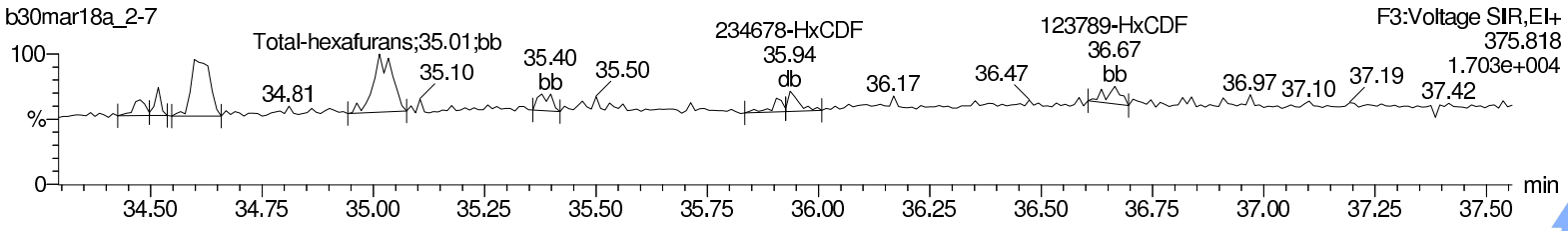
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

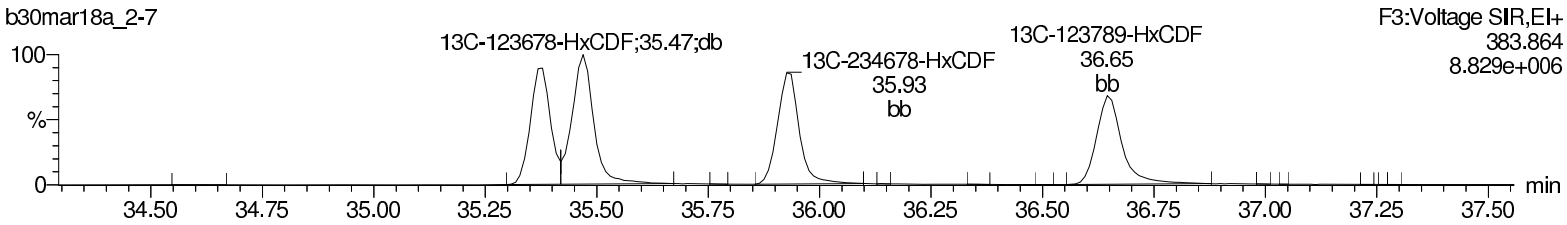
Total-hexafurans



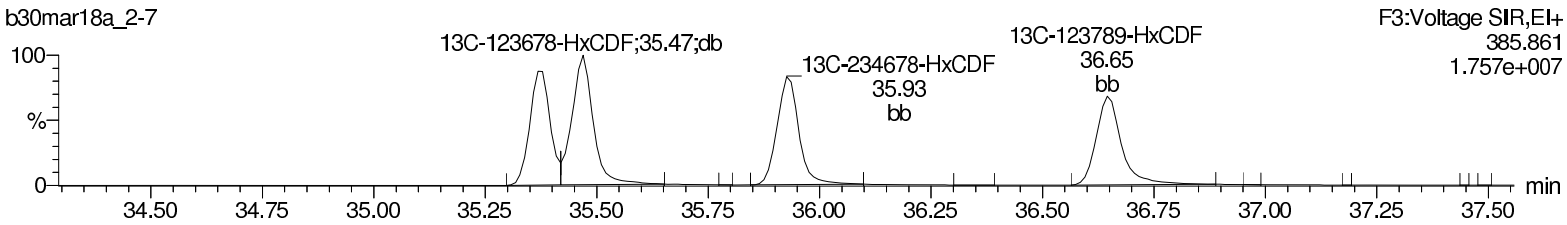
Total-hexafurans



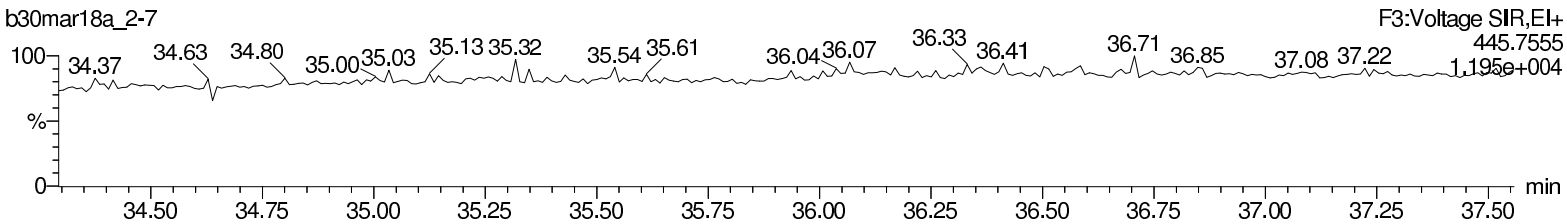
13C-123478-HxCDF



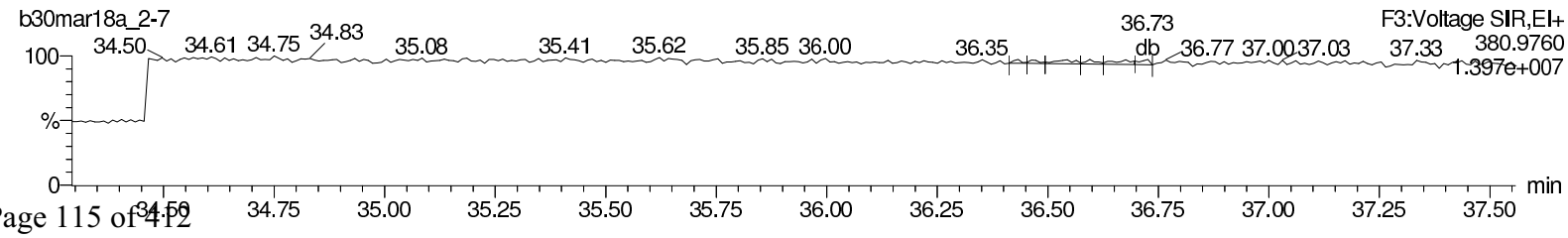
13C-123478-HxCDF



OcDPE



Lock Mass F3

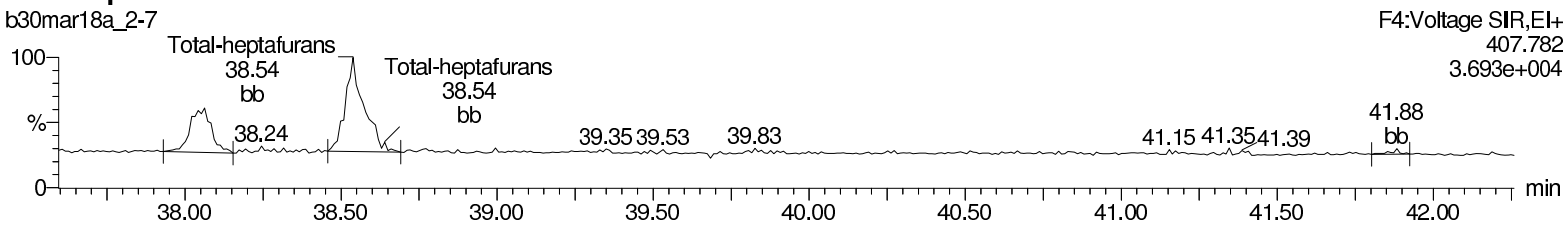


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

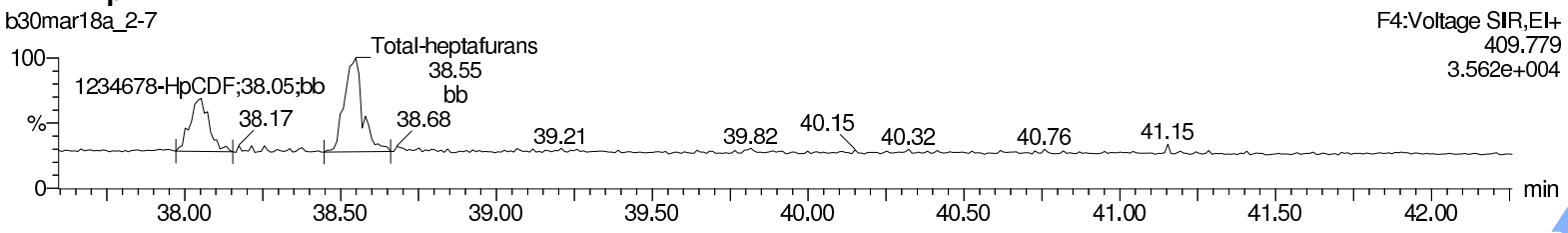
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

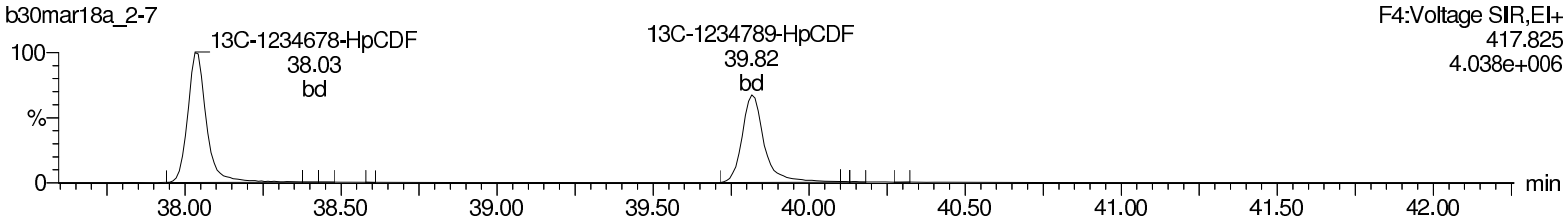
Total-heptafurans



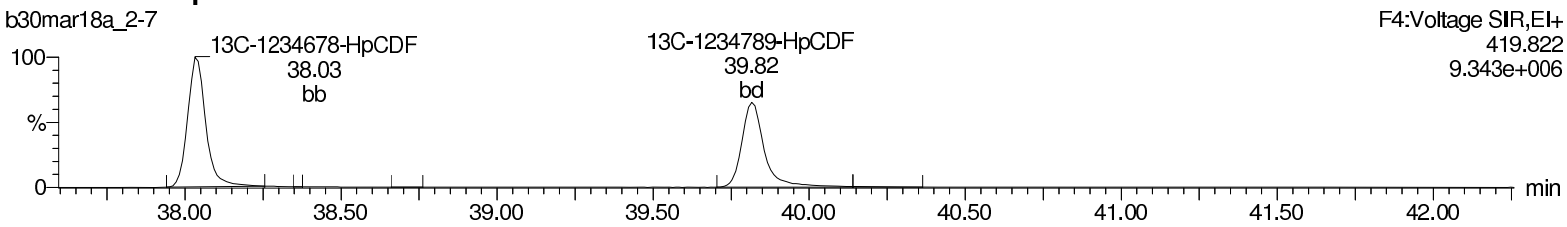
Total-heptafurans



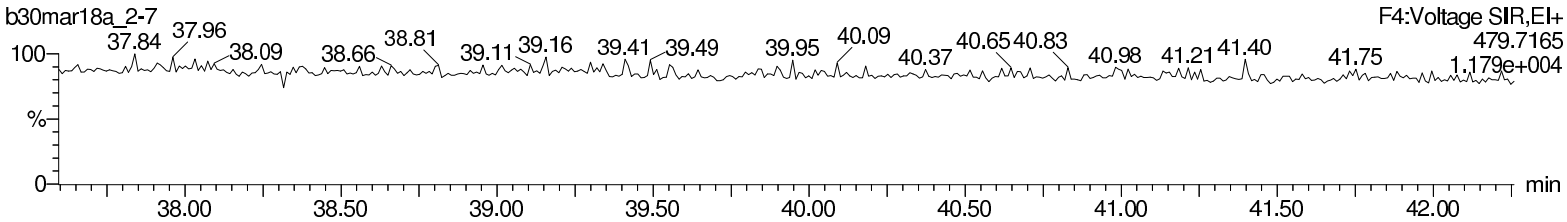
13C-1234678-HpCDF



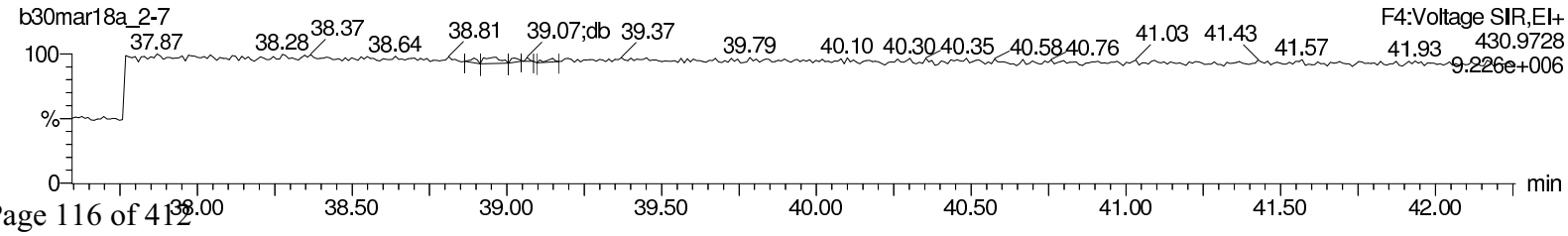
13C-1234678-HpCDF



NoDPE



Lock Mass F4

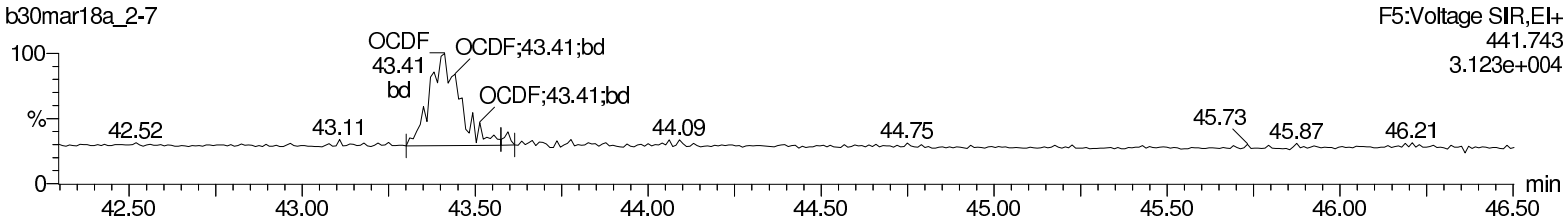


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

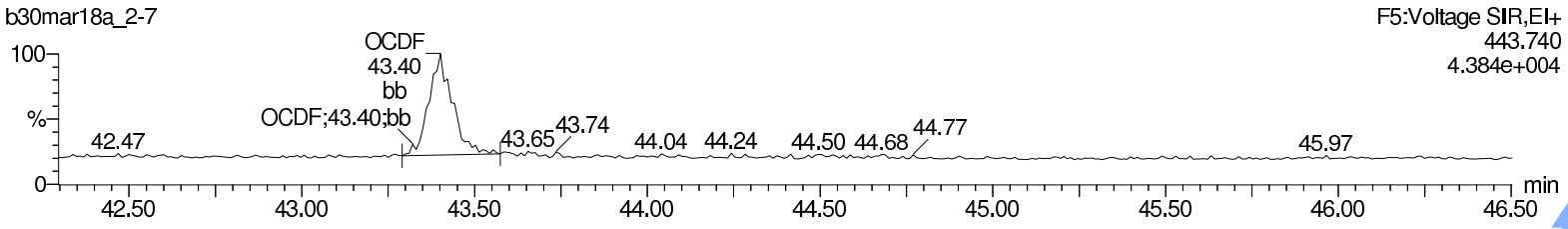
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

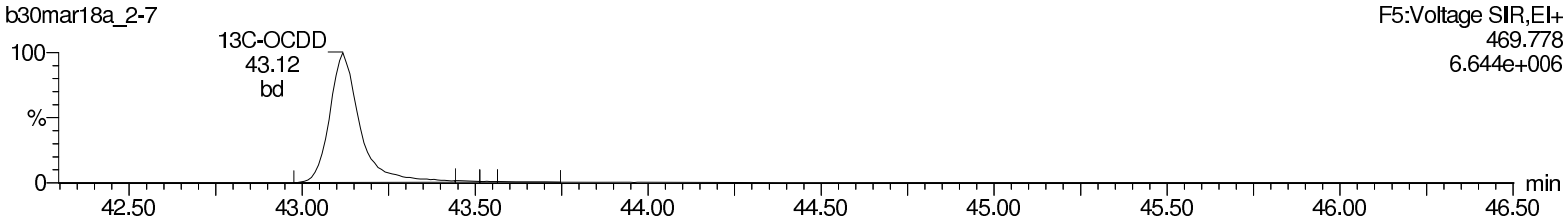
OCDF



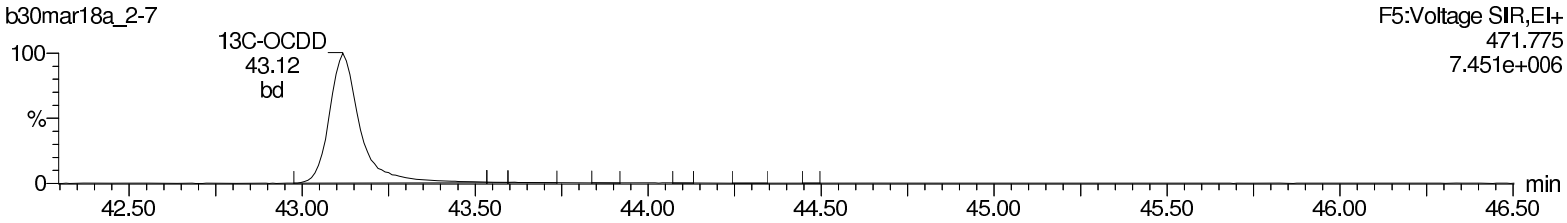
OCDF



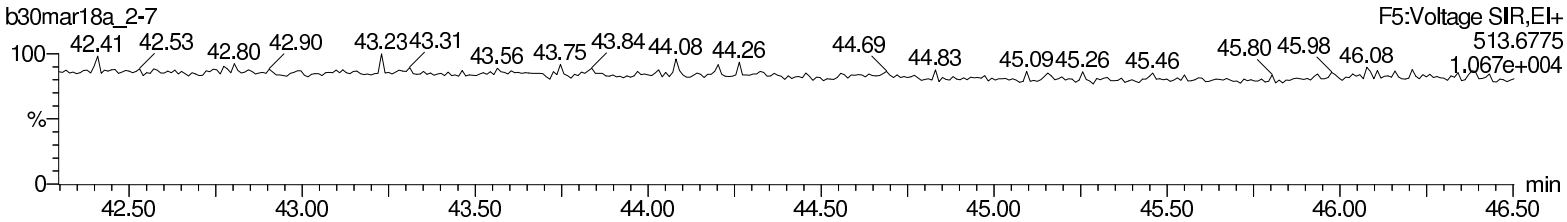
13C-OCDD



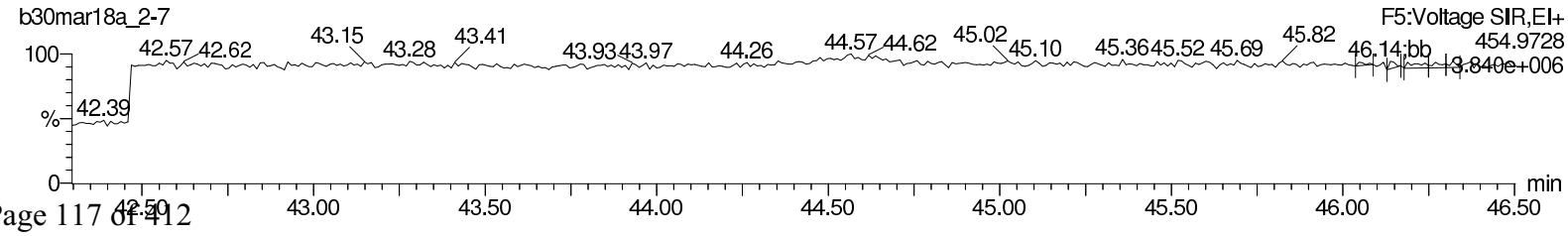
13C-OCDD



DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123005**	**Date Collected:**	**03/22/2018 09:20**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0008S013**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 00:15**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-8**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1053.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000678	ng/L	0.000678	0.00949
40321-76-4	1,2,3,7,8-PeCDD	U	0.000446	ng/L	0.000446	0.0475
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000636	ng/L	0.000636	0.0475
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000575	ng/L	0.000575	0.0475
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000623	ng/L	0.000623	0.0475
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.00697	ng/L	0.000892	0.0475
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.105	ng/L	0.00156	0.0949
51207-31-9	2,3,7,8-TCDF	U	0.000516	ng/L	0.000516	0.00949
57117-41-6	1,2,3,7,8-PeCDF	U	0.000298	ng/L	0.000298	0.0475
57117-31-4	2,3,4,7,8-PeCDF	U	0.00027	ng/L	0.00027	0.0475
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000372	ng/L	0.000372	0.0475
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000338	ng/L	0.000338	0.0475
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000382	ng/L	0.000382	0.0475
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.000778	ng/L	0.000509	0.0475
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	0.00139	ng/L	0.000361	0.0475
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000562	ng/L	0.000562	0.0475
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.00617	ng/L	0.00135	0.0949
41903-57-5	Total TeCDD	U	0.000678	ng/L	0.000678	0.00949
36088-22-9	Total PeCDD	U	0.000446	ng/L	0.000446	0.0475
34465-46-8	Total HxCDD	JK	0.0023	ng/L	0.000575	0.0475
37871-00-4	Total HpCDD	JK	0.0189	ng/L	0.000892	0.0475
30402-14-3	Total TeCDF	U	0.000516	ng/L	0.000516	0.00949
30402-15-4	Total PeCDF	U	0.00027	ng/L	0.00027	0.0475
55684-94-1	Total HxCDF	JK	0.00125	ng/L	0.000338	0.0475
38998-75-3	Total HpCDF	JK	0.00372	ng/L	0.000361	0.0475
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000195	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.000976	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.56	1.90	ng/L	82.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.40	1.90	ng/L	73.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.52	1.90	ng/L	80.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.54	1.90	ng/L	81.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.54	1.90	ng/L	80.9	(23%-140%)
13C-OCDD		2.61	3.80	ng/L	68.7	(17%-157%)
13C-2,3,7,8-TCDF		1.59	1.90	ng/L	84.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.62	1.90	ng/L	85.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.53	1.90	ng/L	80.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.46	1.90	ng/L	77.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.54	1.90	ng/L	81.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.51	1.90	ng/L	79.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.57	1.90	ng/L	82.7	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123005**	**Date Collected:**	**03/22/2018 09:20**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0008S013**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 00:15**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-8**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1053.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.42	1.90	ng/L	75.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.40	1.90	ng/L	73.6	(26%-138%)
37Cl-2,3,7,8-TCDD		0.174	0.190	ng/L	91.8	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:36:23 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:38:01 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD							NO		0.0357		1351			1072			
2	12378-PeCDD	1.67e2	1.38e2	3.05e2	33.60	1.000	1.21	YES	0.028	0.0235	3.30e3	1269	2.6	1.96e3	897	2.2	bb	bb
3	123478-HxCDD	7.74e1	5.26e1	1.30e2	36.06	1.000	1.47	YES	0.013	0.0335	2.38e3	1515	1.6	2.30e3	931	2.5	MM	bd
4	123678-HxCDD	1.05e2	1.18e2	2.23e2	36.14	1.000	0.89	YES	0.020	0.0303	2.94e3	1515	1.9	3.01e3	931	3.2	MM	db
5	123789-HxCDD							NO		0.0328		1515			931			
6	1234678-HpCDD	1.49e3	1.70e3	3.19e3	39.24	1.001	0.87	YES	0.367	0.0470	2.67e4	1261	21.1	2.45e4	975	25.1	bb	bb
7	OCDD	1.72e4	1.84e4	3.56e4	43.14	1.000	0.93	NO	5.520	0.0822	1.76e5	1011	174.5	2.01e5	1093	184.0	bd	bd
8	2378-TCDF							NO		0.0272		914			1390			
9	12378-PeCDF	1.30e2	5.61e1	1.86e2	32.83	1.000	2.31	YES	0.011	0.0157	3.62e3	1119	3.2	1.11e3	1242	0.9	bb	bb
10	23478-PeCDF							NO		0.0142		1119			1242			
11	123478-HxCDF							NO		0.0196		1038			832			
12	123678-HxCDF							NO		0.0178		1038			832			
13	234678-HxCDF							NO		0.0201		1038			832			
14	123789-HxCDF	2.46e2	2.04e2	4.50e2	36.68	1.001	1.21	NO	0.041	0.0268	4.90e3	1038	4.7	4.00e3	832	4.8	MM	MM
15	1234678-HpCDF	3.95e2	3.27e2	7.22e2	38.06	1.001	1.21	YES	0.073	0.0190	9.66e3	553	17.5	6.97e3	641	10.9	bb	MM
16	1234789-HpCDF							NO		0.0296		553			641			
17	OCDF	9.25e2	1.20e3	2.13e3	43.39	1.006	0.77	NO	0.325	0.0711	1.03e4	711	14.4	1.30e4	1132	11.4	MM	bb
18	13C-2378-TCDD	7.86e5	1.03e6	1.81e6	30.37	1.024	0.76	NO	82.385	0.0723	8.25e6	4507	1829.7	1.07e7	2738	3924.4	bb	bb
19	13C-12378-PeCDD	8.39e5	5.25e5	1.36e6	33.60	1.133	1.60	NO	73.606	0.0917	1.79e7	5073	3537.4	1.15e7	2665	4308.6	bb	bb
20	13C-123478-HxCDD	6.42e5	5.27e5	1.17e6	36.06	0.992	1.22	NO	80.010	0.122	1.20e7	6712	1781.2	9.65e6	4892	1973.5	bd	bd
21	13C-123678-HxCDD	7.13e5	5.83e5	1.30e6	36.14	0.994	1.22	NO	81.140	0.111	1.32e7	6712	1965.1	1.06e7	4892	2174.8	dd	dd
22	13C-1234678-HpCDD	4.48e5	4.19e5	8.67e5	39.21	1.078	1.07	NO	80.893	0.167	6.13e6	4617	1327.9	5.86e6	7086	826.8	bb	bb
23	13C-OCDD	6.65e5	7.53e5	1.42e6	43.13	1.186	0.88	NO	137.417	0.132	6.60e6	4332	1522.3	7.48e6	4571	1635.5	bd	bd
24	13C-2378-TCDF	9.42e5	1.22e6	2.16e6	29.44	0.993	0.77	NO	83.974	0.0785	1.00e7	5596	1788.1	1.31e7	3618	3614.7	bb	bb
25	13C-12378-PeCDF	1.25e6	7.96e5	2.04e6	32.83	1.107	1.57	NO	85.262	0.139	2.79e7	6193	4499.7	1.76e7	9010	1949.0	bd	bd
26	13C-23478-PeCDF	1.17e6	7.50e5	1.92e6	33.41	1.127	1.56	NO	80.856	0.140	2.74e7	6193	4426.9	1.75e7	9010	1940.1	db	db
27	13C-123478-HxCDF	4.15e5	7.91e5	1.21e6	35.38	0.973	0.52	NO	77.108	0.158	8.21e6	7805	1051.7	1.63e7	8293	1970.4	bd	bd
28	13C-123678-HxCDF	4.76e5	9.95e5	1.47e6	35.47	0.975	0.48	NO	81.319	0.136	9.08e6	7805	1162.8	1.80e7	8293	2173.6	db	db
29	13C-234678-HxCDF	4.15e5	8.07e5	1.22e6	35.94	0.988	0.51	NO	79.609	0.160	7.65e6	7805	980.6	1.49e7	8293	1796.9	bb	bb
30	13C-123789-HxCDF	3.97e5	7.64e5	1.16e6	36.65	1.008	0.52	NO	82.697	0.175	6.25e6	7805	800.6	1.22e7	8293	1474.8	bd	bb
31	13C-1234678-HpCDF	2.72e5	6.35e5	9.07e5	38.04	1.046	0.43	NO	75.041	0.107	4.30e6	4028	1067.0	9.92e6	4400	2253.6	bb	bd

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:36:23 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:38:01 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.23e5	4.84e5	7.06e5	39.83	1.095	0.46	NO	73.553	0.134	2.87e6	4028	711.6	6.34e6	4400	1440.2	bd	bb
33	13C-1234-TCDD	8.44e5	1.08e6	1.93e6	29.65	0.000	0.78	NO	100.000	0.0825	9.61e6	4507	2131.9	1.23e7	2738	4488.9	bb	bb
34	13C-123789-HxCDD	7.64e5	6.59e5	1.42e6	36.36	0.000	1.16	NO	100.000	0.125	1.25e7	6712	1859.5	1.03e7	4892	2114.8	db	dd
35	37Cl-2378-TCDD	2.06e5		2.06e5	30.40	1.025			9.183	0.0117	2.10e6	1195	1758.9				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:36:23 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:38:01 Eastern Standard Time

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Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetradioxins	8.75e1	1.16e2	2.03e2	29.46	0.75	NO	0.013	0.0357	2.85e3	1351	2.1	1.82e3	1072	1.7	db	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	1.67e2	1.38e2	3.05e2	33.60	1.21	YES	0.028	0.0235	3.30e3	1269	2.6	1.96e3	897	2.2	bb	bb
2	Total-pentadioxins	1.81e2	6.24e1	2.44e2	33.41	2.91	YES	0.023	0.0235	4.29e3	1269	3.4	2.38e3	897	2.6	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123678-HxCDD	1.05e2	1.18e2	2.23e2	36.14	0.89	YES	0.020	0.0303	2.94e3	1515	1.9	3.01e3	931	3.2	MM	db
2	123478-HxCDD	7.74e1	5.26e1	1.30e2	36.06	1.47	YES	0.013	0.0335	2.38e3	1515	1.6	2.30e3	931	2.5	MM	bd
3	Total-hexadioxins	5.41e2	3.15e2	8.55e2	35.50	1.72	YES	0.084	0.0322	7.22e3	1515	4.8	4.83e3	931	5.2	MM	db
4	Total-hexadioxins	2.73e2	1.07e2	3.80e2	35.37	2.56	YES	0.037	0.0322	6.37e3	1515	4.2	4.63e3	931	5.0	bd	bd
5	Total-hexadioxins	1.96e2	1.34e2	3.30e2	34.89	1.46	YES	0.032	0.0322	5.07e3	1515	3.3	5.04e3	931	5.4	bb	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptadioxins	3.64e2	1.34e2	4.99e2	39.81	2.71	YES	0.057	0.0470	5.22e3	1261	4.1	3.61e3	975	3.7	bb	bb
2	1234678-HpCDD	1.49e3	1.70e3	3.19e3	39.24	0.87	YES	0.367	0.0470	2.67e4	1261	21.1	2.45e4	975	25.1	bb	bb
3	Total-heptadioxins	2.71e3	2.75e3	5.46e3	38.36	0.99	NO	0.629	0.0470	4.14e4	1261	32.8	4.18e4	975	42.9	bb	bb
4	Total-heptadioxins	4.13e2	1.02e2	5.15e2	38.03	4.05	YES	0.059	0.0470	9.23e3	1261	7.3	3.59e3	975	3.7	bb	bb

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1																	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:36:23 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:38:01 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	5.24e1	5.89e1	1.11e2	25.14	0.89	YES	0.006	0.0146	6.63e2	954	0.7	1.98e3	1362	1.5	bb	bb
2	Total-pentafurans (F1)	1.48e2	1.17e2	2.65e2	31.36	1.27	YES	0.015	0.0146	2.67e3	954	2.8	1.86e3	1362	1.4	bb	bb
3	Total-pentafurans (F1)	7.40e1	8.25e1	1.57e2	30.40	0.90	YES	0.009	0.0146	1.40e3	954	1.5	2.89e3	1362	2.1	db	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDF	1.30e2	5.61e1	1.86e2	32.83	2.31	YES	0.011	0.0157	3.62e3	1119	3.2	1.11e3	1242	0.9	bb	bb

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDF	2.46e2	2.04e2	4.50e2	36.68	1.21	NO	0.041	0.0268	4.90e3	1038	4.7	4.00e3	832	4.8	MM	MM
2	Total-hexafurans	1.59e2	1.55e2	3.14e2	34.62	1.02	YES	0.025	0.0208	4.98e3	1038	4.8	3.88e3	832	4.7	bb	bb

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	5.53e2	5.42e2	1.10e3	38.56	1.02	NO	0.123	0.0237	1.01e4	553	18.2	9.93e3	641	15.5	bb	MM
2	1234678-HpCDF	3.95e2	3.27e2	7.22e2	38.06	1.21	YES	0.073	0.0190	9.66e3	553	17.5	6.97e3	641	10.9	bb	MM

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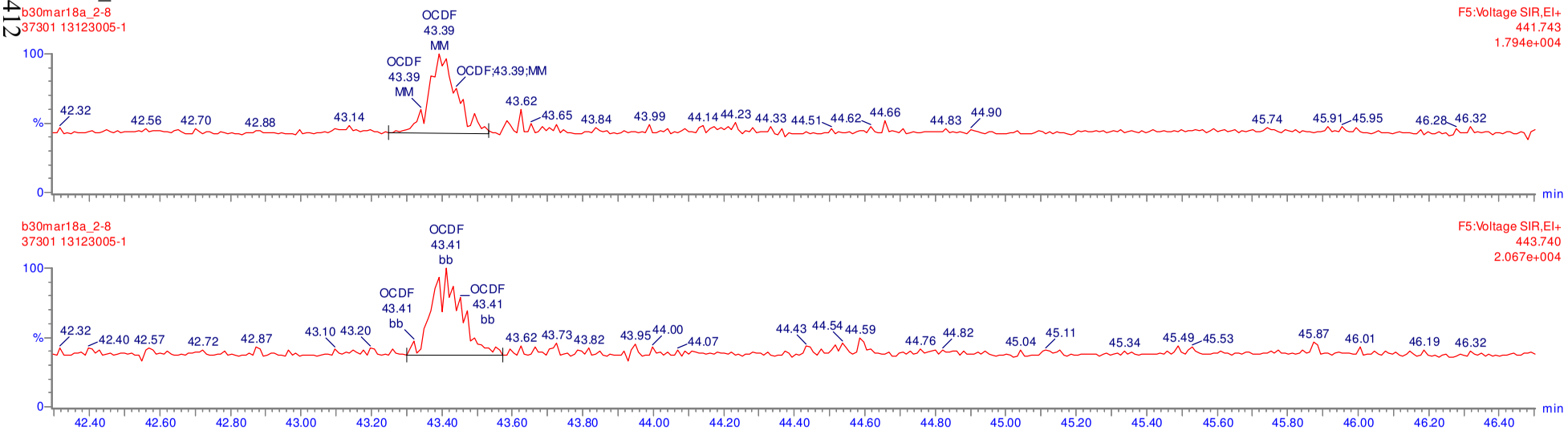
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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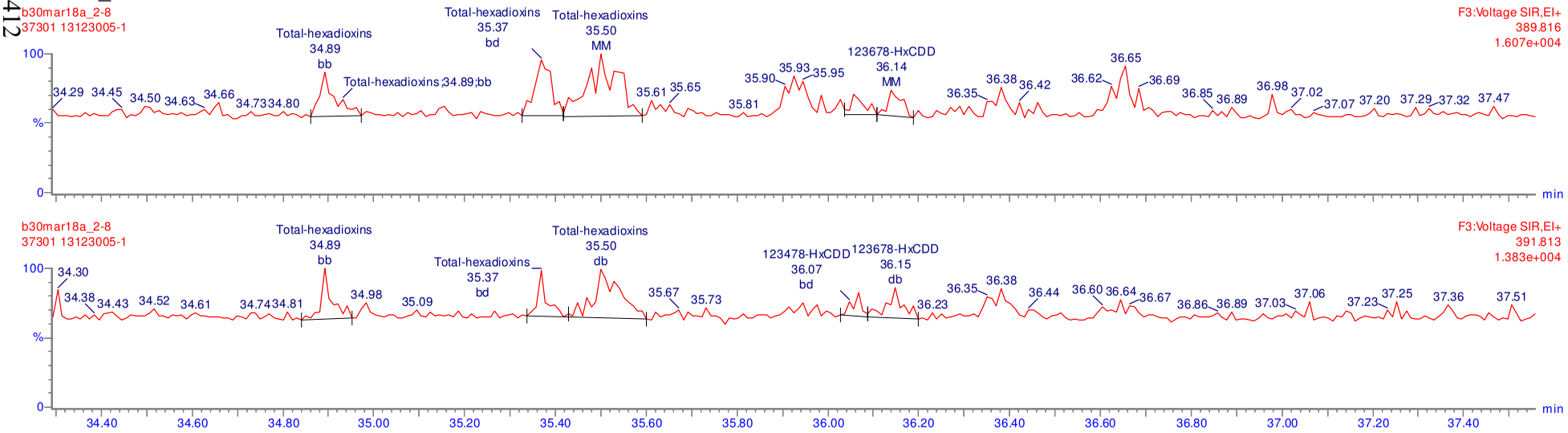
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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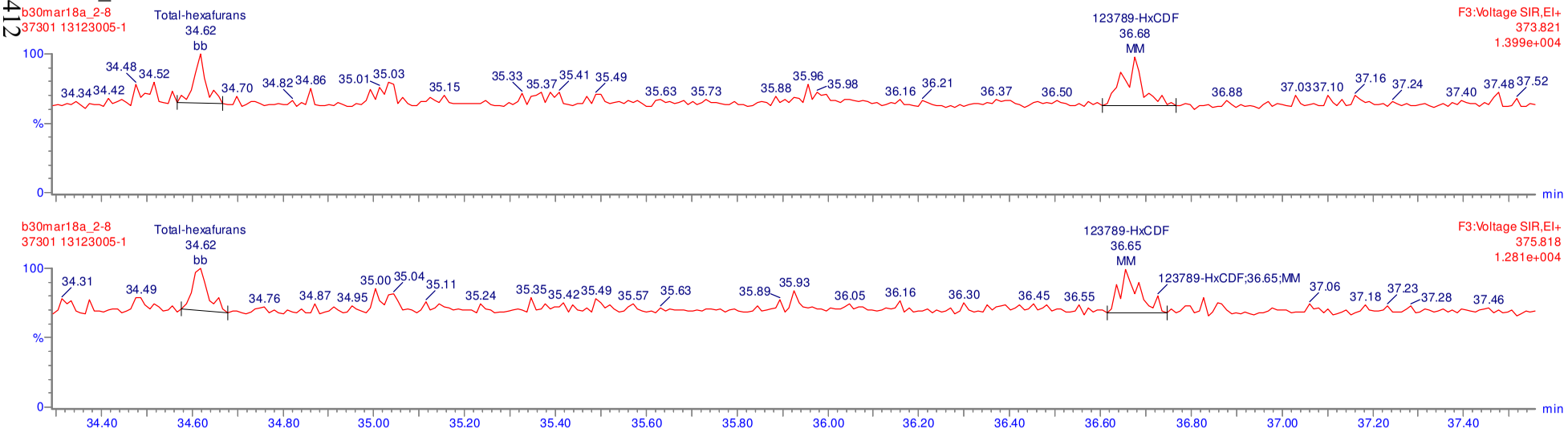
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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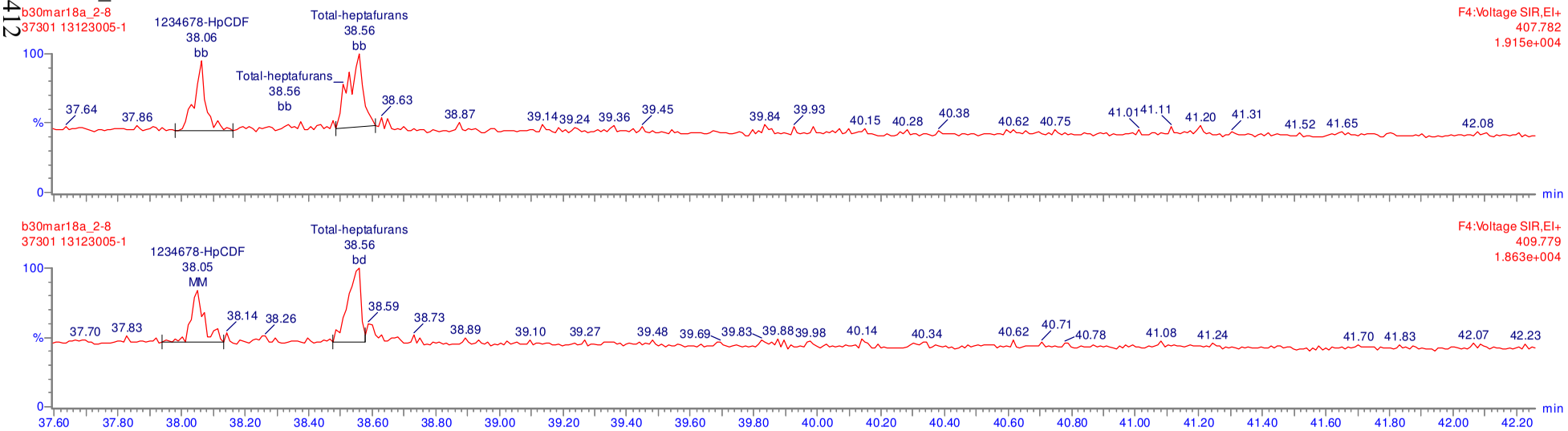
METHOD 1613
HRP763_1



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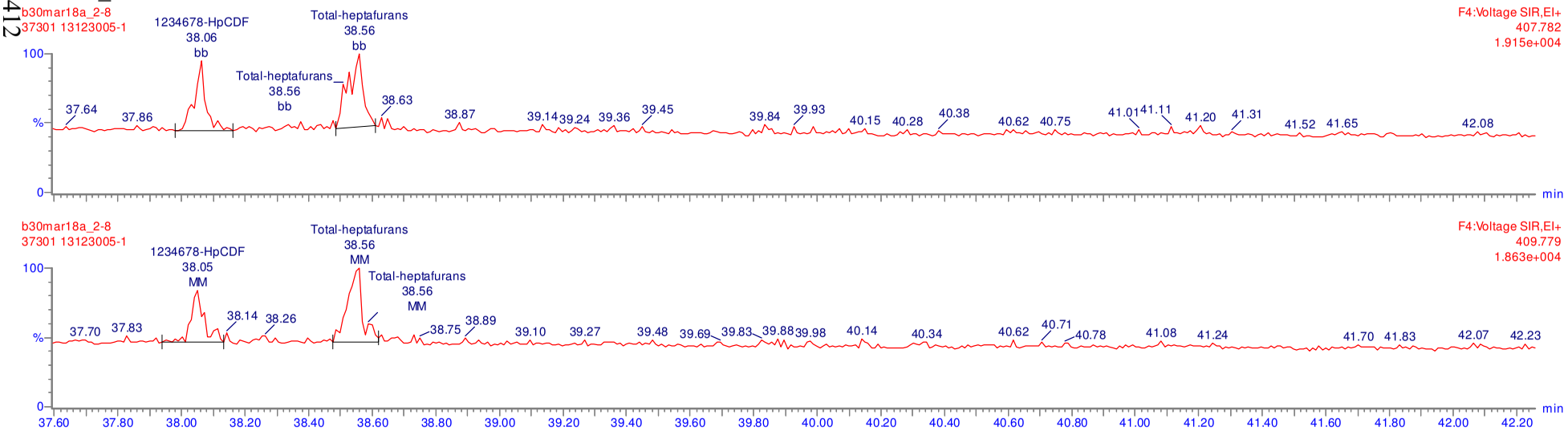
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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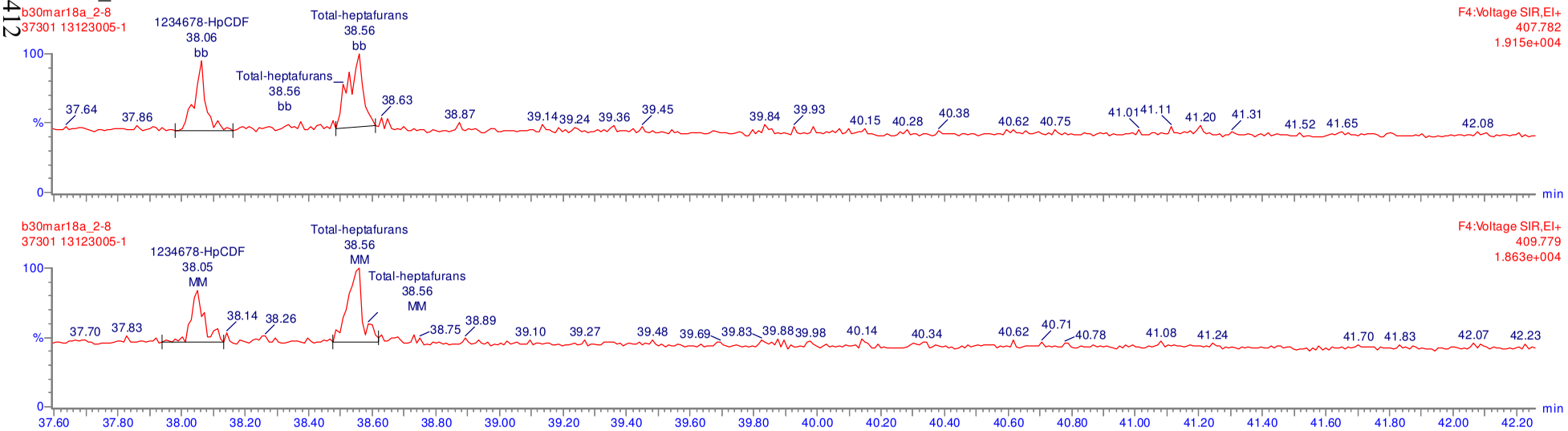
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

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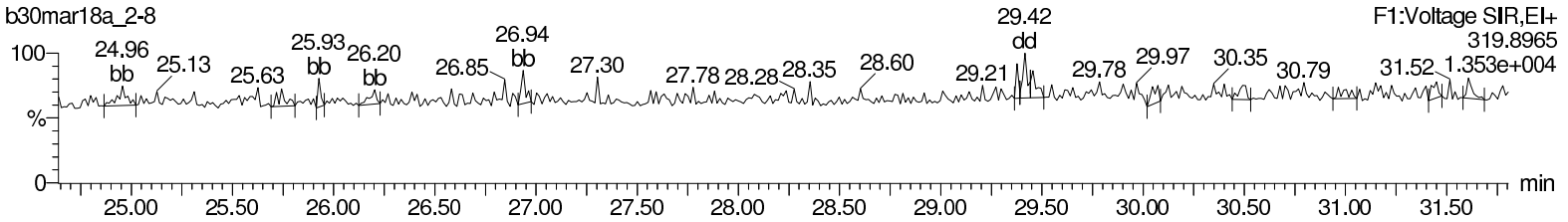

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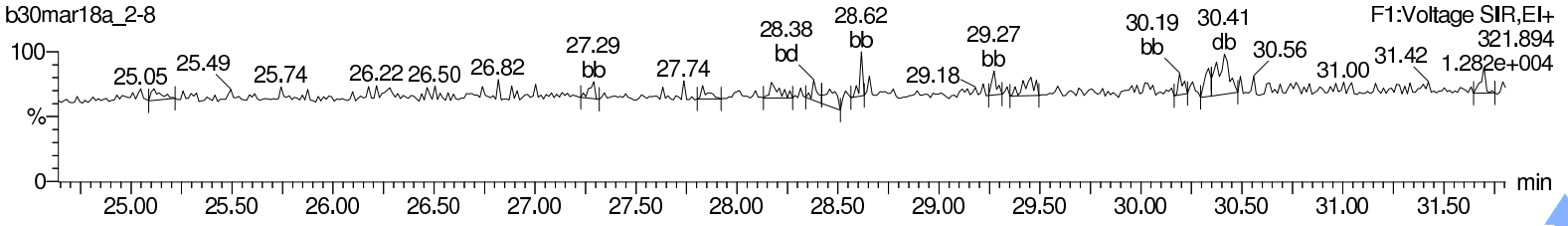

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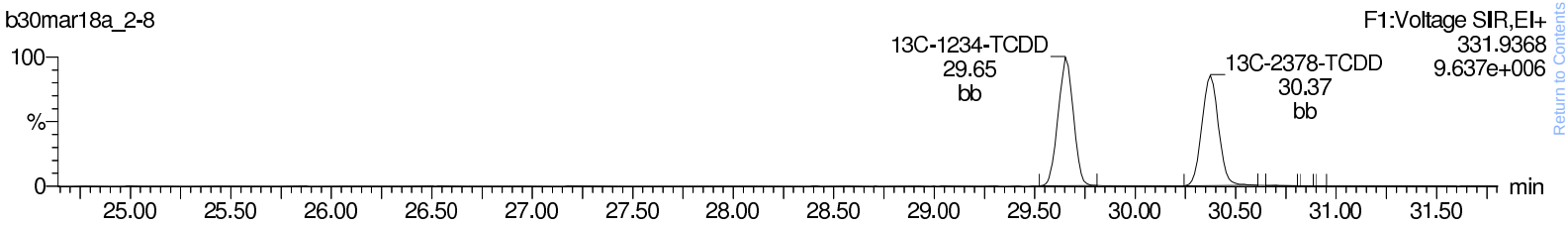

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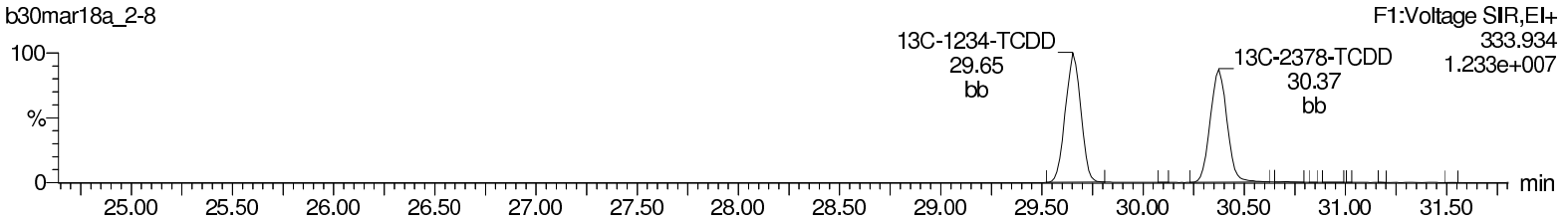

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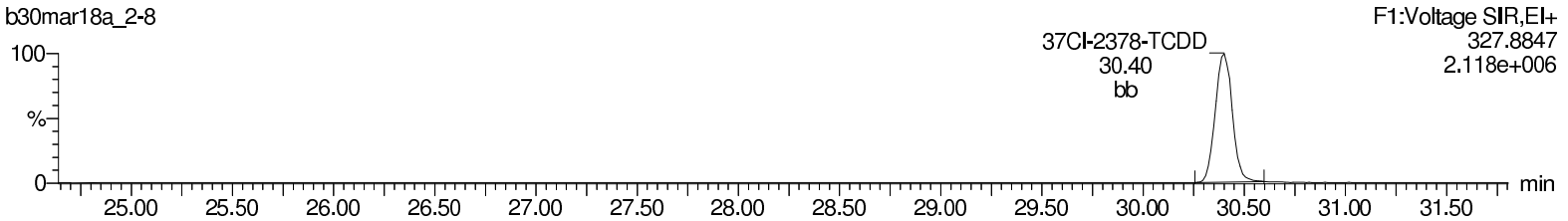

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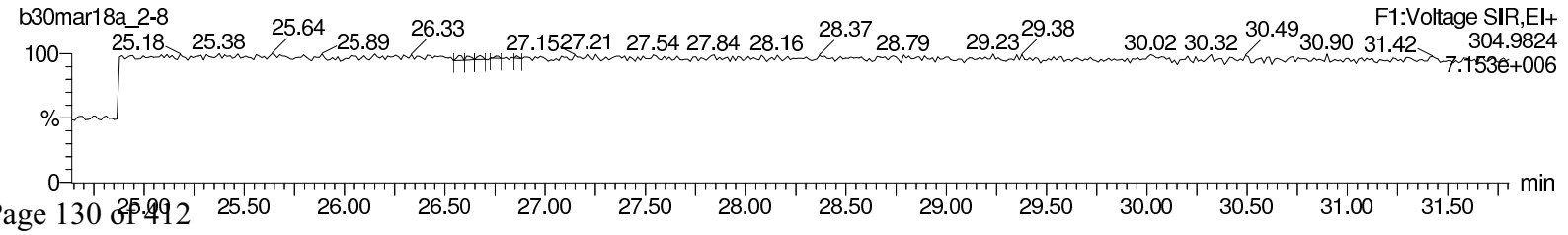

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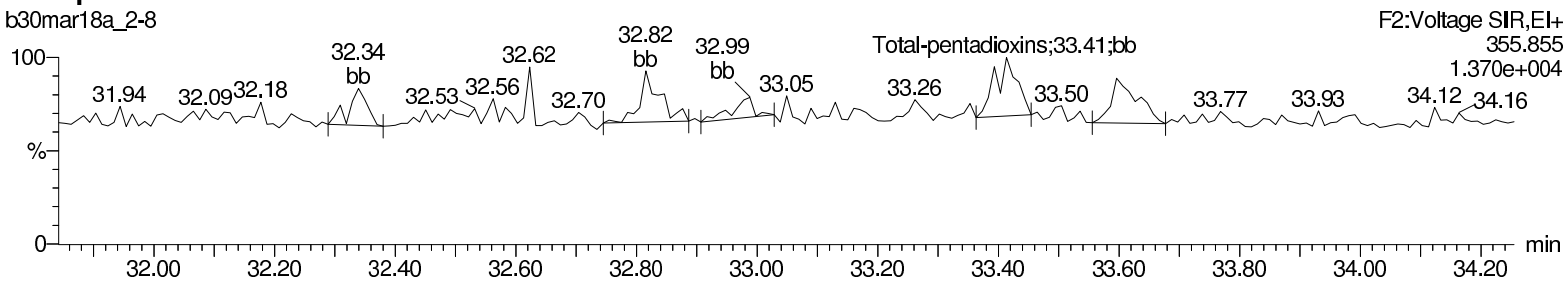
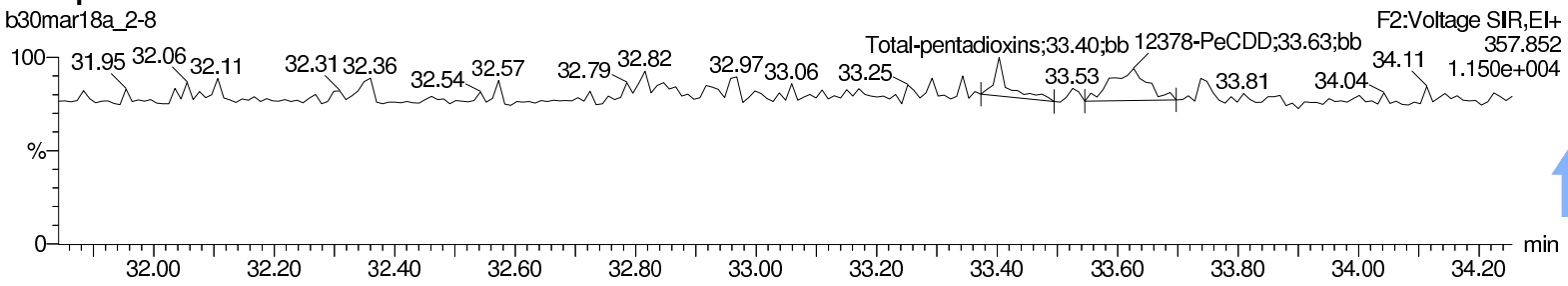
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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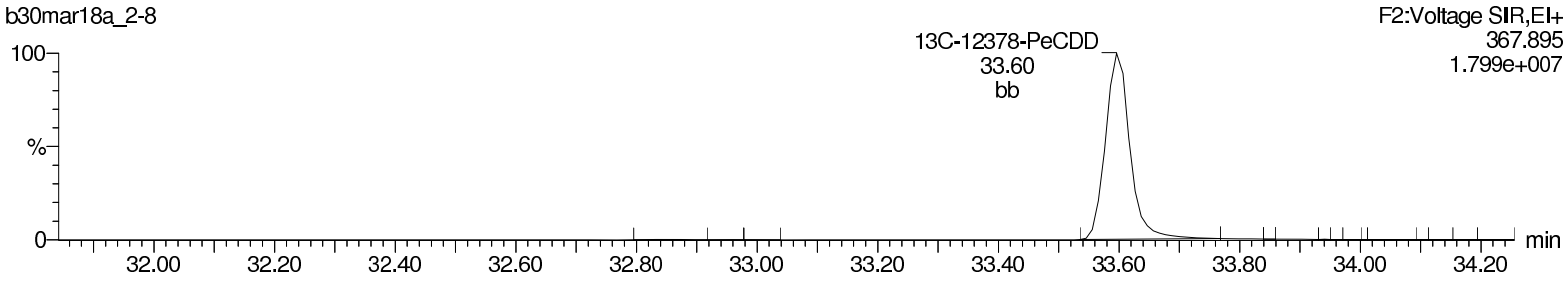

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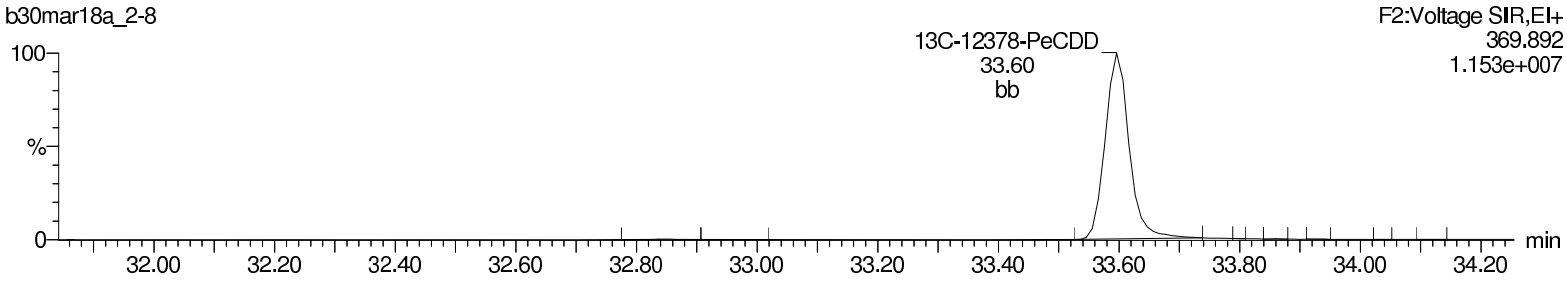

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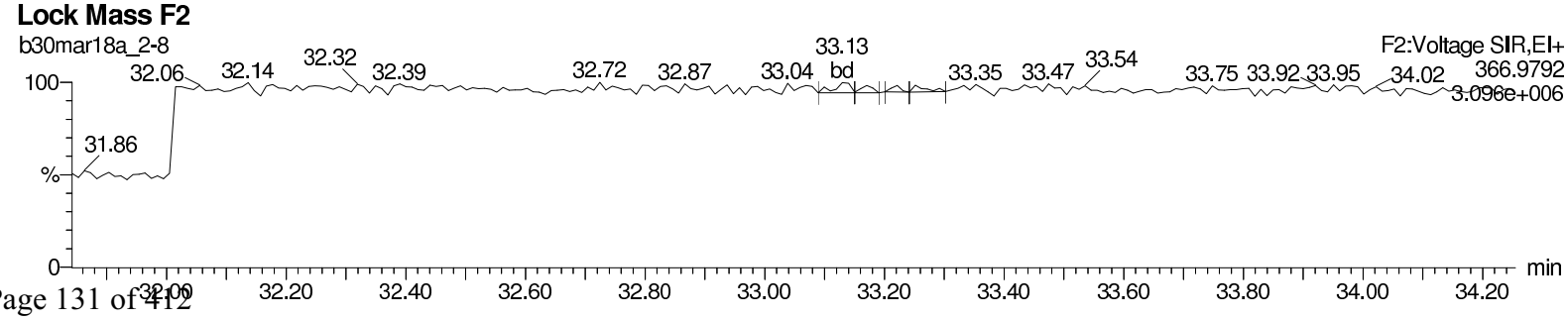

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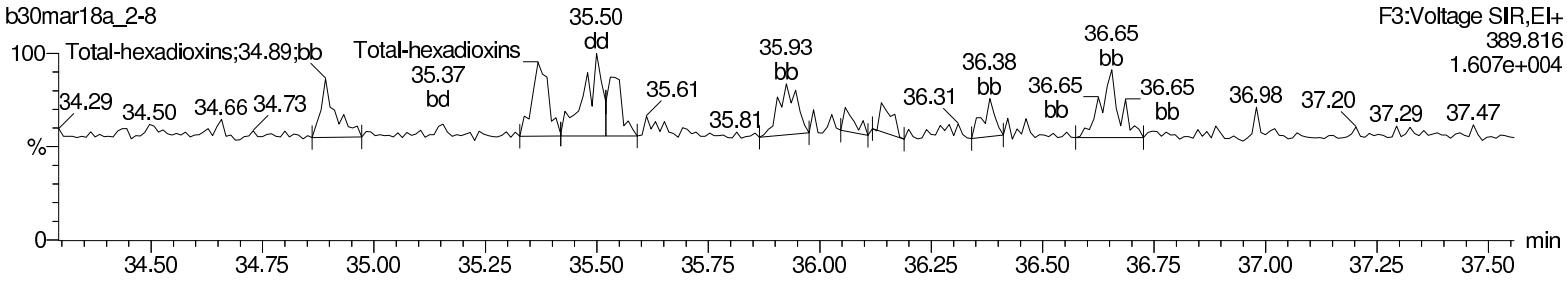
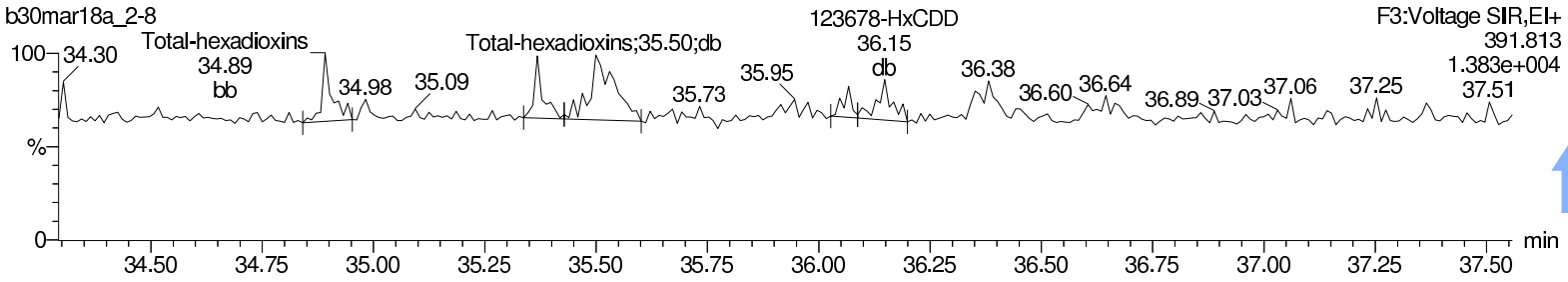
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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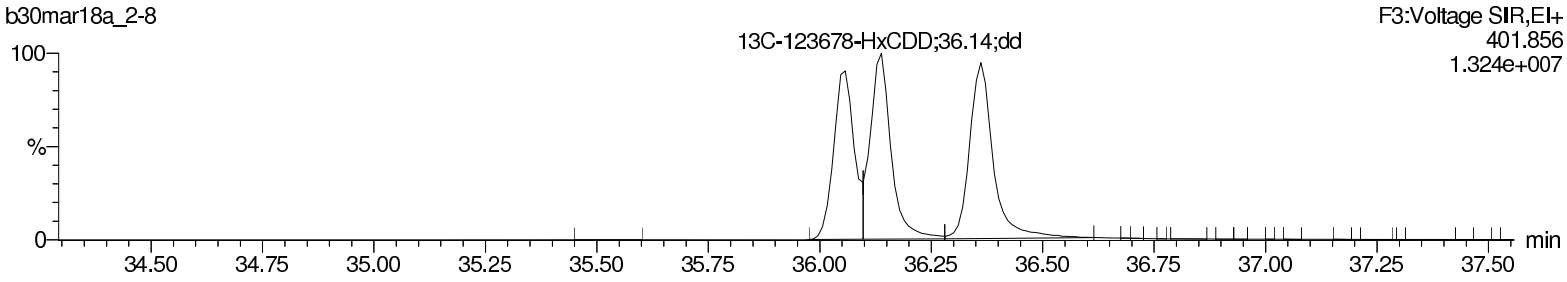

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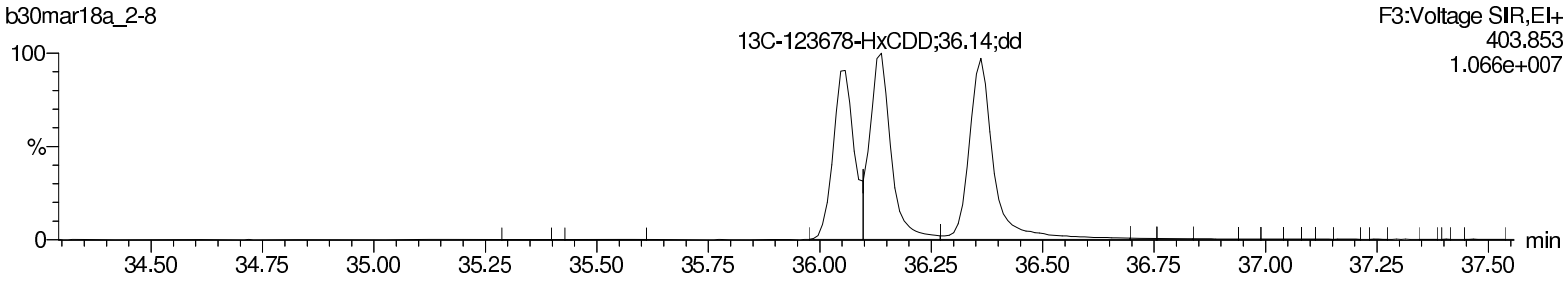

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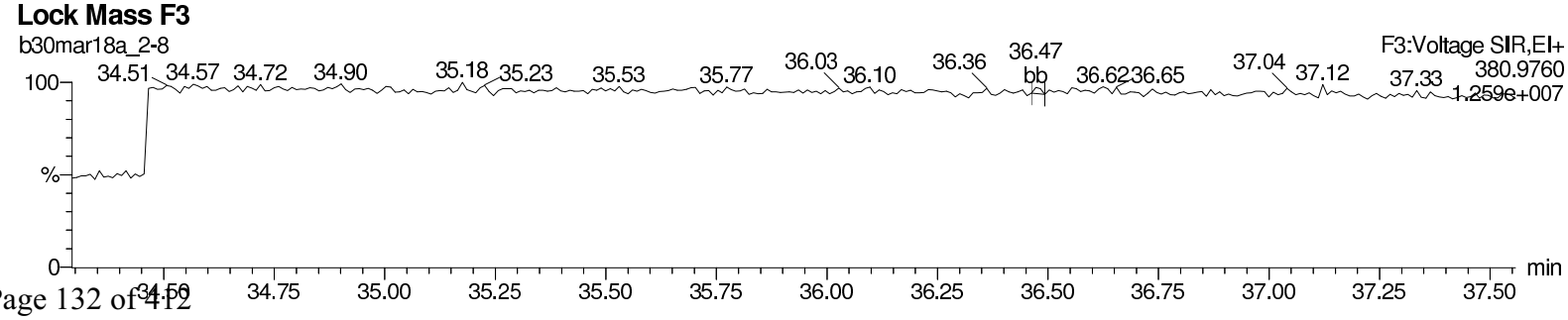

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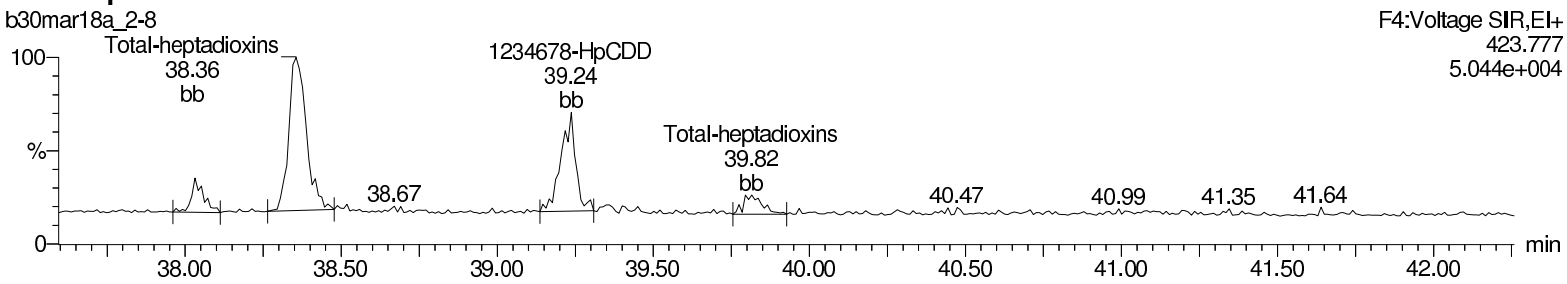
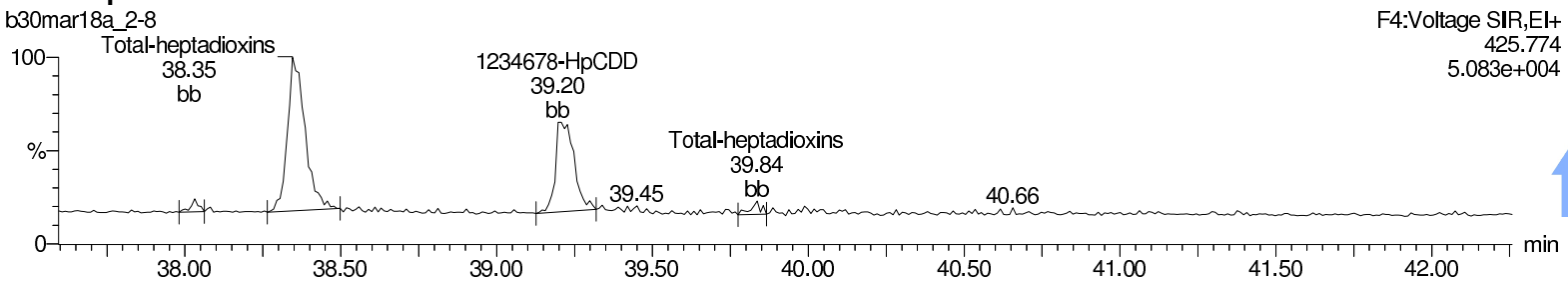
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

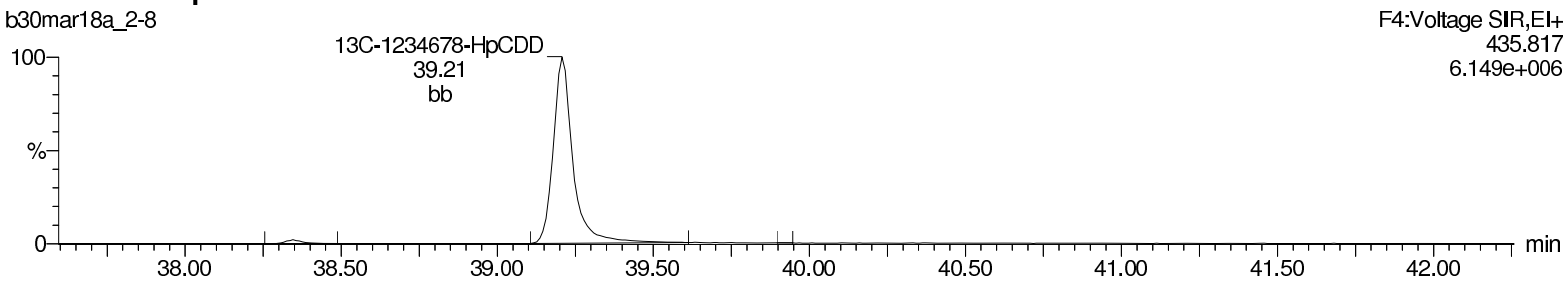
Total-heptadioxins



Total-heptadioxins



13C-1234678-HpCDD



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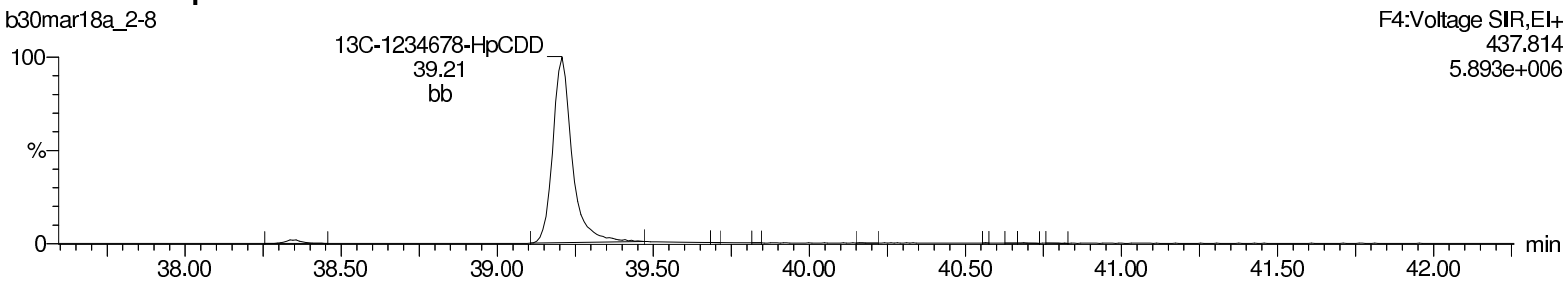
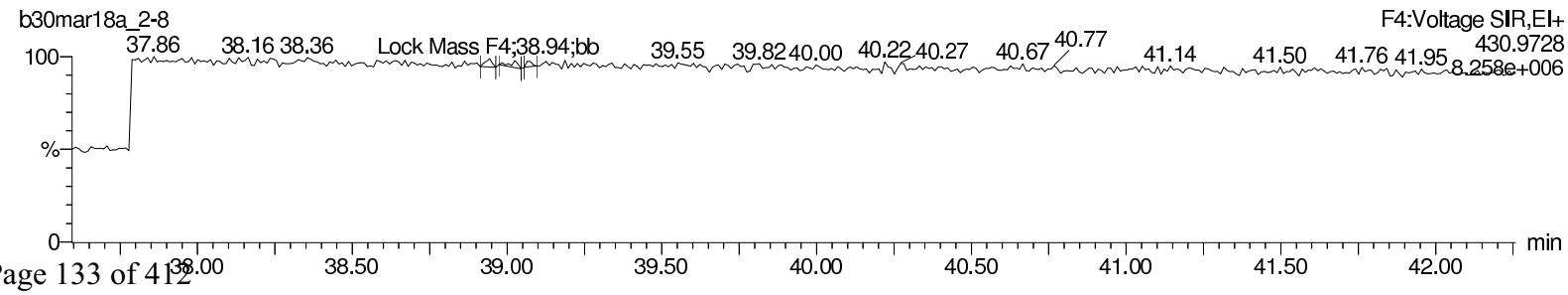


Lock Mass F4

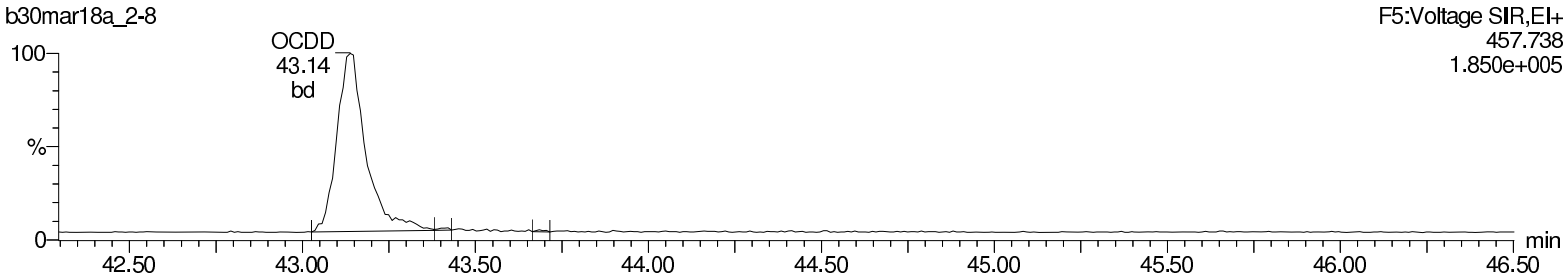


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

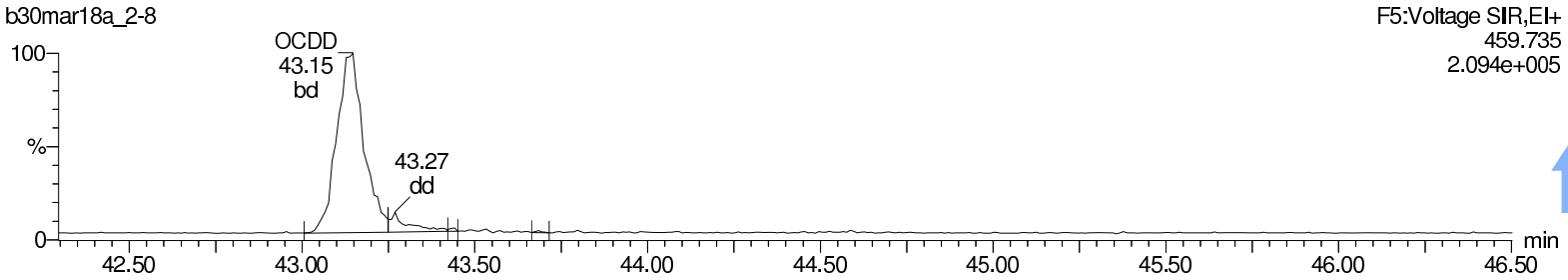
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

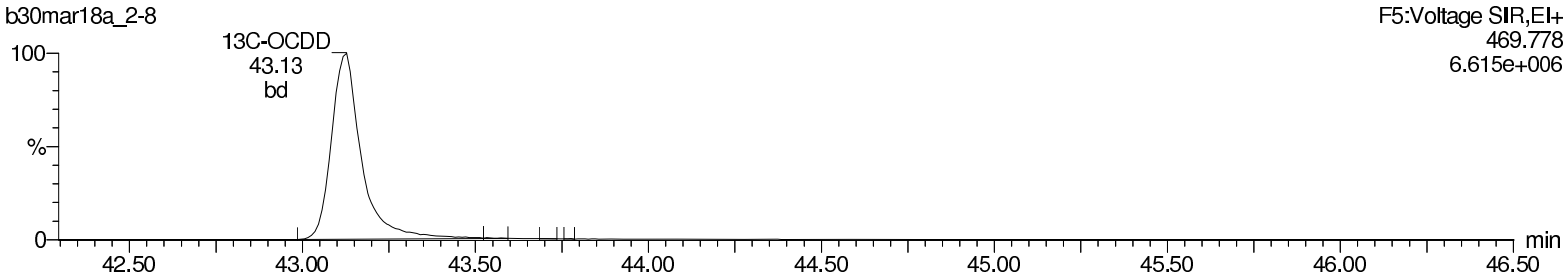
OCDD



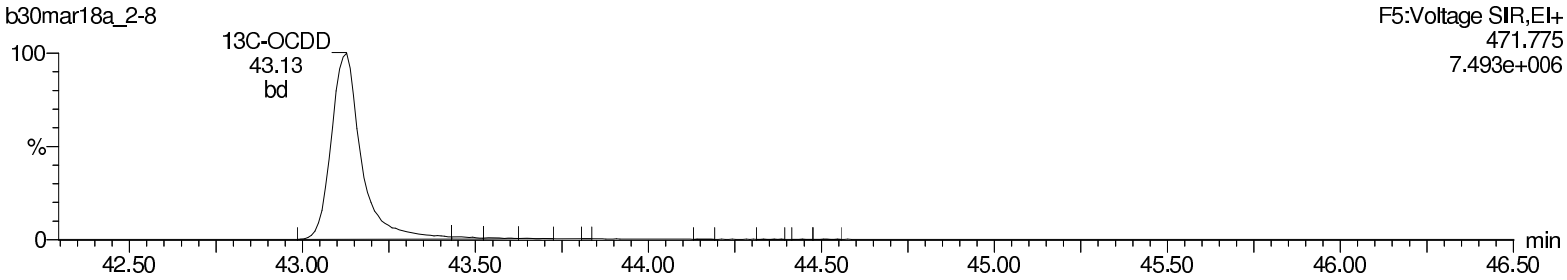
OCDD



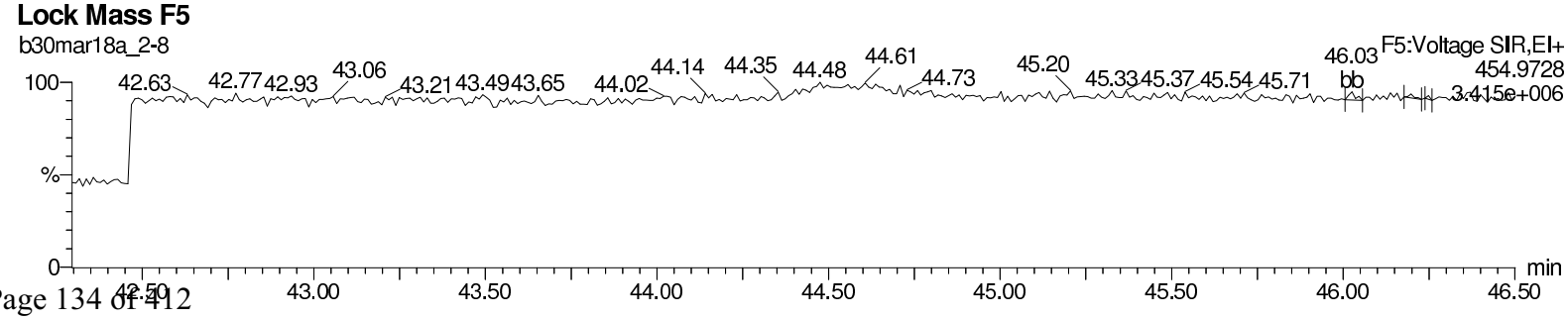
13C-OCDD



13C-OCDD



Lock Mass F5



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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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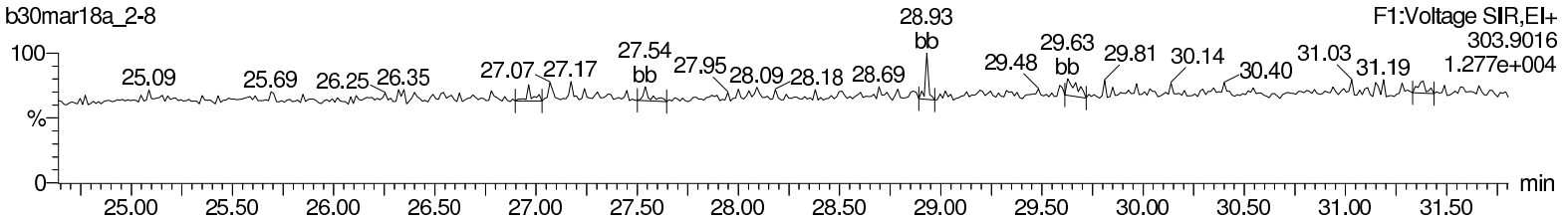
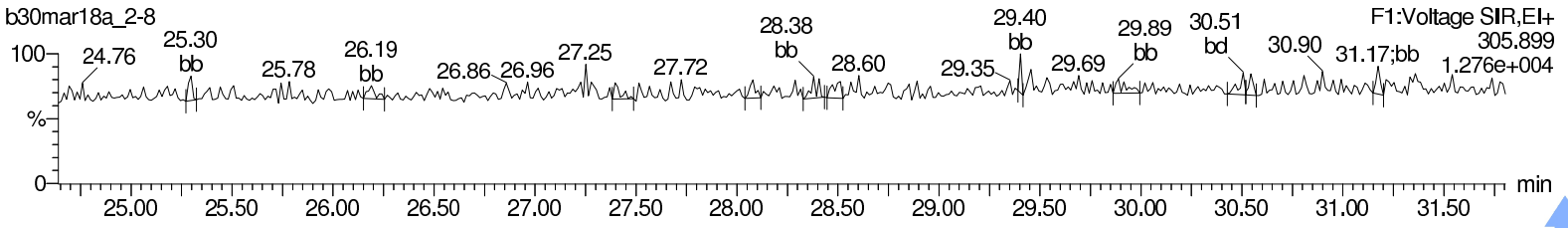
Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

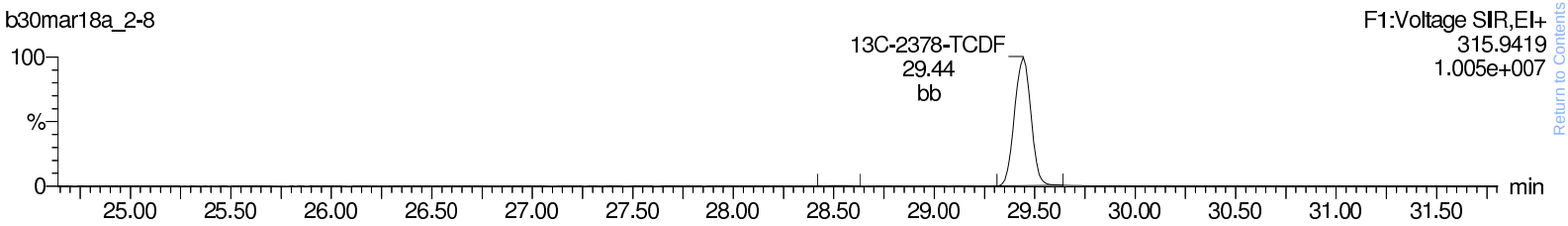
Total-tetrafurans



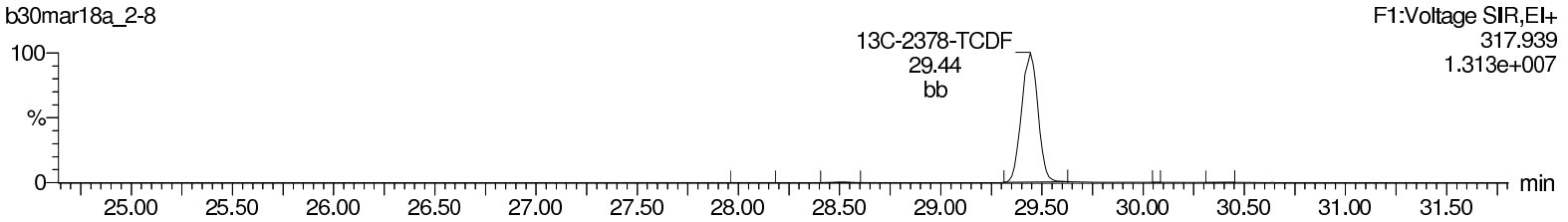
Total-tetrafurans



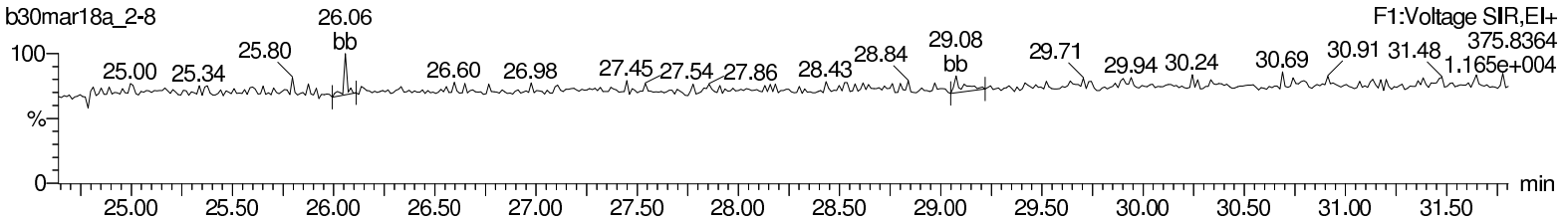
13C-2378-TCDF



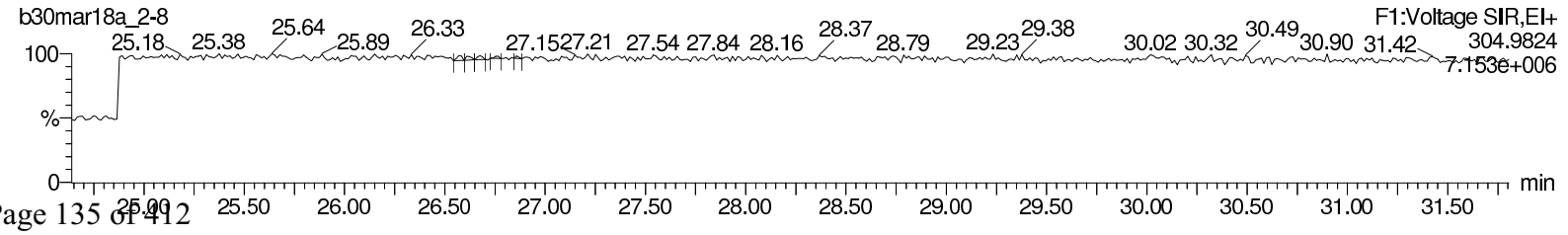
13C-2378-TCDF



HxDPE



Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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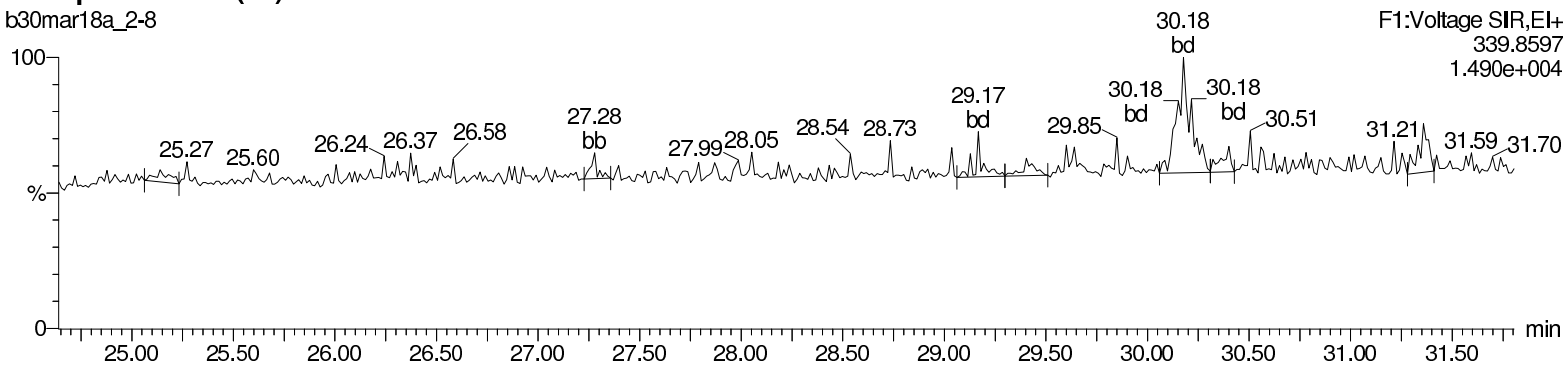
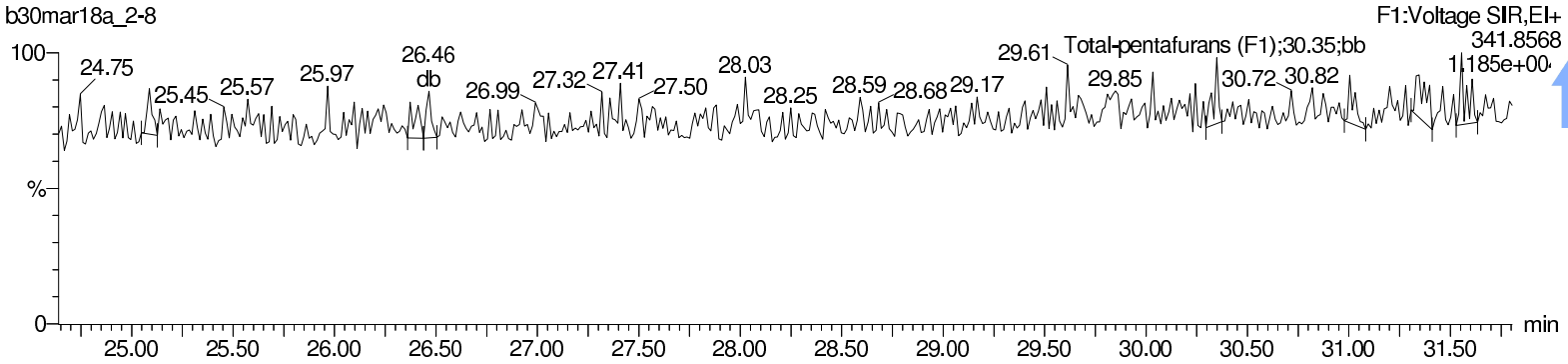
Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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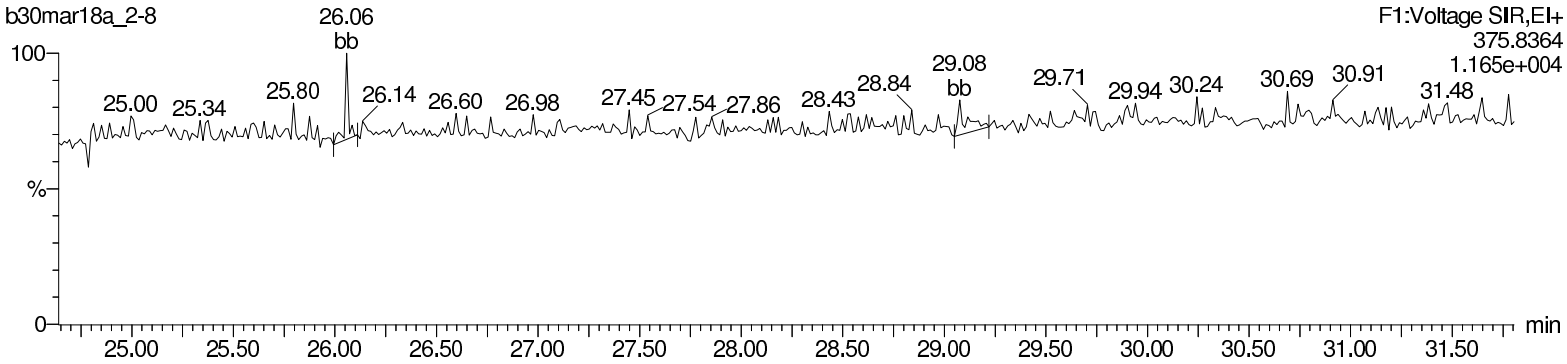
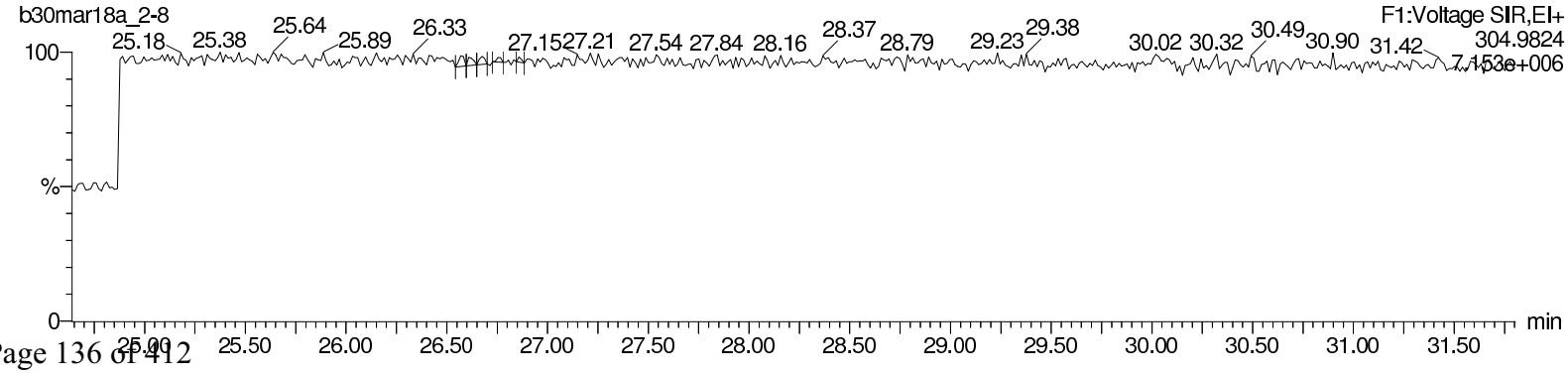


Lock Mass F1



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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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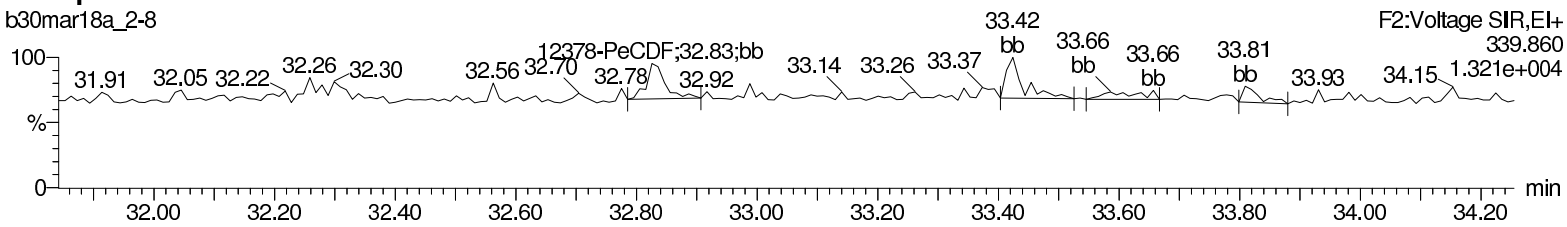
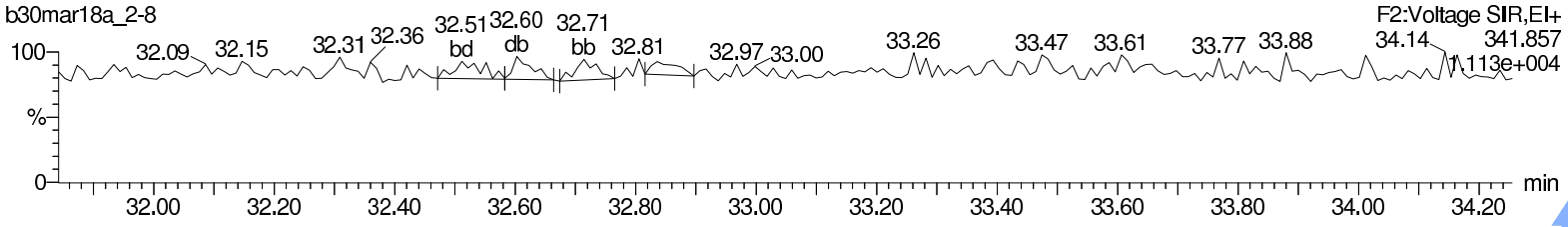
Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans



Total-pentafurans



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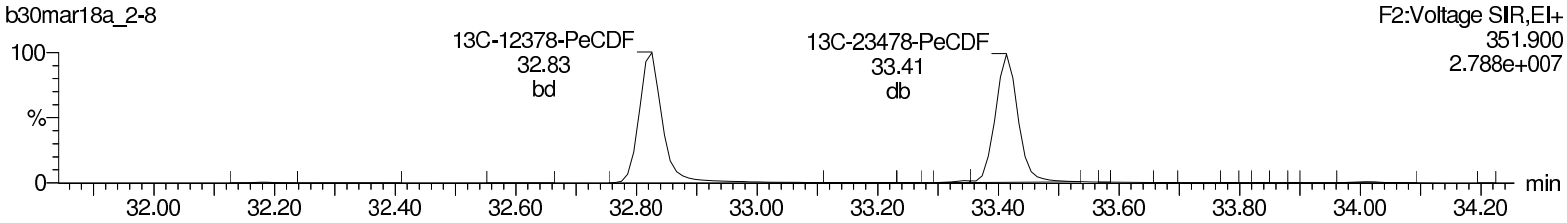

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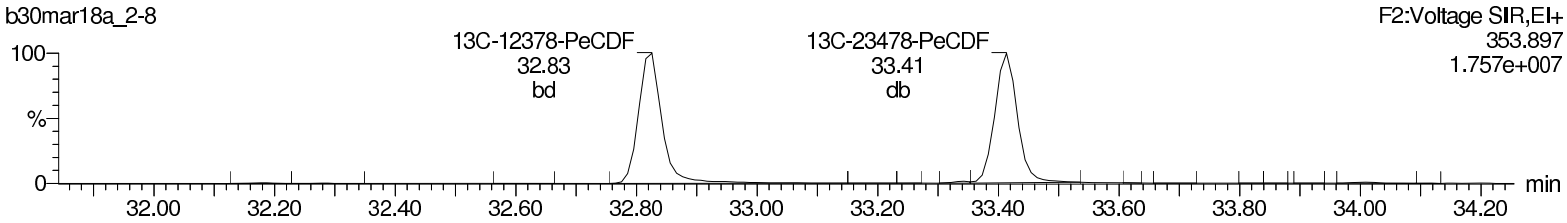
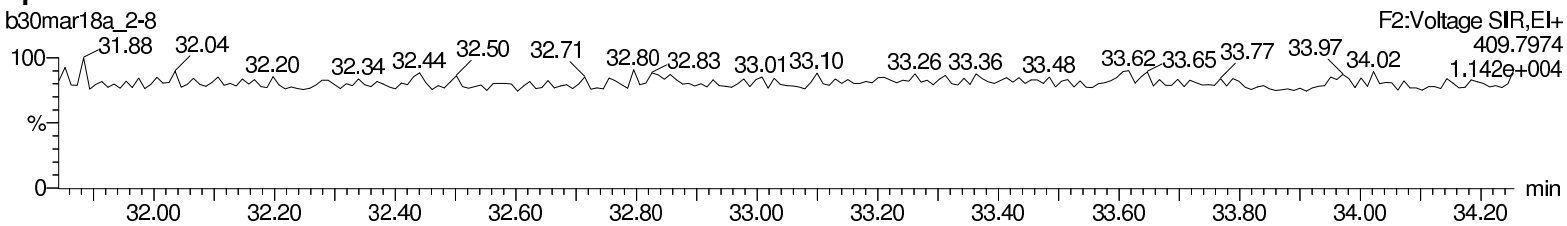
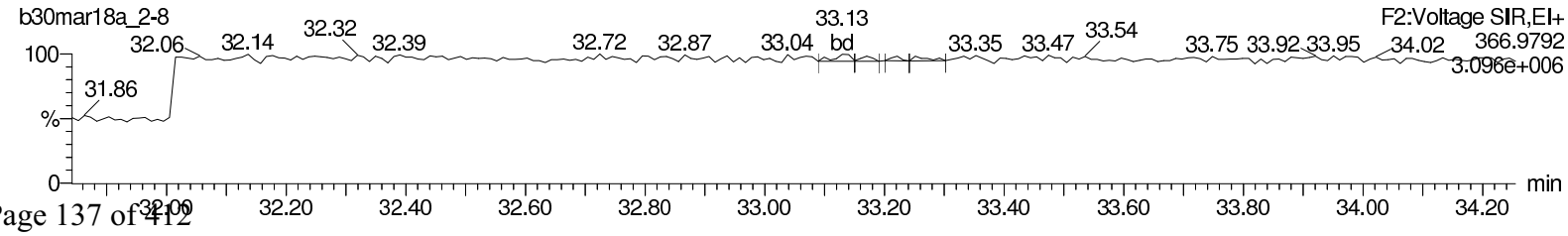


HpDPE



Lock Mass F2

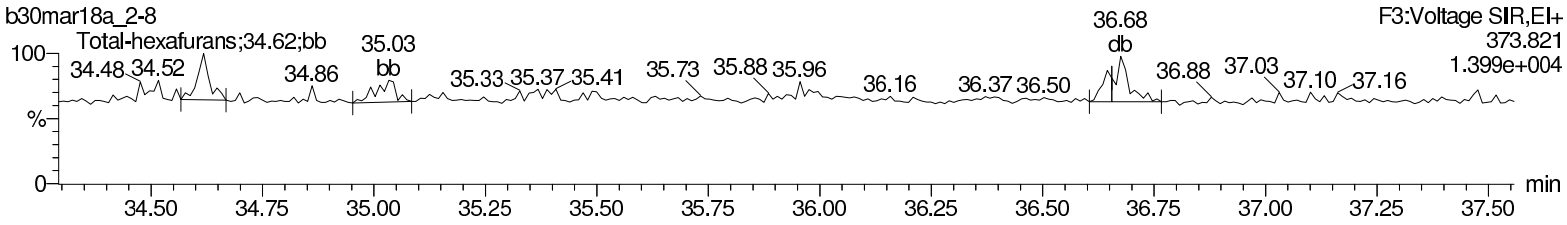


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

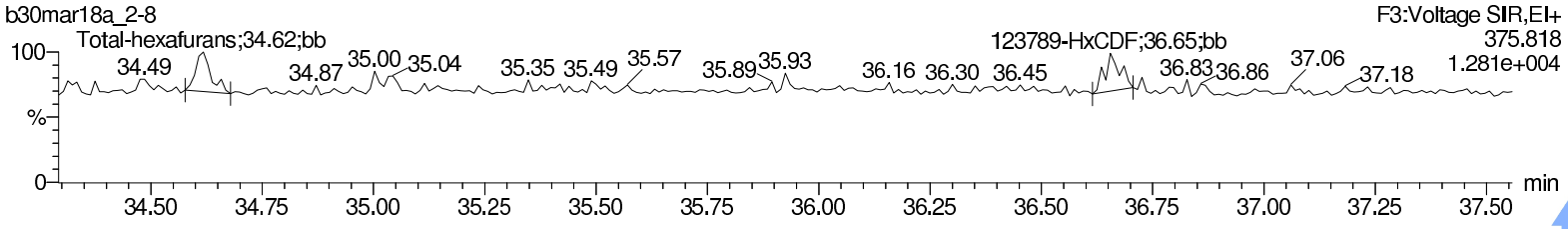
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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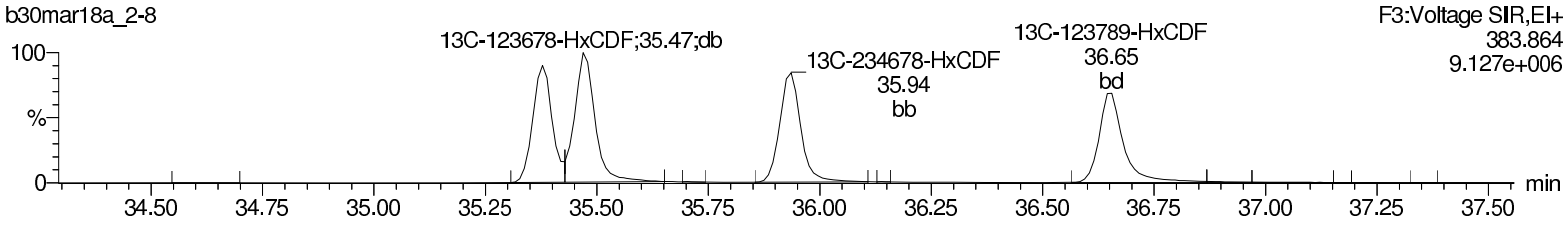

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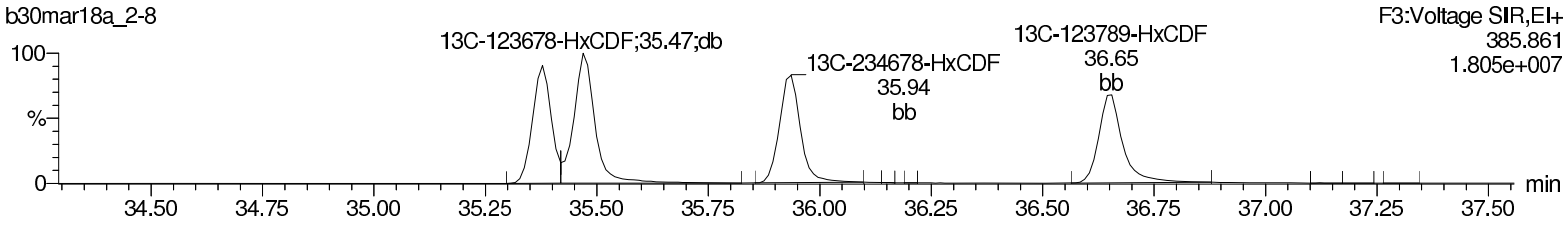
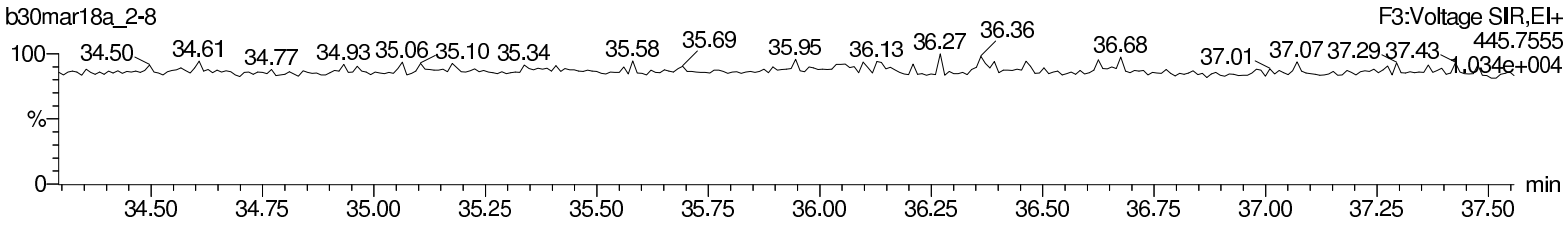
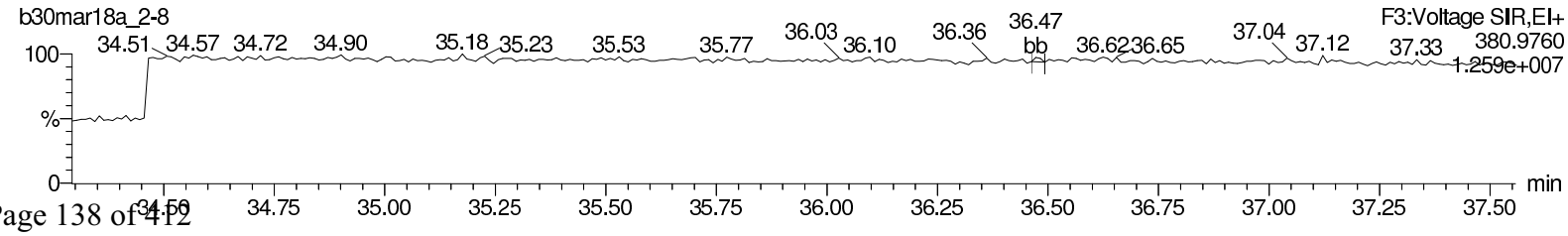


OcDPE



Lock Mass F3



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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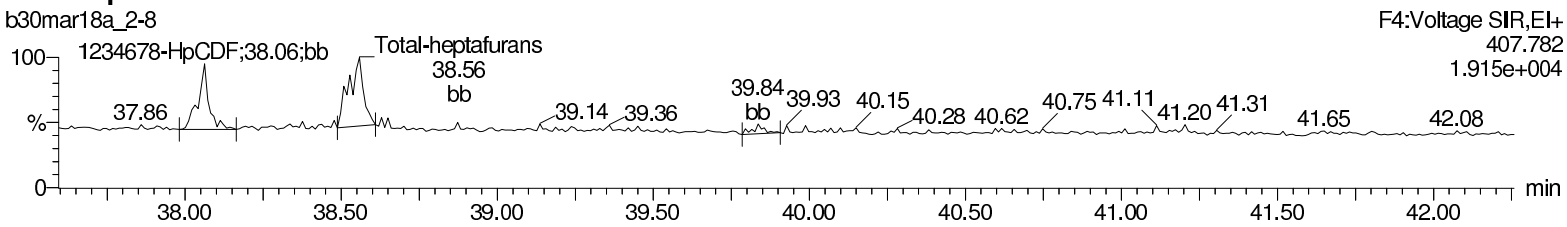
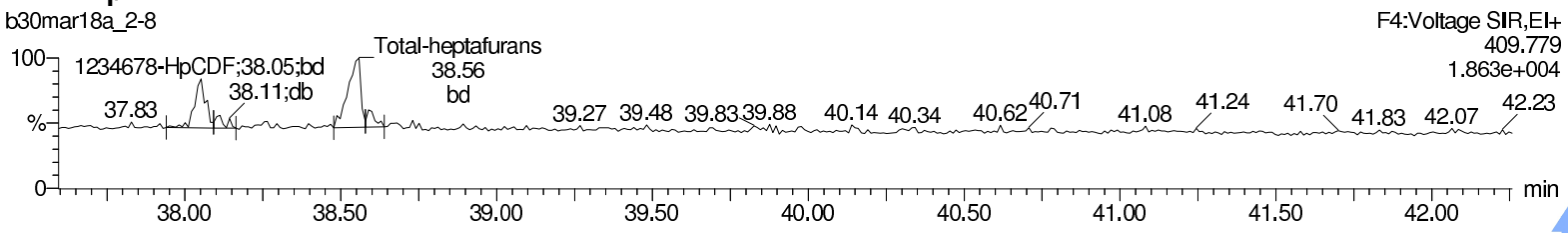
Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptafurans



Total-heptafurans



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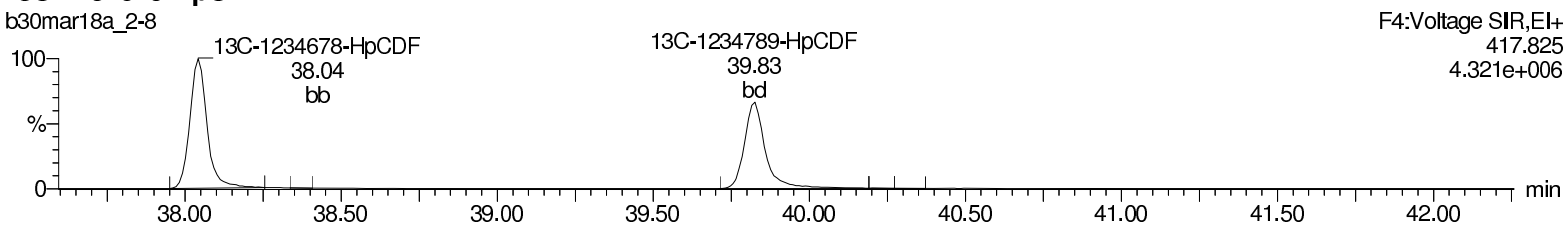

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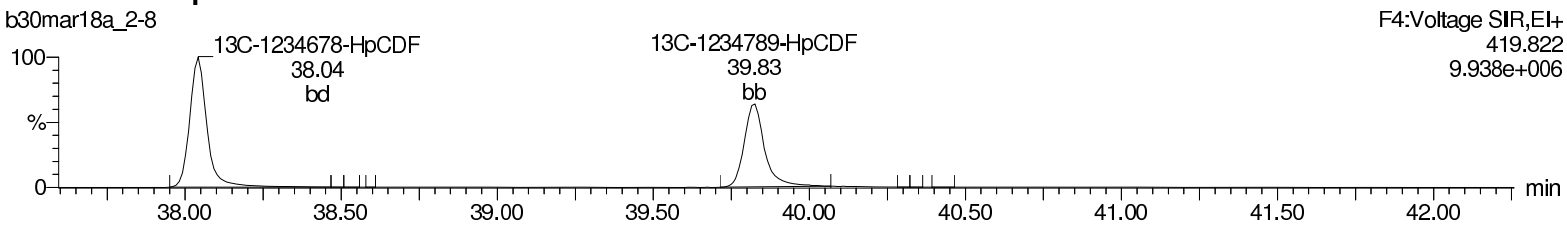

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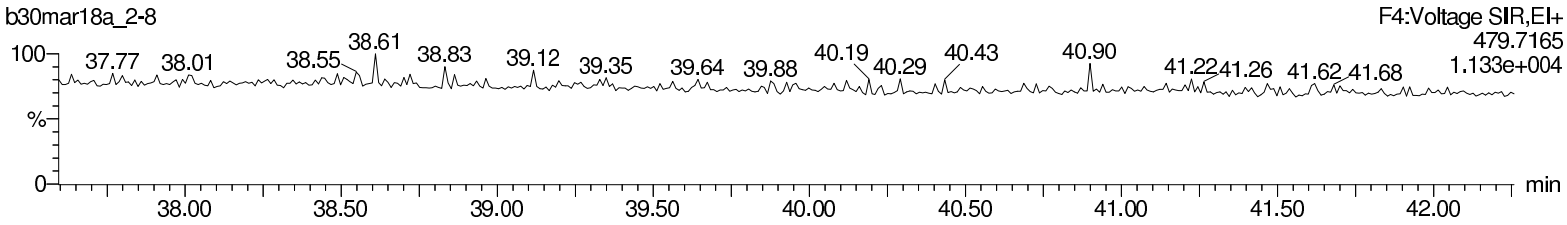
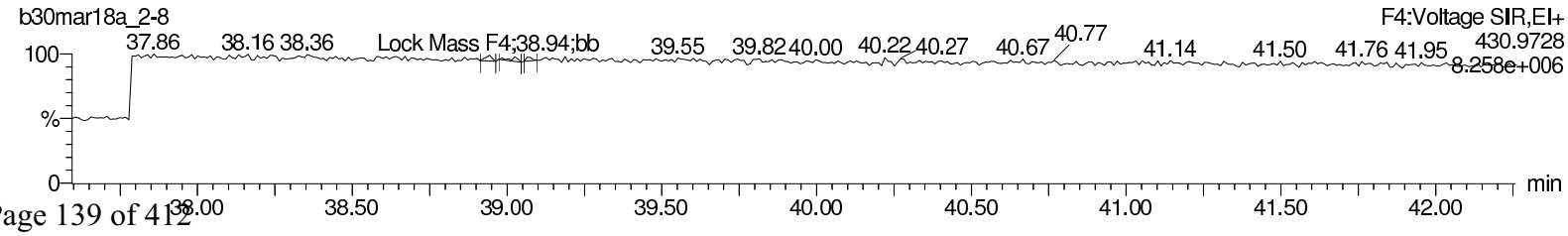


Lock Mass F4



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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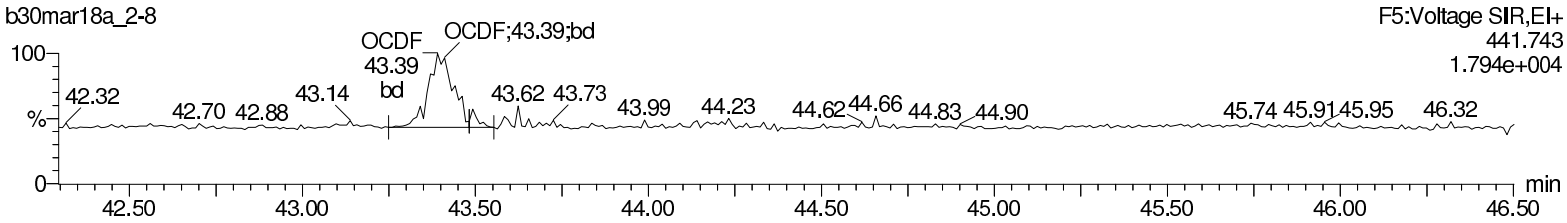
OCDF



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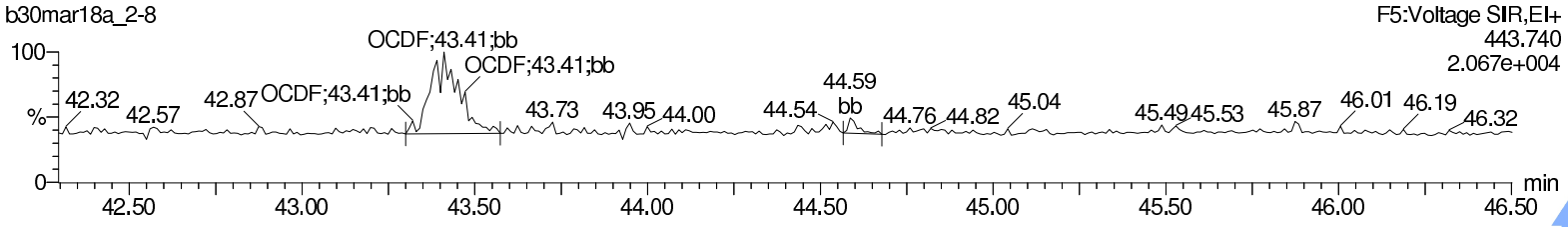

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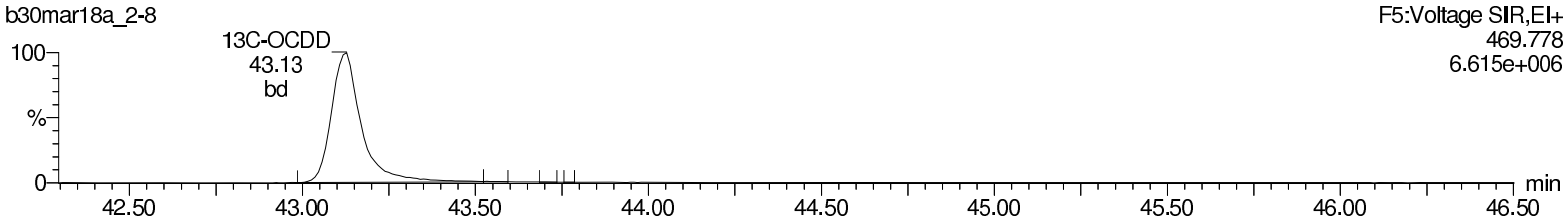

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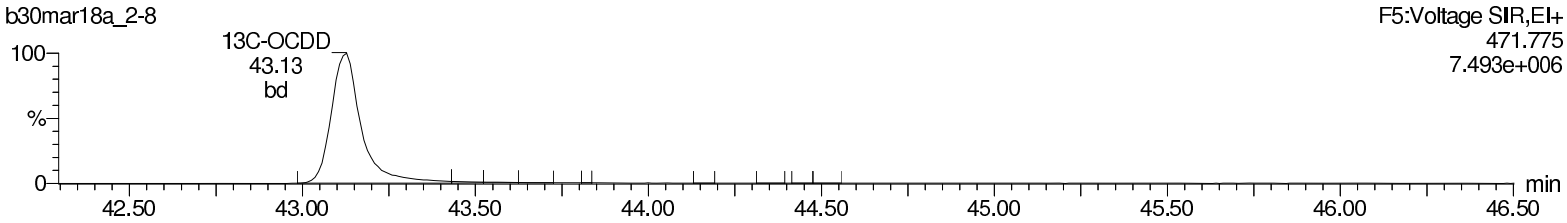
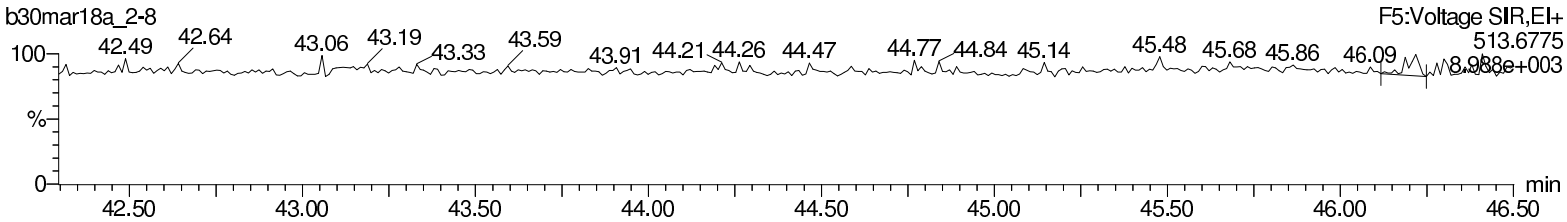
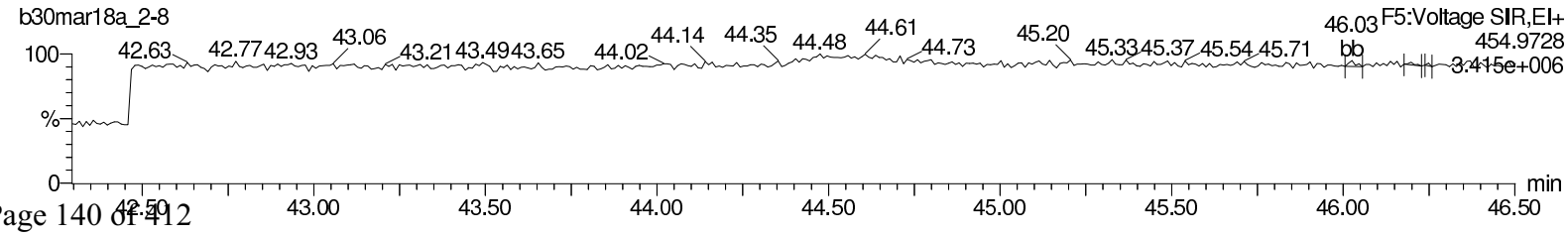


DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123006**	**Date Collected:**	**03/22/2018 08:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0009S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:03**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-9**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1024.9 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000562	ng/L	0.000562	0.00976
40321-76-4	1,2,3,7,8-PeCDD	U	0.000355	ng/L	0.000355	0.0488
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000531	ng/L	0.000531	0.0488
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.000956	ng/L	0.000541	0.0488
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000552	ng/L	0.000552	0.0488
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.0166	ng/L	0.00113	0.0488
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.220	ng/L	0.00265	0.0976
51207-31-9	2,3,7,8-TCDF	U	0.000336	ng/L	0.000336	0.00976
57117-41-6	1,2,3,7,8-PeCDF	JK	0.000332	ng/L	0.000263	0.0488
57117-31-4	2,3,4,7,8-PeCDF	U	0.000248	ng/L	0.000248	0.0488
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000433	ng/L	0.000433	0.0488
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000427	ng/L	0.000427	0.0488
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000453	ng/L	0.000453	0.0488
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.000578	ng/L	0.000578	0.0488
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00341	ng/L	0.000704	0.0488
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.00104	ng/L	0.00104	0.0488
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0131	ng/L	0.0016	0.0976
41903-57-5	Total TeCDD	U	0.000562	ng/L	0.000562	0.00976
36088-22-9	Total PeCDD	U	0.000355	ng/L	0.000355	0.0488
34465-46-8	Total HxCDD	JK	0.00502	ng/L	0.000531	0.0488
37871-00-4	Total HpCDD	JK	0.048	ng/L	0.00113	0.0488
30402-14-3	Total TeCDF	U	0.000336	ng/L	0.000336	0.00976
30402-15-4	Total PeCDF	JK	0.00127	ng/L	0.000248	0.0488
55684-94-1	Total HxCDF	J	0.00209	ng/L	0.000427	0.0488
38998-75-3	Total HpCDF	J	0.010	ng/L	0.000704	0.0488
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000375	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00104	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.92	1.95	ng/L	98.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.55	1.95	ng/L	79.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.66	1.95	ng/L	84.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.72	1.95	ng/L	88.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.70	1.95	ng/L	87.3	(23%-140%)
13C-OCDD		2.93	3.90	ng/L	75.0	(17%-157%)
13C-2,3,7,8-TCDF		1.97	1.95	ng/L	101	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.84	1.95	ng/L	94.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.72	1.95	ng/L	88.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.69	1.95	ng/L	86.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.73	1.95	ng/L	88.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.72	1.95	ng/L	88.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.88	1.95	ng/L	96.4	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123006**	**Date Collected:**	**03/22/2018 08:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0009S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:03**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-9**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1024.9 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.55	1.95	ng/L	79.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.55	1.95	ng/L	79.5	(26%-138%)
37Cl-2,3,7,8-TCDD		0.193	0.195	ng/L	98.8	(35%-197%)

Comments:

J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:42:05 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:43:05 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	9.31e1	2.76e2	3.69e2	30.36	0.999	0.34	YES	0.018	0.0288	2.86e3	1347	2.1	3.41e3	1046	3.3	bb	bb
2	12378-PeCDD							NO		0.0182		1154			835			
3	123478-HxCDD	7.72e1	9.86e1	1.76e2	36.07	1.000	0.78	YES	0.017	0.0272	1.70e3	965	1.8	3.74e3	1327	2.8	bd	bd
4	123678-HxCDD	3.49e2	2.34e2	5.83e2	36.17	1.001	1.49	YES	0.049	0.0277	6.05e3	965	6.3	4.30e3	1327	3.2	db	db
5	123789-HxCDD	1.07e2	1.89e2	2.95e2	36.38	1.006	0.57	YES	0.027	0.0283	3.19e3	965	3.3	5.47e3	1327	4.1	bb	bb
6	1234678-HpCDD	4.38e3	3.64e3	8.02e3	39.22	1.000	1.20	YES	0.849	0.0580	5.82e4	1690	34.5	5.33e4	1377	38.7	bb	bb
7	OCDD	3.77e4	4.24e4	8.00e4	43.15	1.000	0.89	NO	11.281	0.136	3.74e5	1441	259.8	4.15e5	2373	174.7	bd	bd
8	2378-TCDF							NO		0.0172		752			1142			
9	12378-PeCDF	2.21e2	1.17e2	3.38e2	32.85	1.001	1.88	YES	0.017	0.0135	5.26e3	977	5.4	3.53e3	1360	2.6	bb	bb
10	23478-PeCDF	1.01e2	1.19e2	2.21e2	33.44	1.001	0.85	YES	0.011	0.0127	2.95e3	977	3.0	2.41e3	1360	1.8	bb	bb
11	123478-HxCDF							NO		0.0222		1401			1022			
12	123678-HxCDF							NO		0.0219		1401			1022			
13	234678-HxCDF							NO		0.0232		1401			1022			
14	123789-HxCDF	6.51e1	1.79e2	2.44e2	36.67	1.001	0.36	YES	0.019	0.0296	2.33e3	1401	1.7	2.86e3	1022	2.8	bb	bb
15	1234678-HpCDF	9.55e2	9.01e2	1.86e3	38.06	1.001	1.06	NO	0.175	0.0361	1.62e4	1535	10.6	1.64e4	862	19.1	bb	bb
16	1234789-HpCDF							NO		0.0535		1535			862			
17	OCDF	2.13e3	2.69e3	4.82e3	43.41	1.007	0.79	NO	0.671	0.0820	2.31e4	922	25.0	2.90e4	1398	20.7	MM	bb
18	13C-2378-TCDD	1.00e6	1.31e6	2.31e6	30.39	1.024	0.77	NO	98.383	0.0863	1.01e7	5106	1983.7	1.29e7	3672	3515.6	bb	bb
19	13C-12378-PeCDD	9.60e5	6.10e5	1.57e6	33.61	1.133	1.57	NO	79.258	0.0914	2.12e7	4367	4846.2	1.31e7	3462	3770.1	bb	bb
20	13C-123478-HxCDD	6.90e5	5.57e5	1.25e6	36.06	0.991	1.24	NO	84.828	0.127	1.39e7	7084	1964.1	1.12e7	5349	2091.1	bd	bd
21	13C-123678-HxCDD	7.84e5	6.37e5	1.42e6	36.15	0.994	1.23	NO	88.306	0.117	1.36e7	7084	1915.2	1.12e7	5349	2095.8	db	db
22	13C-1234678-HpCDD	4.73e5	4.69e5	9.42e5	39.22	1.078	1.01	NO	87.311	0.158	6.61e6	5546	1192.5	6.27e6	5755	1089.9	bb	bb
23	13C-OCDD	7.38e5	8.21e5	1.56e6	43.13	1.186	0.90	NO	150.005	0.109	7.26e6	3587	2025.1	8.33e6	3914	2129.0	bd	bb
24	13C-2378-TCDF	1.21e6	1.58e6	2.78e6	29.44	0.992	0.77	NO	101.117	0.0803	1.30e7	5454	2382.1	1.70e7	4106	4138.0	bb	bb
25	13C-12378-PeCDF	1.47e6	9.38e5	2.41e6	32.83	1.107	1.57	NO	94.221	0.126	3.21e7	5352	6001.6	2.08e7	8566	2423.5	bd	bb
26	13C-23478-PeCDF	1.37e6	8.72e5	2.24e6	33.42	1.127	1.57	NO	88.123	0.127	3.03e7	5352	5661.5	1.93e7	8566	2252.7	bb	bb
27	13C-123478-HxCDF	4.55e5	9.09e5	1.36e6	35.39	0.973	0.50	NO	86.680	0.145	9.12e6	6616	1379.2	1.80e7	8543	2109.6	bd	bd
28	13C-123678-HxCDF	5.61e5	1.05e6	1.61e6	35.48	0.975	0.53	NO	88.583	0.125	1.03e7	6616	1555.8	2.00e7	8543	2341.1	db	db
29	13C-234678-HxCDF	4.63e5	9.01e5	1.36e6	35.94	0.988	0.51	NO	88.257	0.148	8.57e6	6616	1295.5	1.69e7	8543	1976.9	bb	bb
30	13C-123789-HxCDF	4.57e5	9.06e5	1.36e6	36.65	1.008	0.50	NO	96.440	0.162	7.19e6	6616	1087.5	1.42e7	8543	1666.4	bb	bd
31	13C-1234678-HpCDF	2.95e5	6.72e5	9.67e5	38.04	1.046	0.44	NO	79.461	0.126	4.63e6	4056	1140.3	1.03e7	6144	1679.1	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:42:05 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:43:05 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.37e5	5.32e5	7.69e5	39.83	1.095	0.44	NO	79.541	0.159	3.11e6	4056	766.8	7.24e6	6144	1178.4	bd	bb
33	13C-1234-TCDD	8.94e5	1.17e6	2.06e6	29.67	0.000	0.77	NO	100.000	0.0985	9.66e6	5106	1892.5	1.23e7	3672	3362.6	bb	bb
34	13C-123789-HxCDD	7.87e5	6.45e5	1.43e6	36.37	0.000	1.22	NO	100.000	0.131	1.31e7	7084	1843.0	1.08e7	5349	2024.3	bd	bd
35	37Cl-2378-TCDD	2.36e5		2.36e5	30.41	1.025			9.883	0.0133	2.33e6	1371	1698.2				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:42:05 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:43:05 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	9.31e1	2.76e2	3.69e2	30.36	0.34	YES	0.018	0.0288	2.86e3	1347	2.1	3.41e3	1046	3.3	bb	bb
2	Total-tetradioxins	5.99e1	5.78e1	1.18e2	29.93	1.04	YES	0.006	0.0288	2.57e3	1347	1.9	1.54e3	1046	1.5	bd	bb
3	Total-tetradioxins	8.45e1	1.02e2	1.87e2	28.72	0.83	NO	0.009	0.0288	2.07e3	1347	1.5	2.72e3	1046	2.6	bb	bb
4	Total-tetradioxins	7.98e1	5.19e1	1.32e2	28.55	1.54	YES	0.006	0.0288	2.99e3	1347	2.2	1.43e3	1046	1.4	bb	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentadioxins	1.55e2	7.26e1	2.27e2	32.84	2.13	YES	0.018	0.0182	4.40e3	1154	3.8	2.84e3	835	3.4	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-hexadioxins	2.67e2	1.10e2	3.78e2	36.67	2.42	YES	0.034	0.0278	4.01e3	965	4.2	3.25e3	1327	2.4	bb	bb
2	123789-HxCDD	1.07e2	1.89e2	2.95e2	36.38	0.57	YES	0.027	0.0283	3.19e3	965	3.3	5.47e3	1327	4.1	bb	bb
3	123678-HxCDD	3.49e2	2.34e2	5.83e2	36.17	1.49	YES	0.049	0.0277	6.05e3	965	6.3	4.30e3	1327	3.2	db	db
4	123478-HxCDD	7.72e1	9.86e1	1.76e2	36.07	0.78	YES	0.017	0.0272	1.70e3	965	1.8	3.74e3	1327	2.8	bd	bd
5	Total-hexadioxins	9.01e2	5.53e2	1.45e3	35.54	1.63	YES	0.131	0.0278	1.23e4	965	12.7	8.39e3	1327	6.3	MM	db
6	Total-hexadioxins	2.74e2	1.46e2	4.20e2	35.38	1.88	YES	0.038	0.0278	4.26e3	965	4.4	2.93e3	1327	2.2	MM	bd
7	Total-hexadioxins	5.24e2	3.24e2	8.49e2	34.90	1.62	YES	0.077	0.0278	1.07e4	965	11.1	7.60e3	1327	5.7	bb	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	1234678-HpCDD	4.38e3	3.64e3	8.02e3	39.22	1.20	YES	0.849	0.0580	5.82e4	1690	34.5	5.33e4	1377	38.7	bb	bb
2	Total-heptadioxins	7.40e3	7.79e3	1.52e4	38.37	0.95	NO	1.609	0.0580	1.17e5	1690	69.2	1.30e5	1377	94.5	bb	bd
3	Total-heptadioxins	5.43e2	1.27e2	6.70e2	38.06	4.27	YES	0.071	0.0580	1.02e4	1690	6.1	3.28e3	1377	2.4	bb	bb

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:42:05 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:43:05 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	5.10e1	9.11e1	1.42e2	30.43	0.56	YES	0.006	0.0172	9.89e2	752	1.3	1.65e3	1142	1.4	bb	bb
2	Total-tetrafurans	9.93e1	8.06e1	1.80e2	29.81	1.23	YES	0.007	0.0172	2.12e3	752	2.8	3.15e3	1142	2.8	bd	bb
3	Total-tetrafurans	8.86e1	1.06e2	1.95e2	29.63	0.83	NO	0.008	0.0172	2.07e3	752	2.8	1.82e3	1142	1.6	bb	bb

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	6.04e2	3.82e2	9.86e2	31.36	1.58	NO	0.048	0.0136	1.10e4	847	13.0	5.82e3	1583	3.7	bb	bb
2	Total-pentafurans (F1)	3.55e2	9.07e1	4.46e2	30.24	3.92	YES	0.022	0.0136	6.90e3	847	8.1	1.71e3	1583	1.1	db	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	23478-PeCDF	1.01e2	1.19e2	2.21e2	33.44	0.85	YES	0.011	0.0127	2.95e3	977	3.0	2.41e3	1360	1.8	bb	bb
2	12378-PeCDF	2.21e2	1.17e2	3.38e2	32.85	1.88	YES	0.017	0.0135	5.26e3	977	5.4	3.53e3	1360	2.6	bb	bb
3	Total-pentafurans	5.60e1	7.48e1	1.31e2	32.63	0.75	YES	0.006	0.0131	2.39e3	977	2.4	2.11e3	1360	1.5	bb	bb
4	Total-pentafurans	2.18e2	7.16e1	2.89e2	32.31	3.04	YES	0.014	0.0131	4.99e3	977	5.1	2.15e3	1360	1.6	db	bb

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDF	6.51e1	1.79e2	2.44e2	36.67	0.36	YES	0.019	0.0296	2.33e3	1401	1.7	2.86e3	1022	2.8	bb	bb
2	Total-hexafurans	3.90e2	3.33e2	7.22e2	35.04	1.17	NO	0.052	0.0241	1.36e4	1401	9.7	7.94e3	1022	7.8	bb	bb
3	Total-hexafurans	4.47e2	3.25e2	7.72e2	34.63	1.37	NO	0.055	0.0241	7.21e3	1401	5.1	8.27e3	1022	8.1	bb	bb
4	Total-hexafurans	1.76e2	7.78e1	2.54e2	34.51	2.26	YES	0.018	0.0241	6.46e3	1401	4.6	2.30e3	1022	2.2	bb	bb

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	1.72e3	1.53e3	3.25e3	38.54	1.12	NO	0.340	0.0438	2.72e4	1535	17.7	2.66e4	862	30.9	bb	bb
2	1234678-HpCDF	9.55e2	9.01e2	1.86e3	38.06	1.06	NO	0.175	0.0361	1.62e4	1535	10.6	1.64e4	862	19.1	bb	bb

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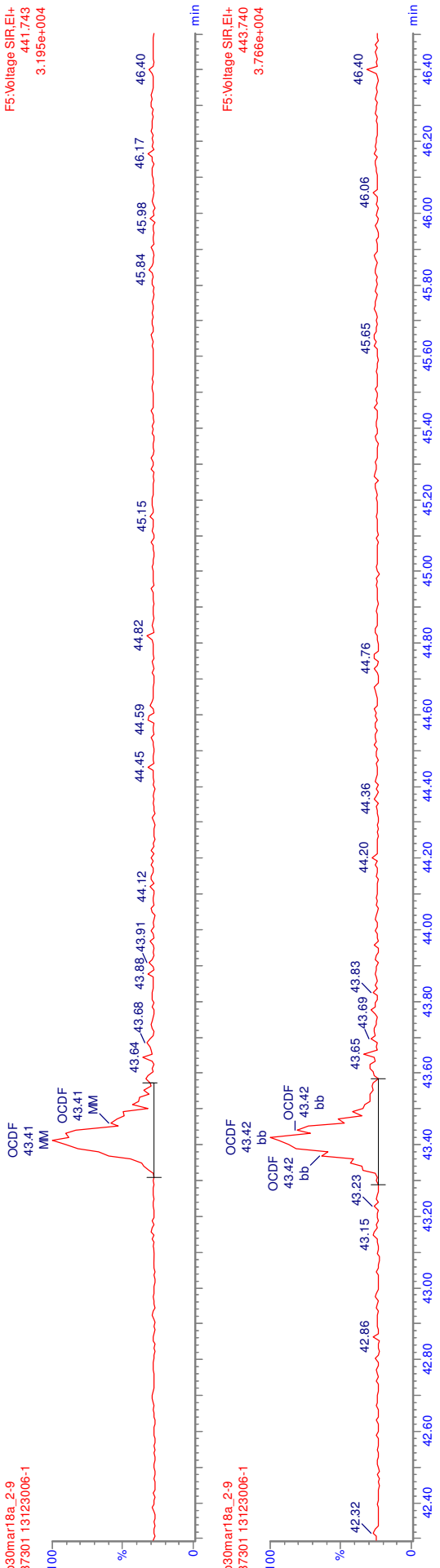

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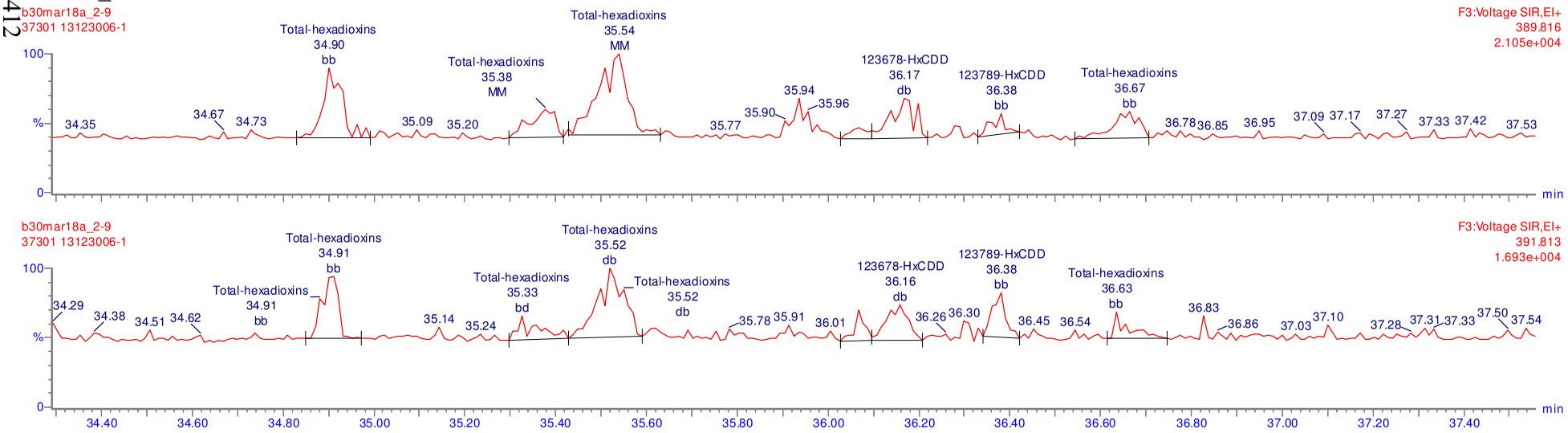
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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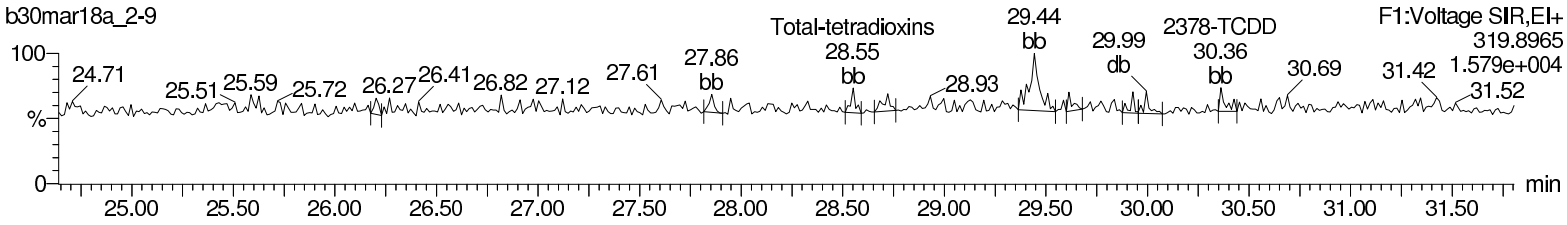
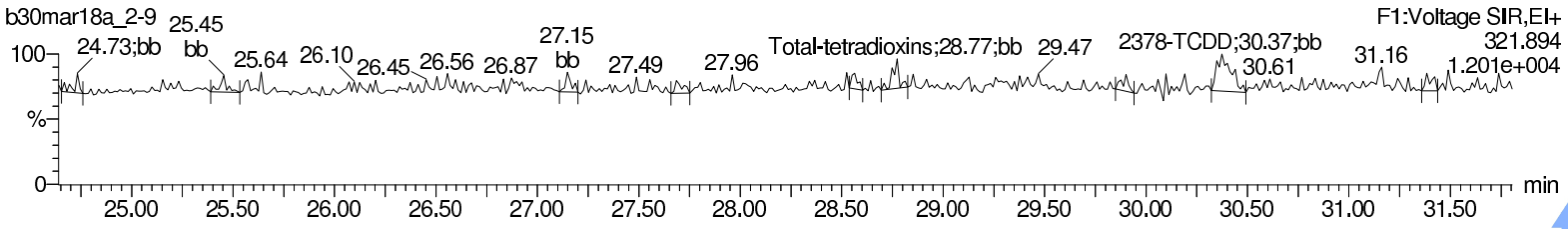
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

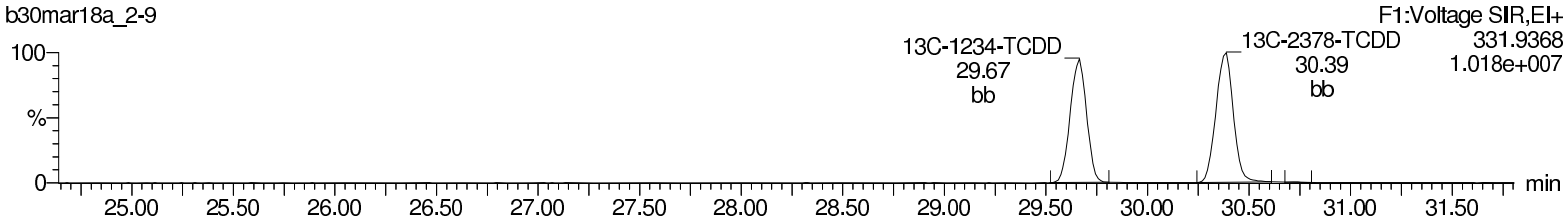
Total-tetradioxins



Total-tetradioxins



13C-2378-TCDD



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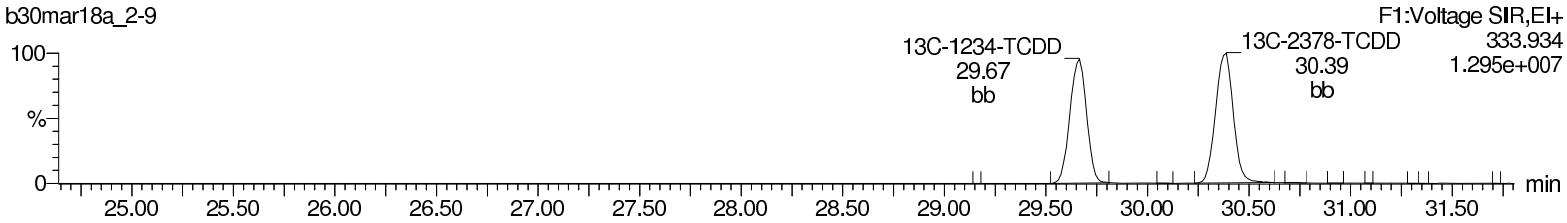

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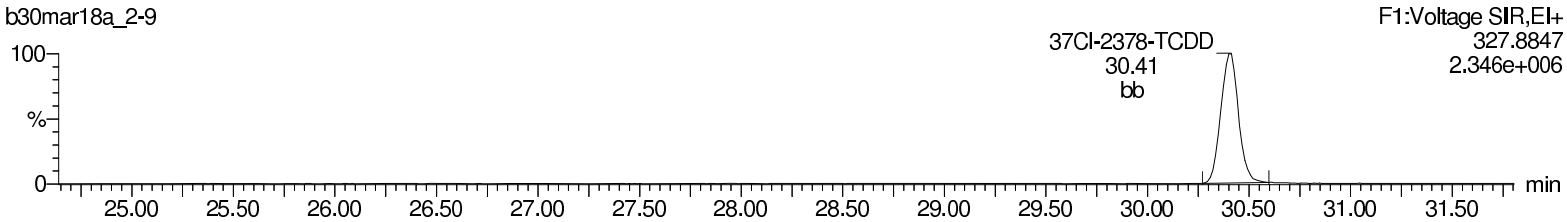
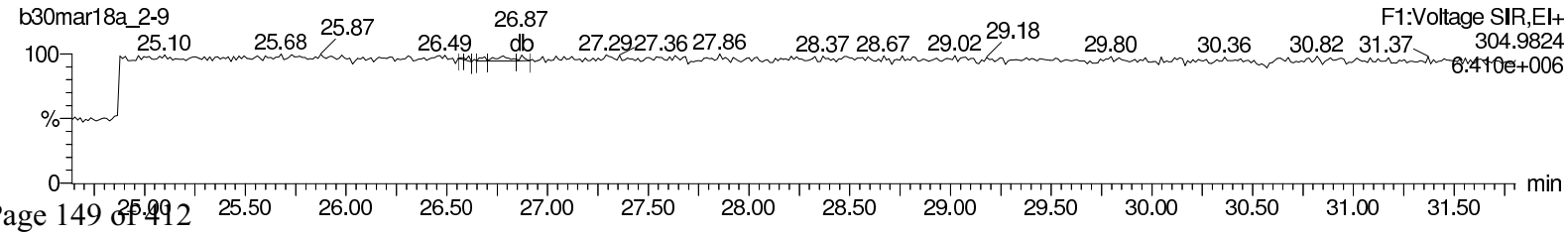


Lock Mass F1

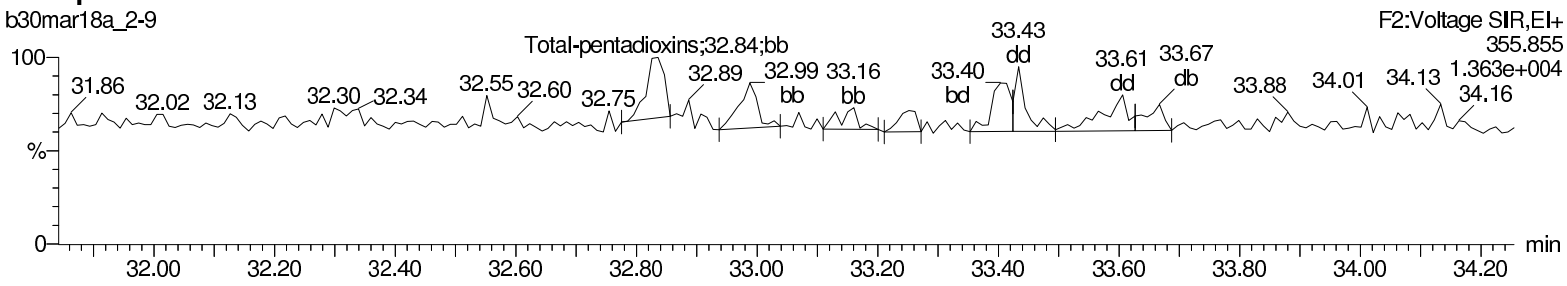


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

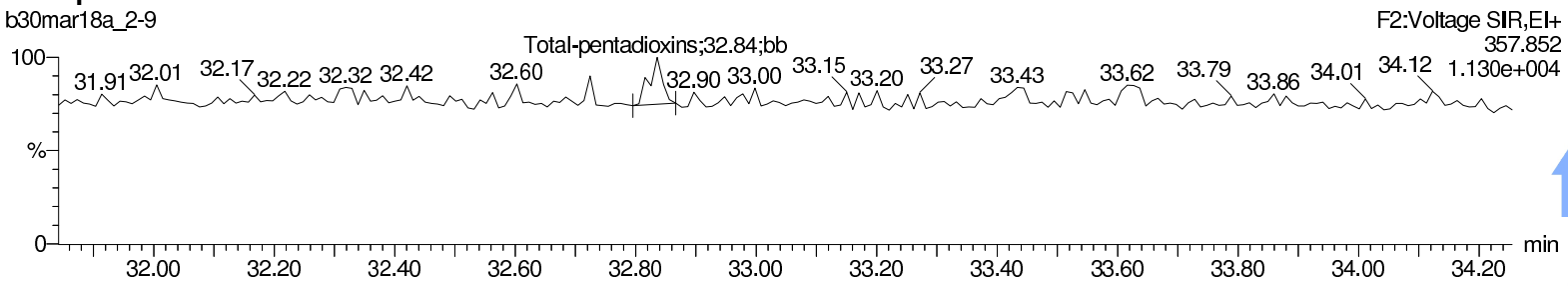
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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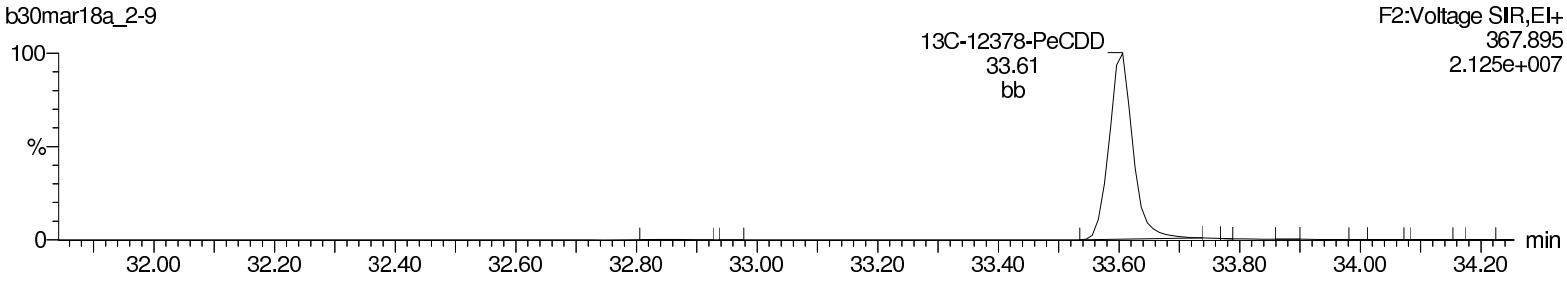

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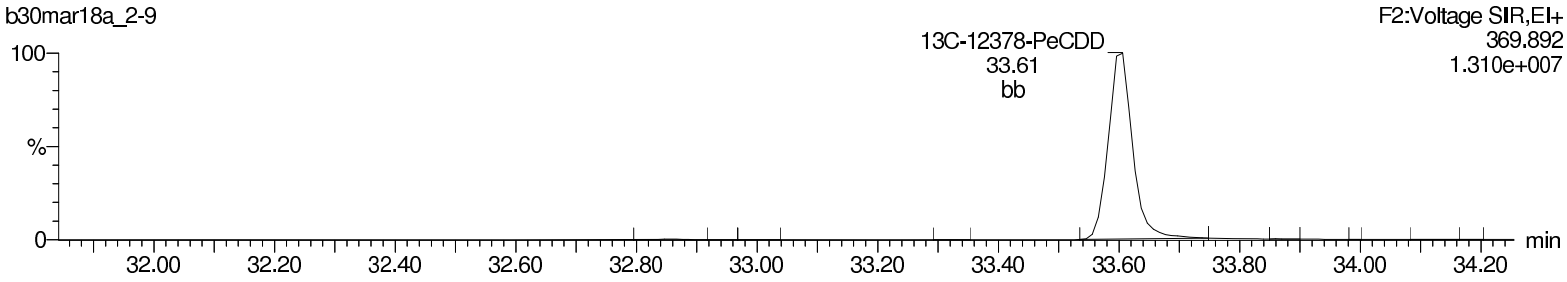

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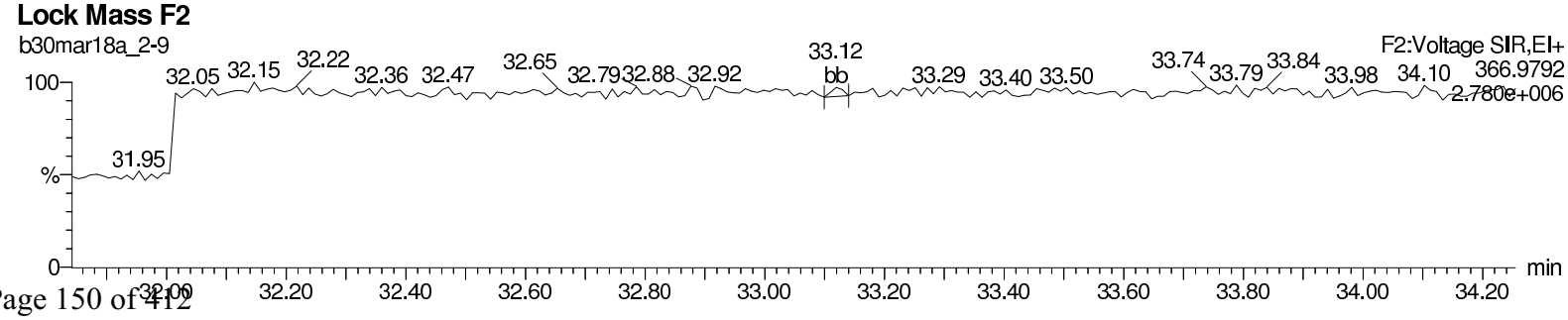

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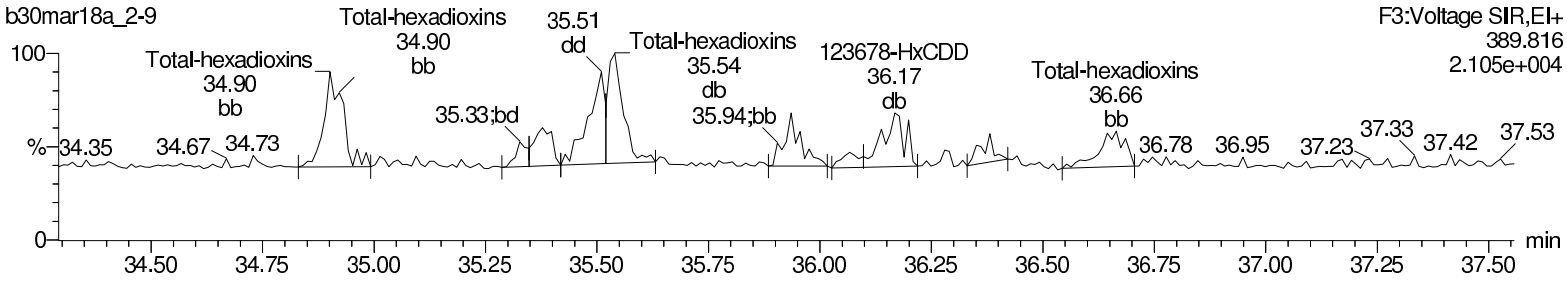
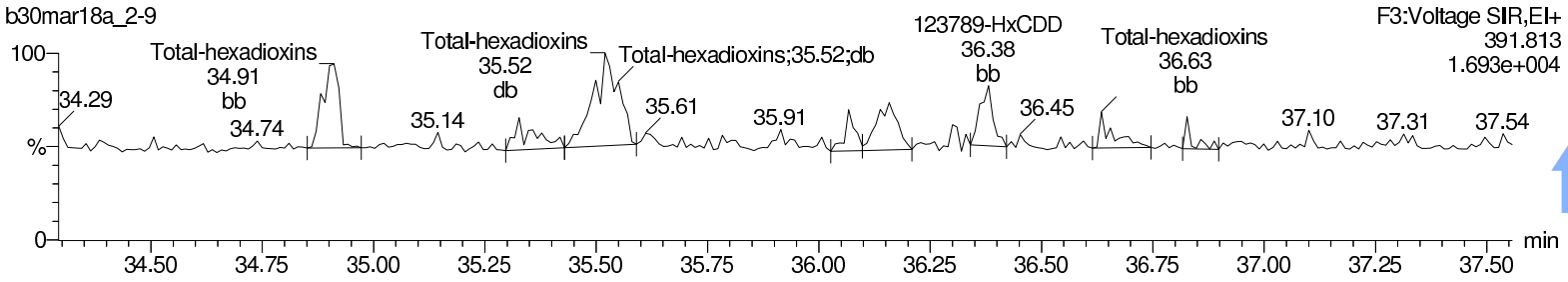
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

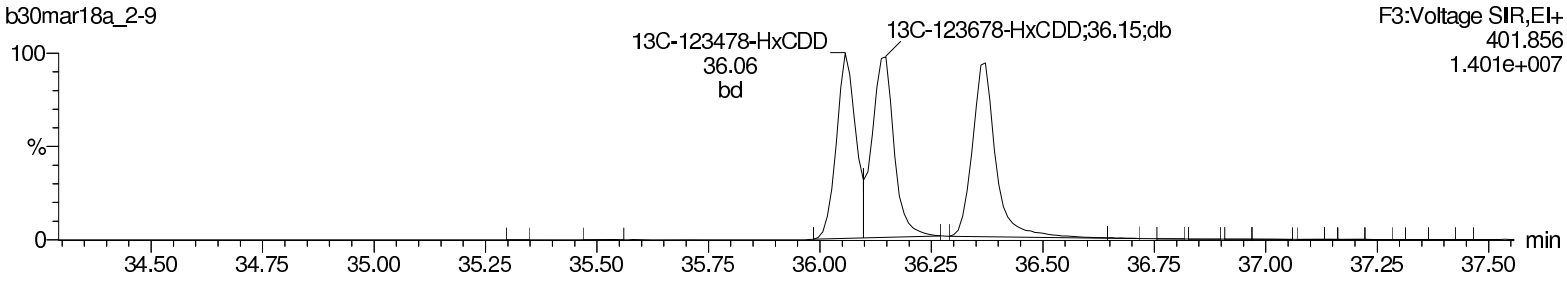
Total-hexadioxins



Total-hexadioxins



13C-123478-HxCDD



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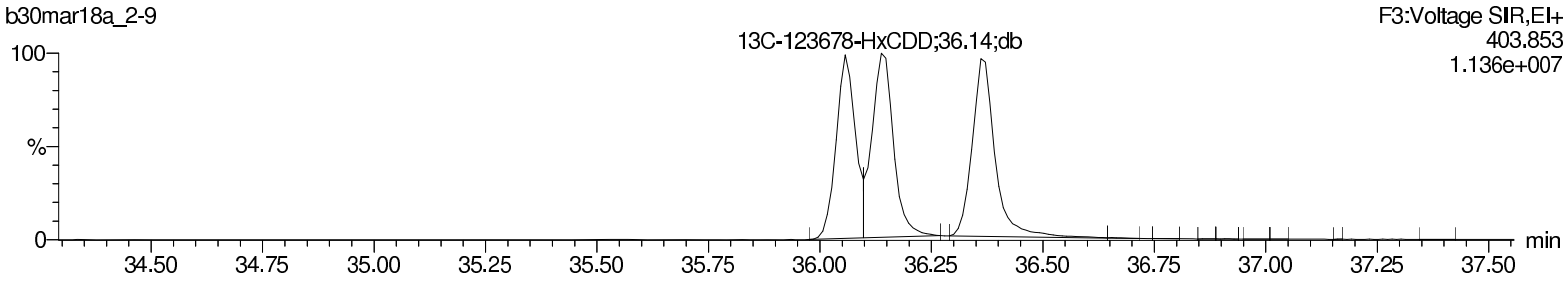
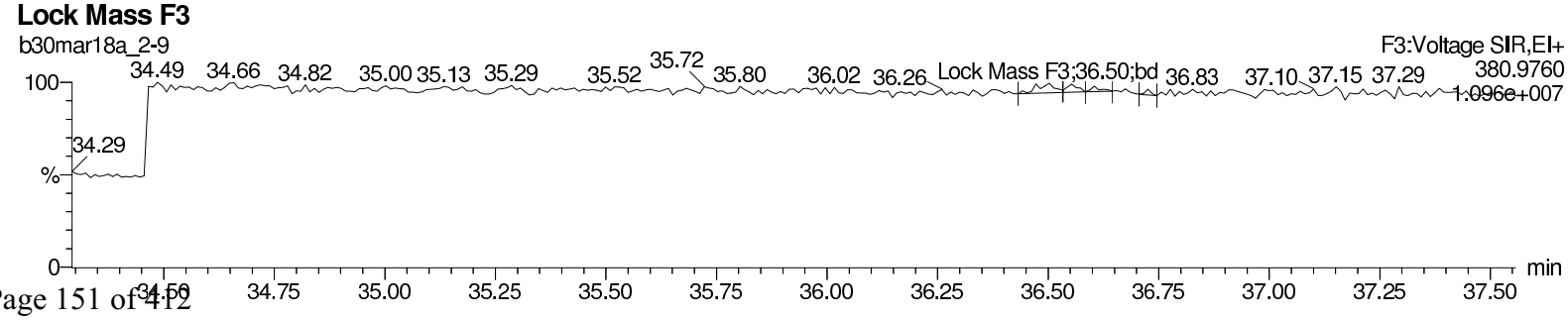


Lock Mass F3



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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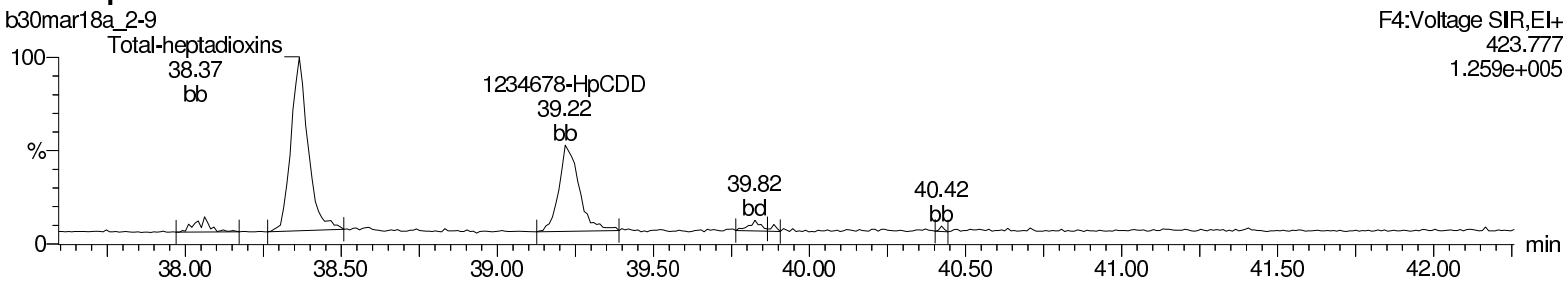
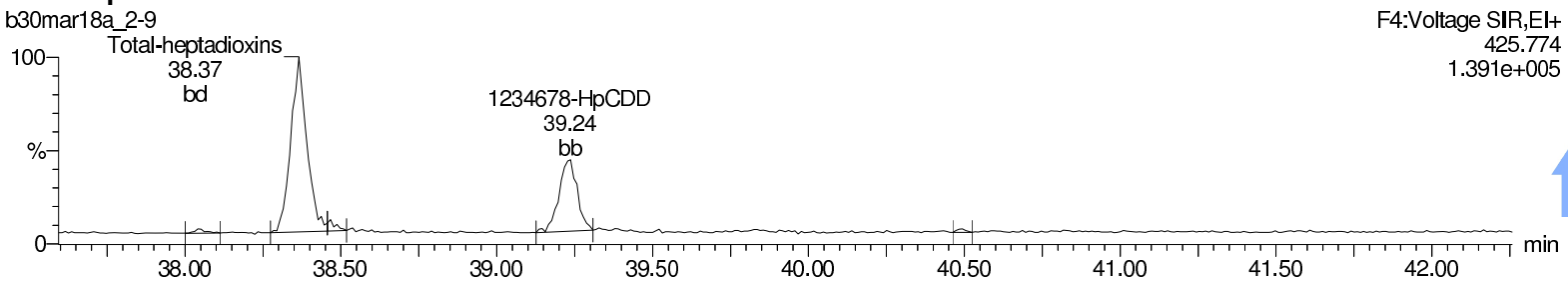
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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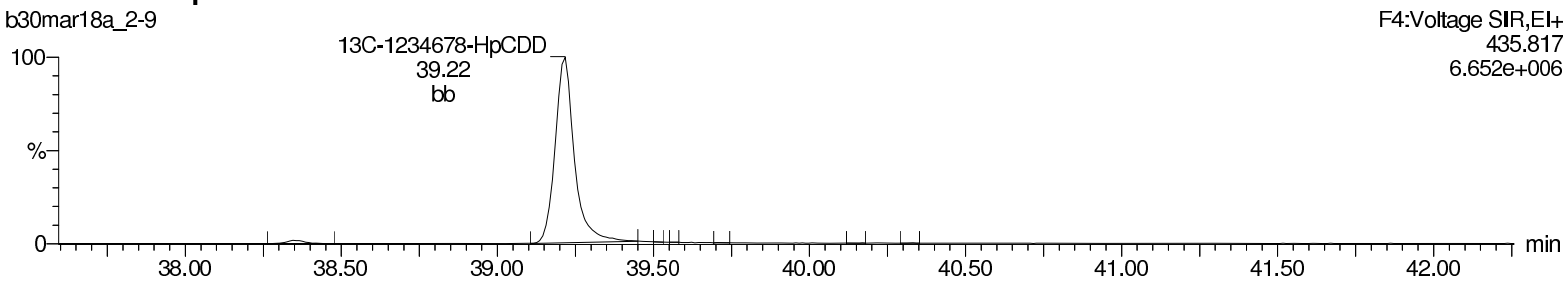

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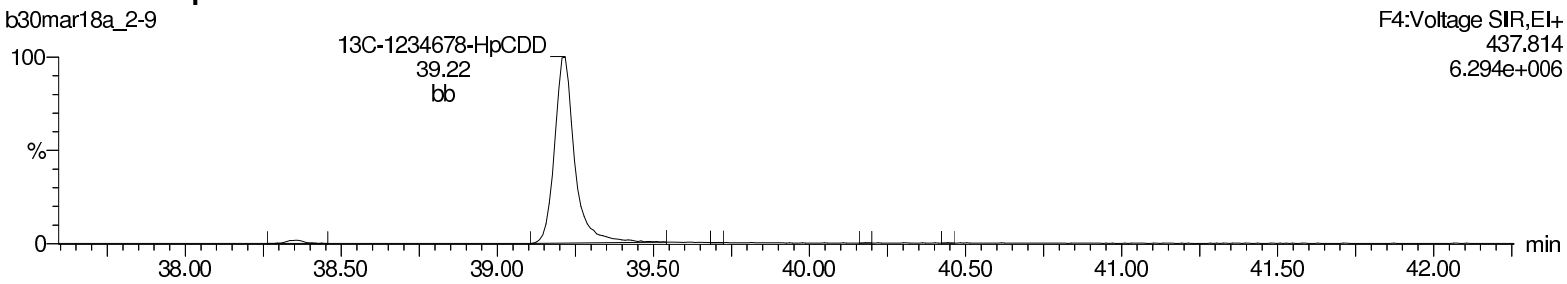
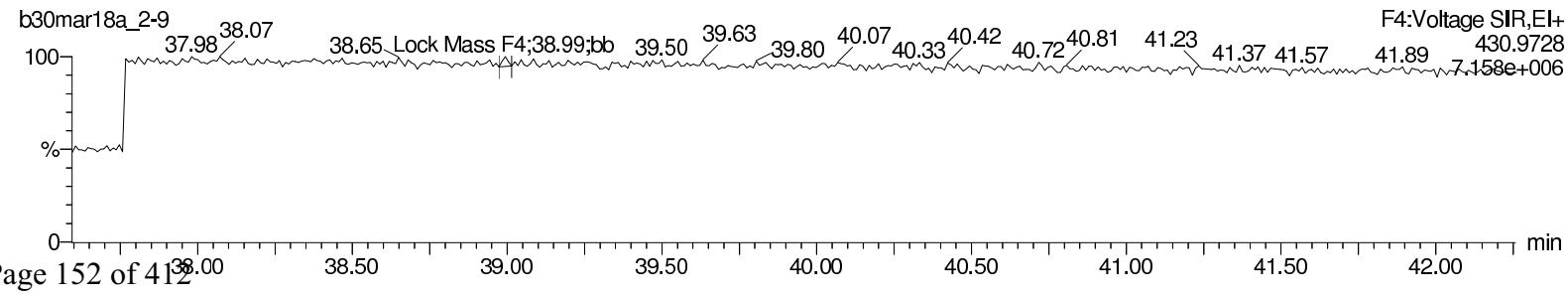


Lock Mass F4



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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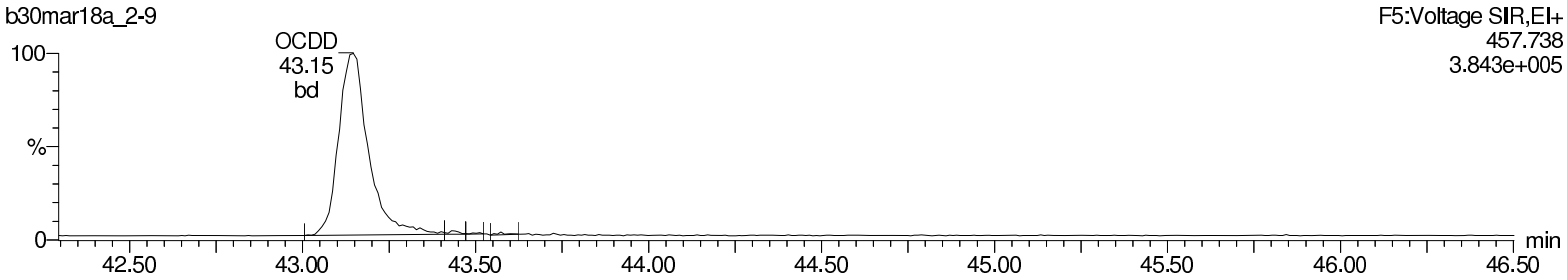
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



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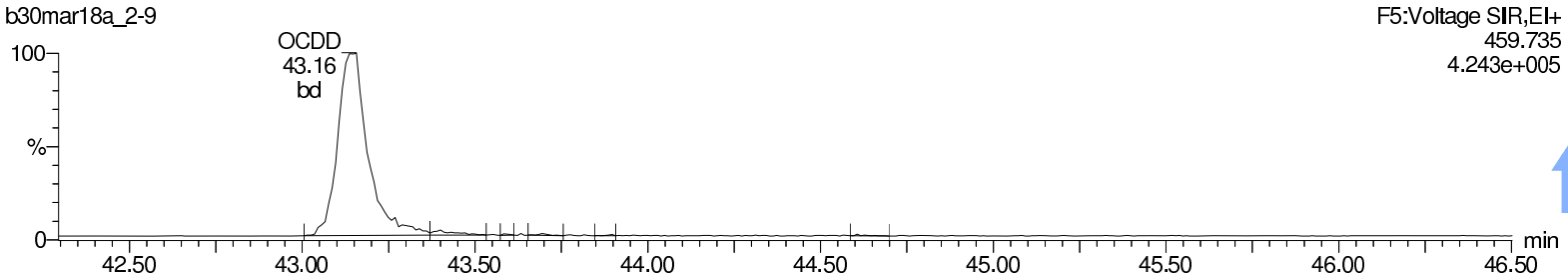

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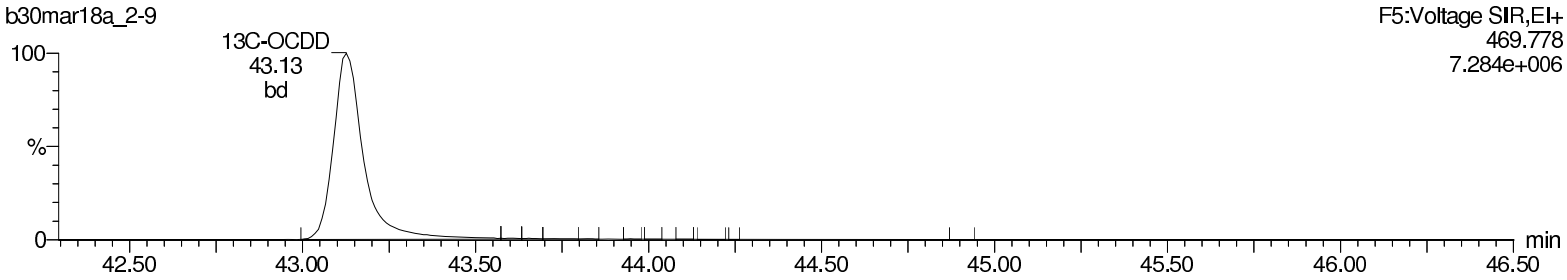

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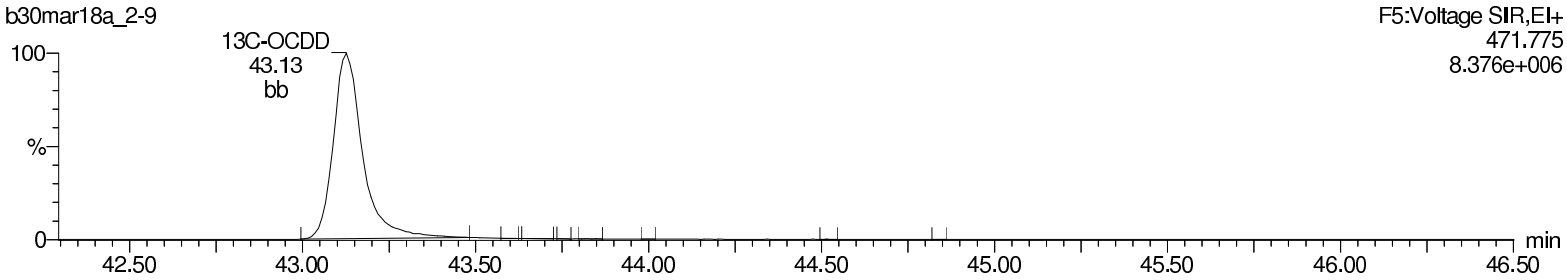

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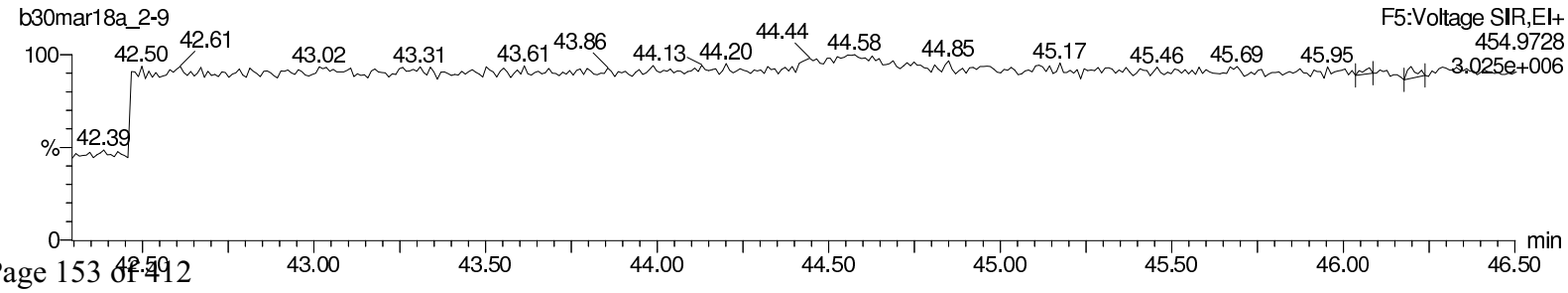

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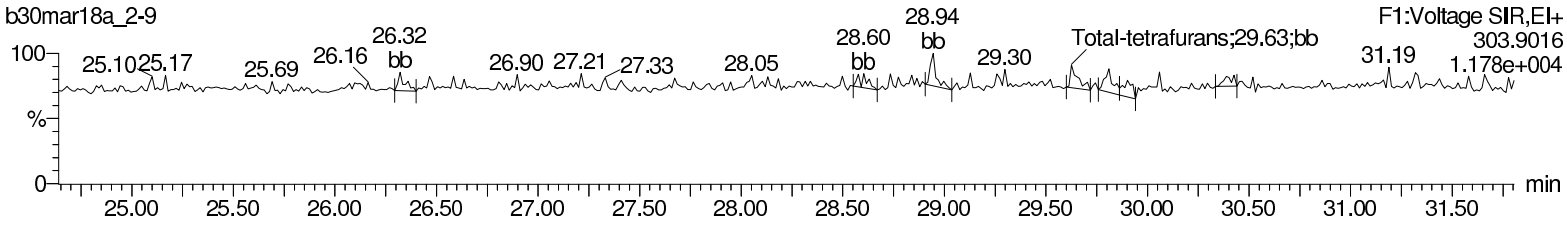
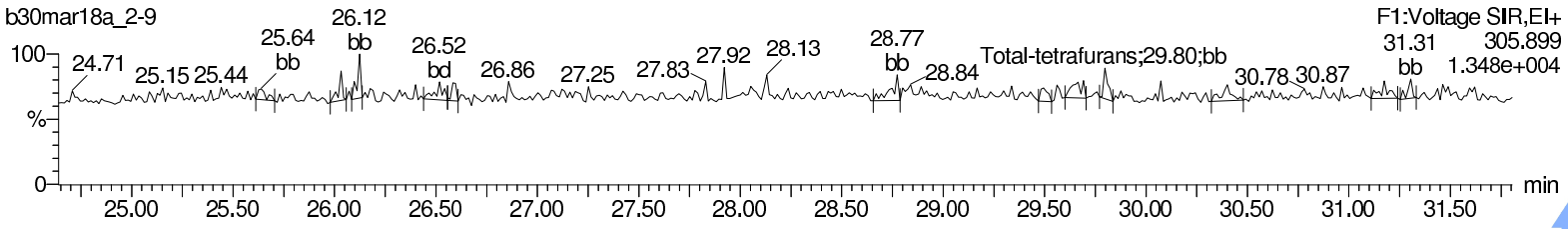
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

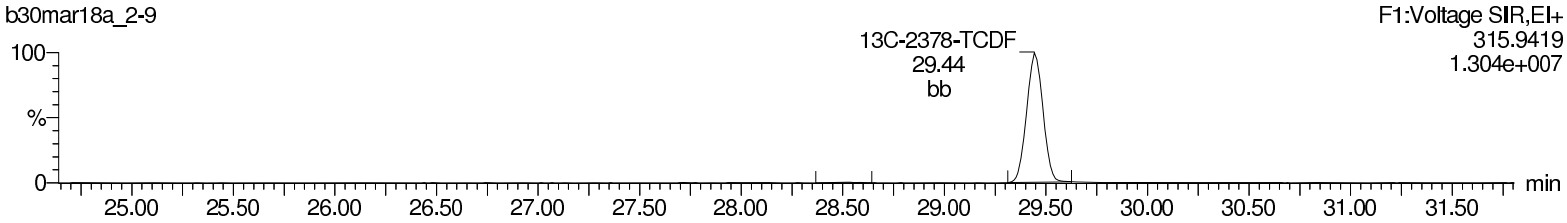
Total-tetrafurans



Total-tetrafurans



13C-2378-TCDF



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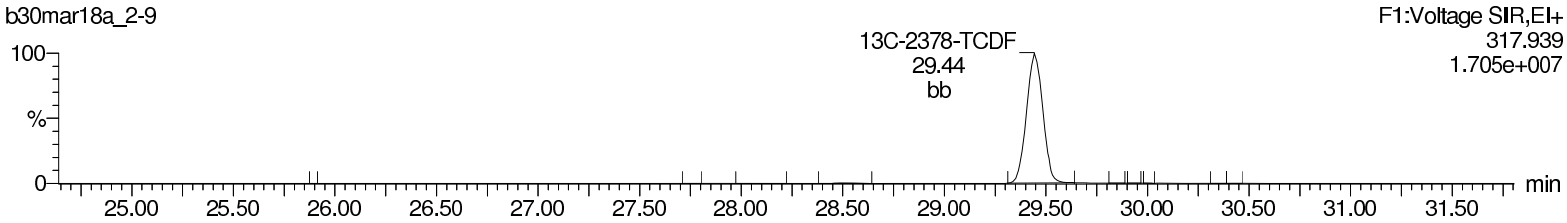
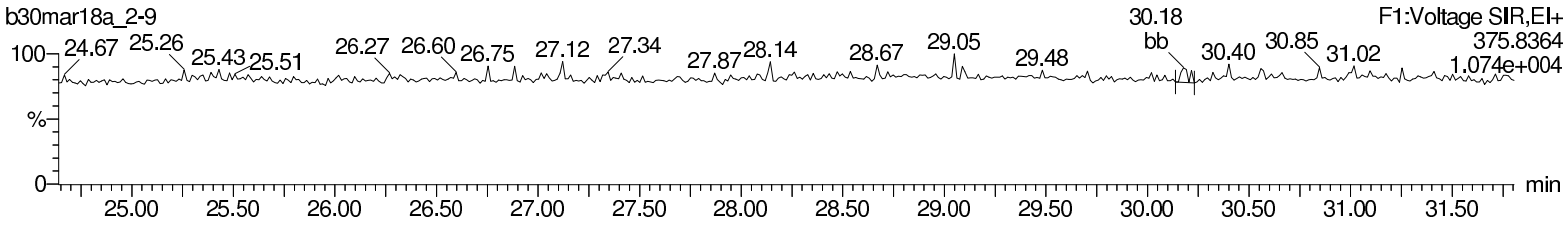
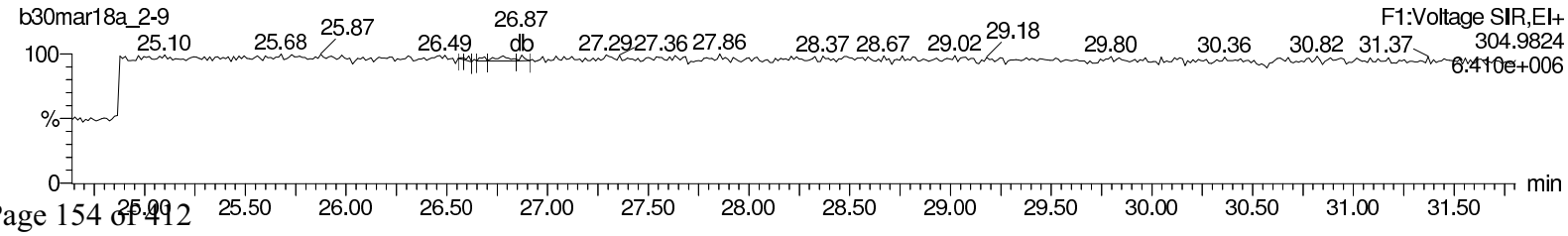


HxDPE



Lock Mass F1



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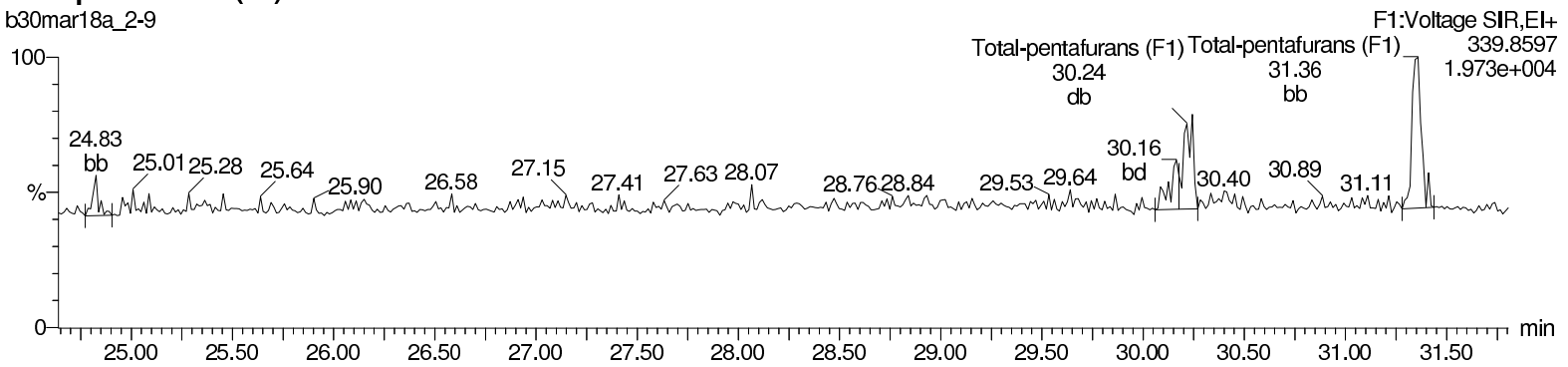
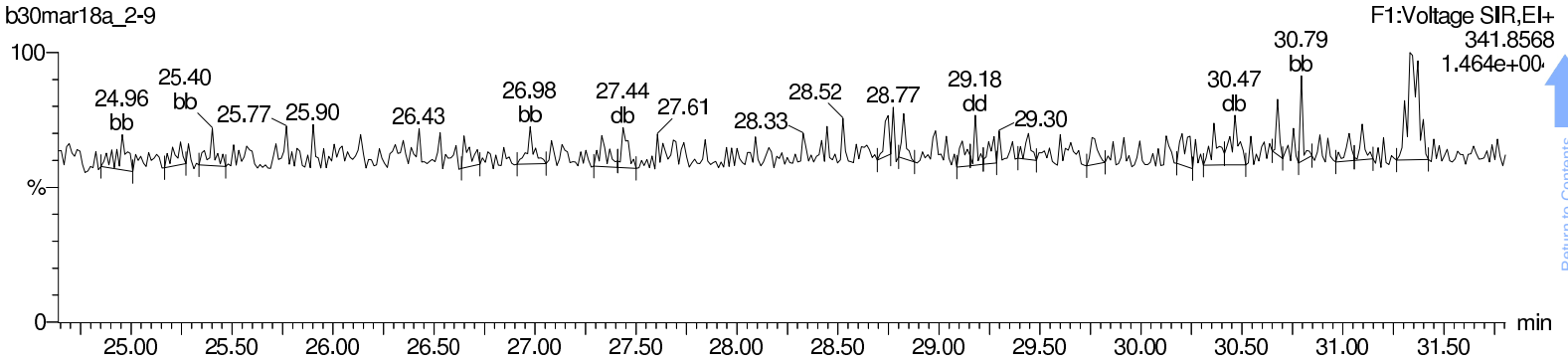
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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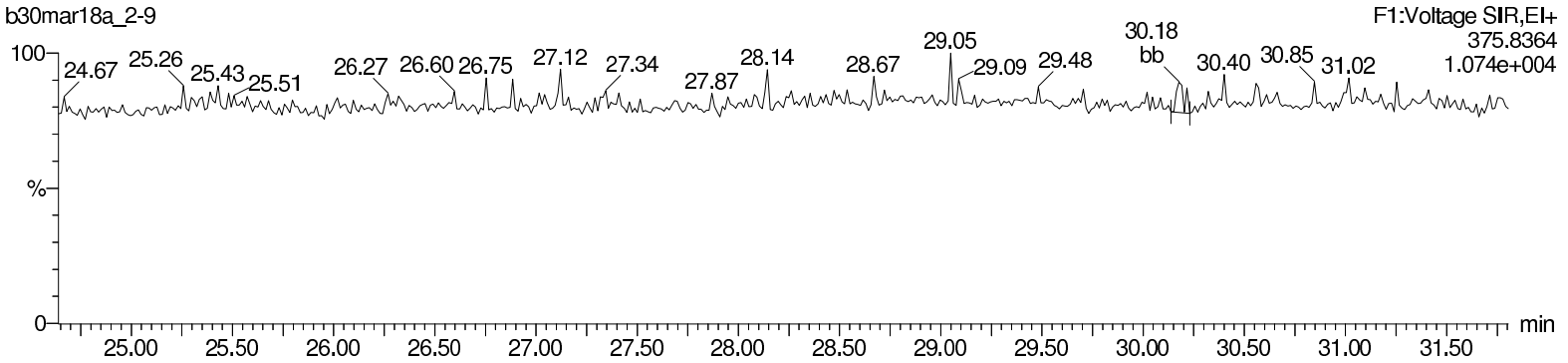
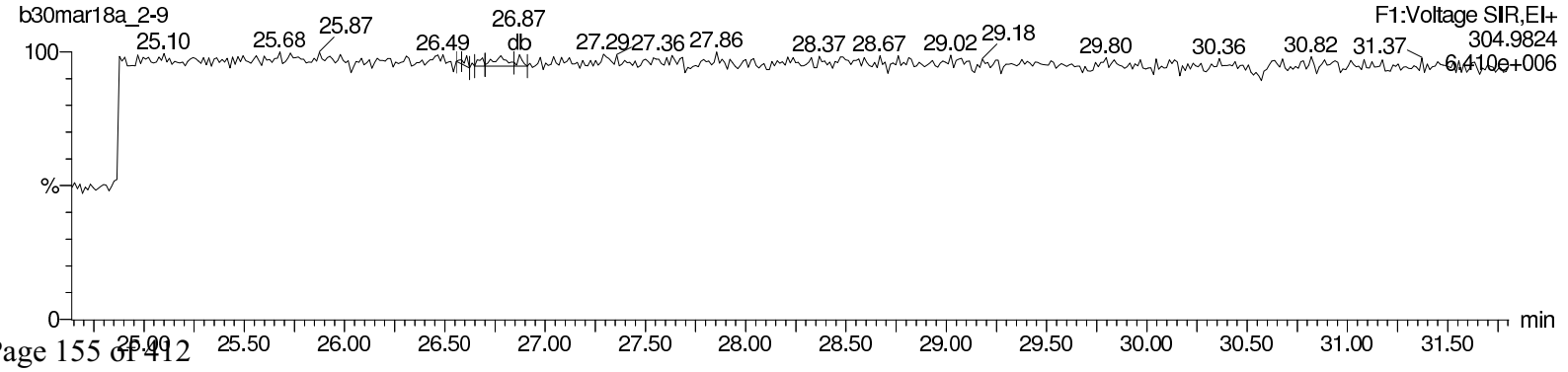


Lock Mass F1



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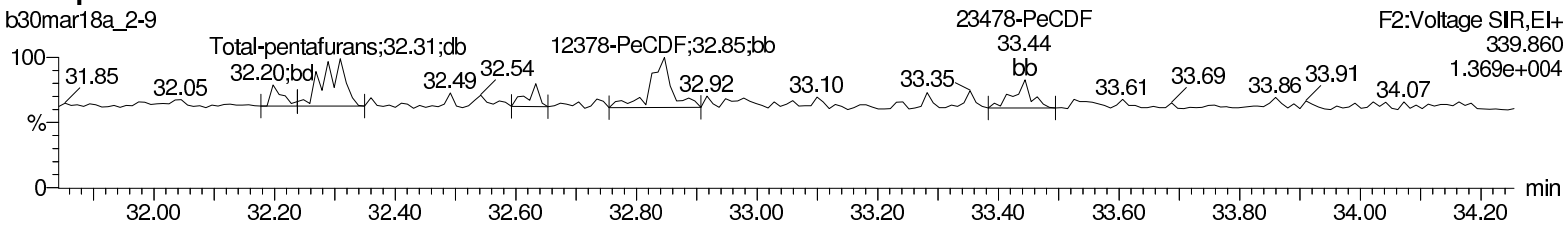
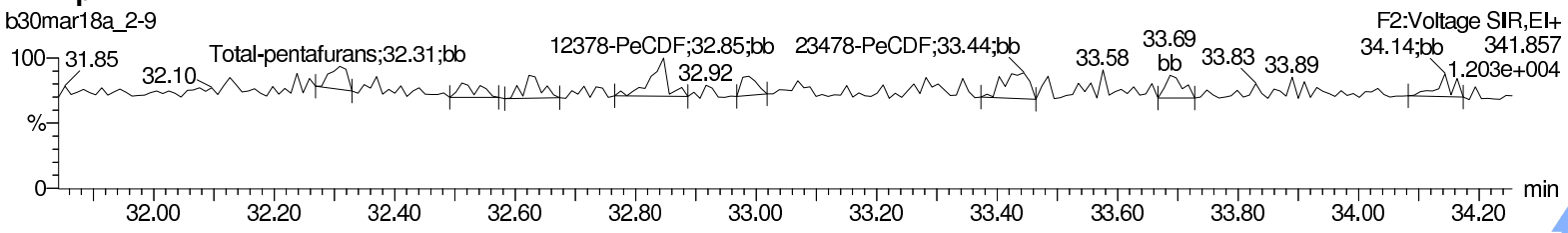
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

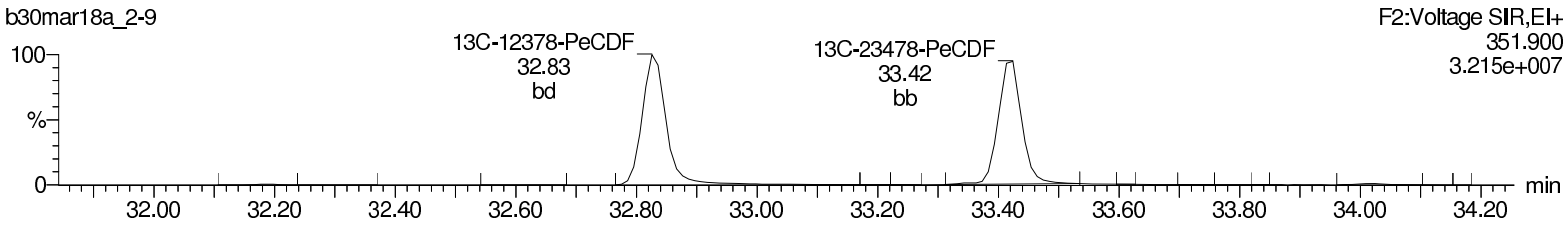
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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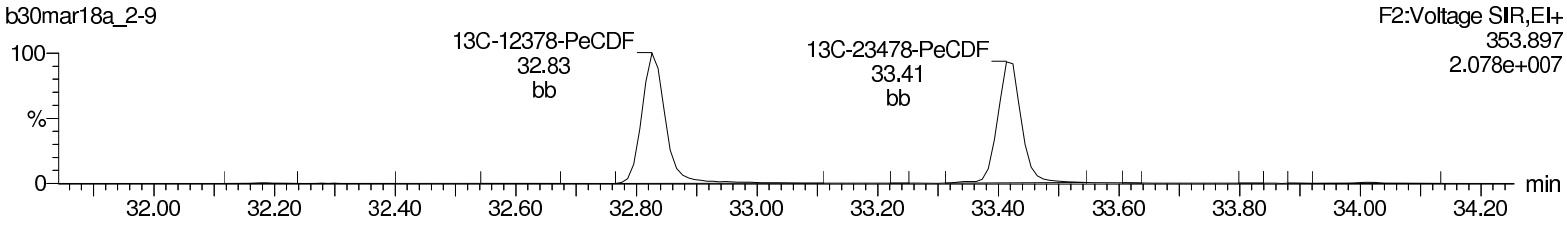

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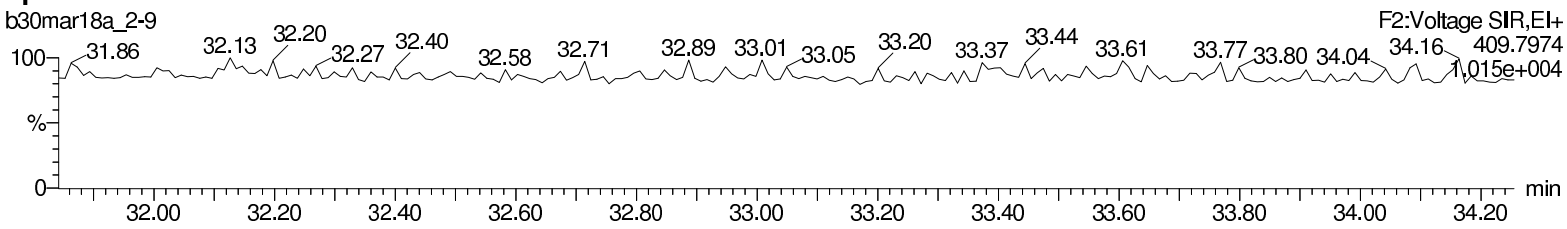
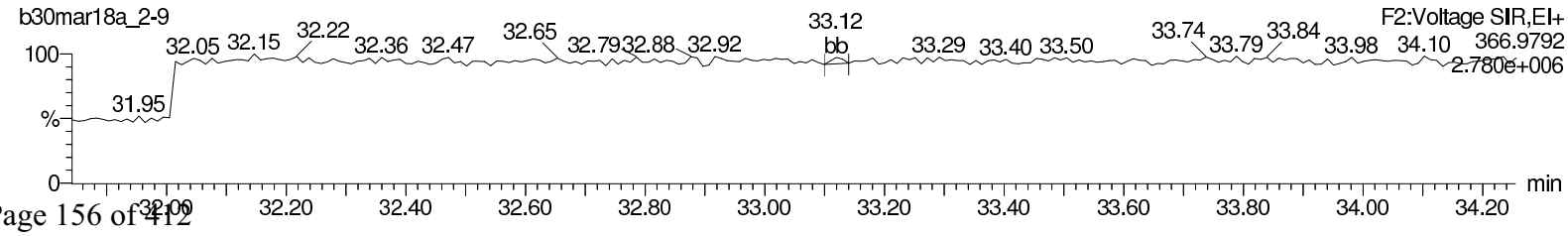


Lock Mass F2



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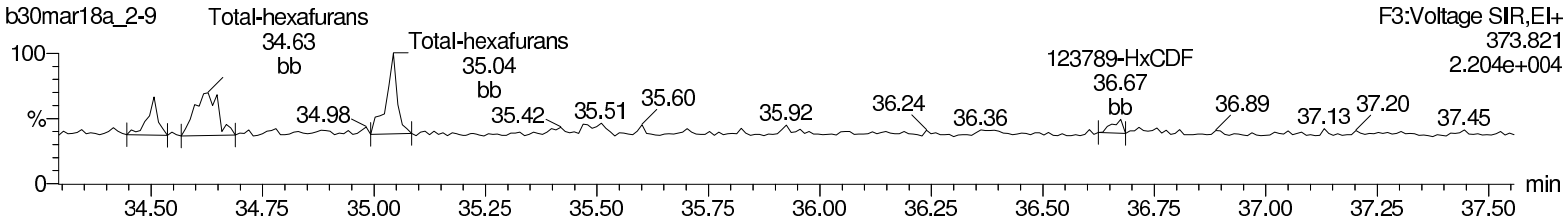
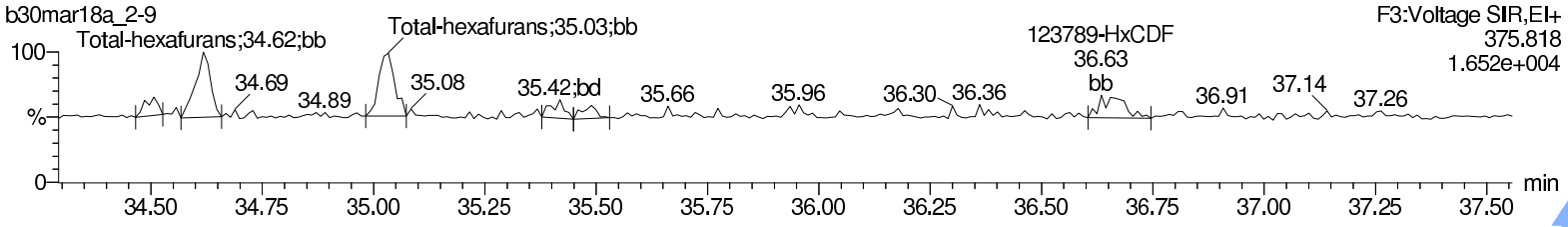
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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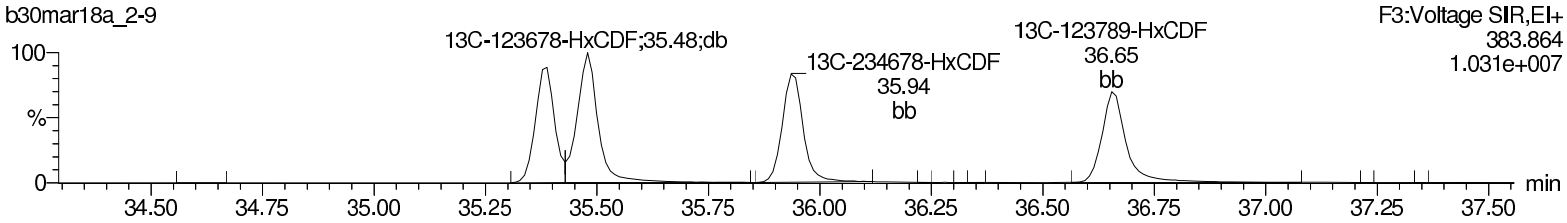

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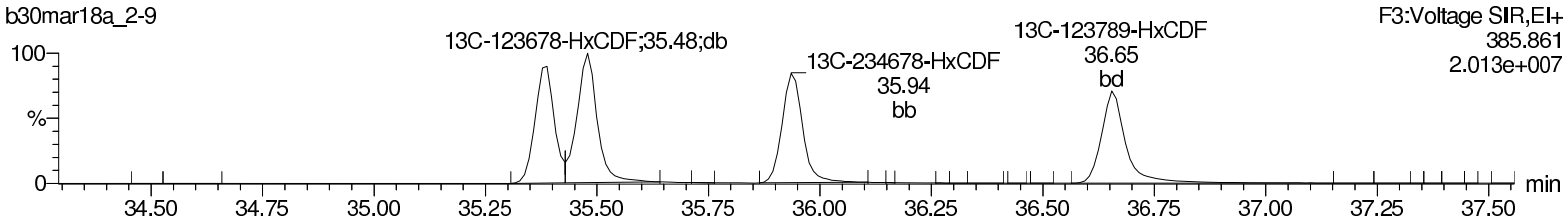

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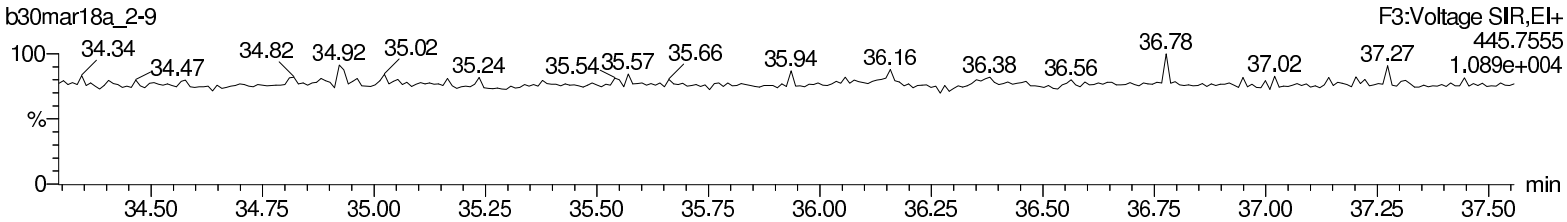
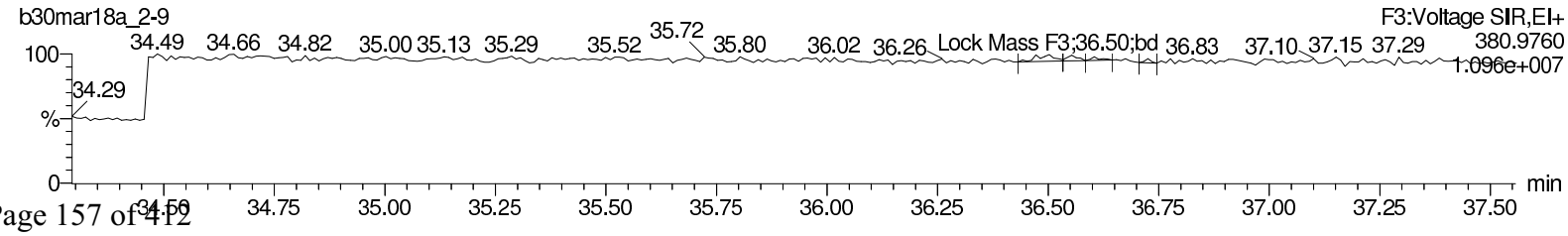


Lock Mass F3



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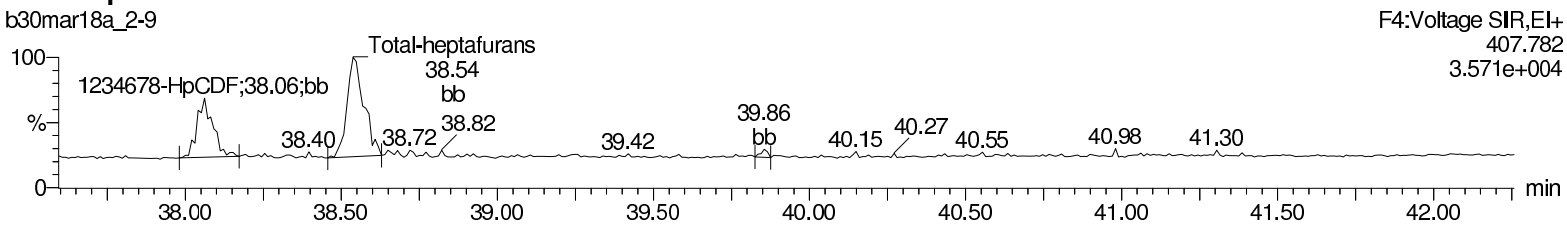
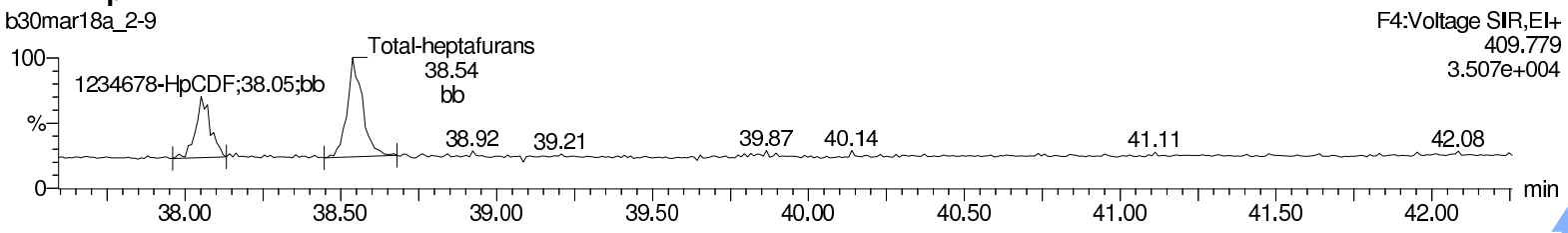
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

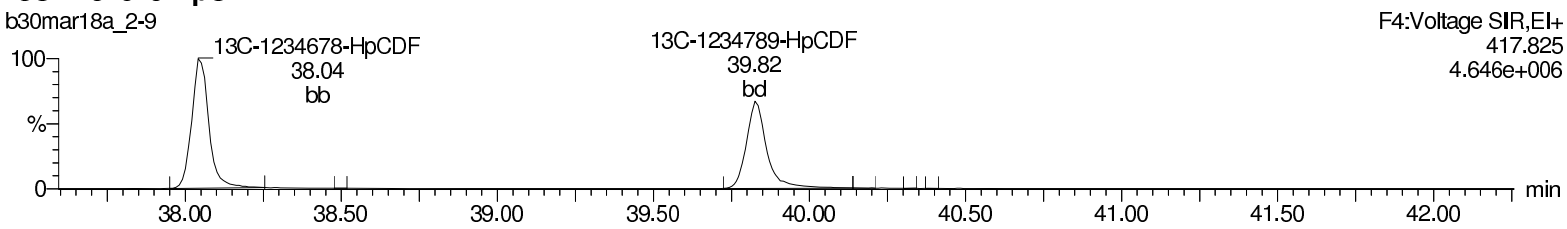
Total-heptafurans



Total-heptafurans



13C-1234678-HpCDF



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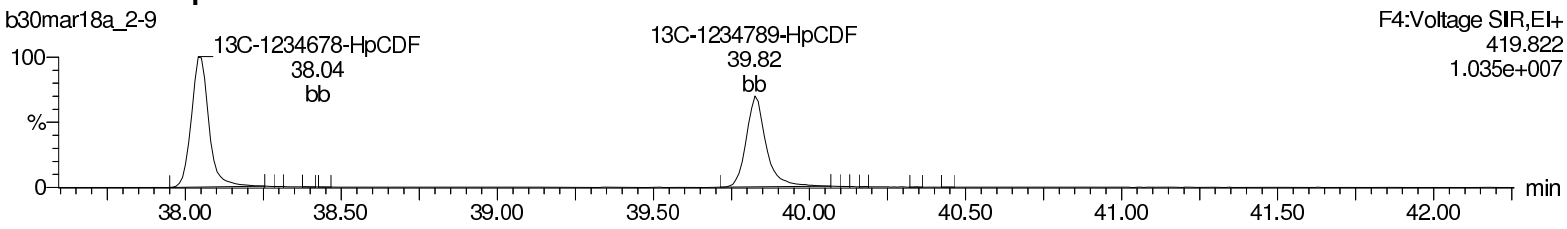

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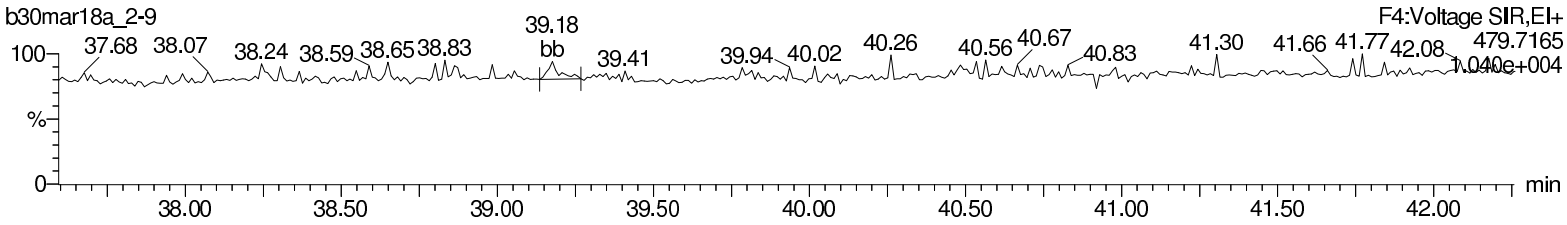
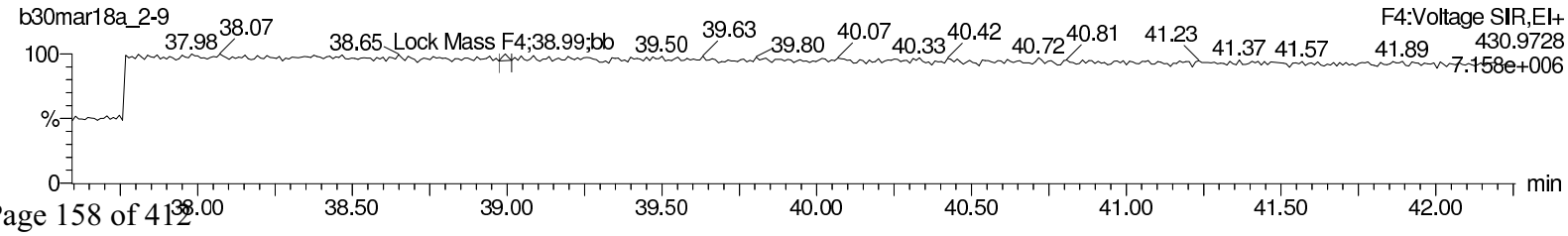


Lock Mass F4

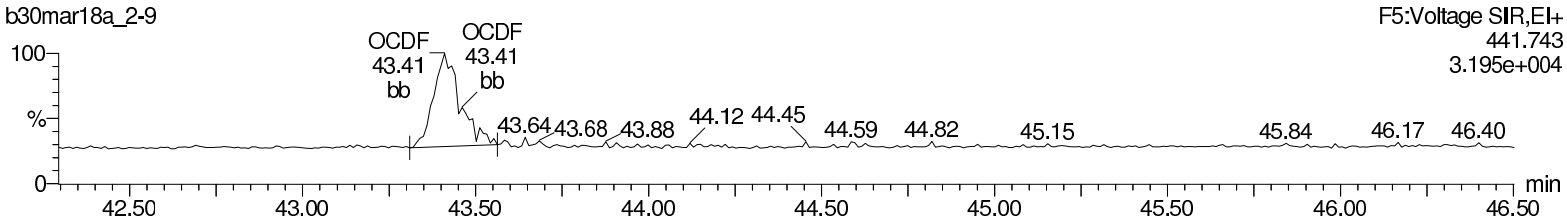


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

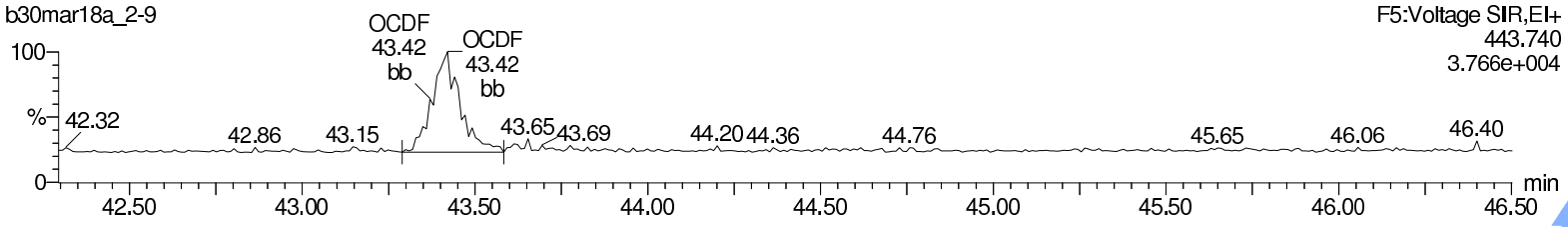
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

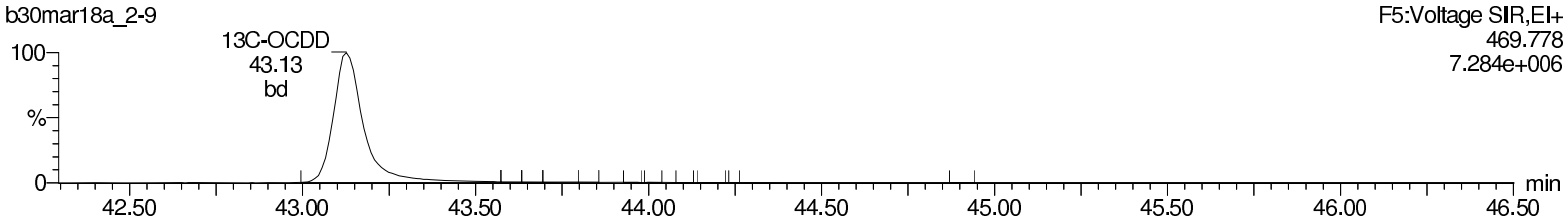
OCDF



OCDF



13C-OCDD



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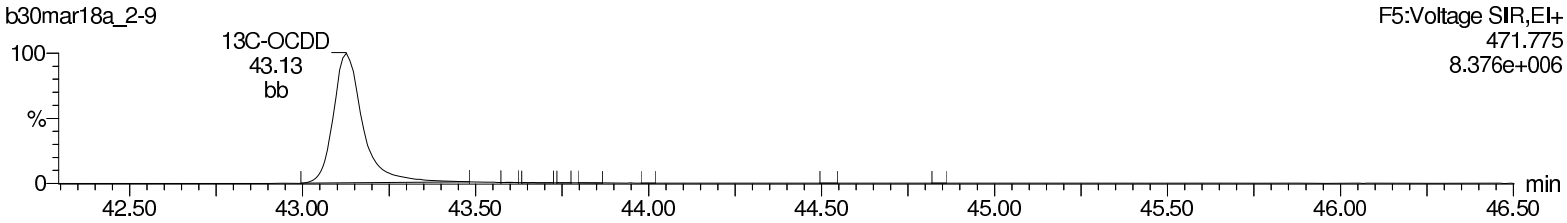
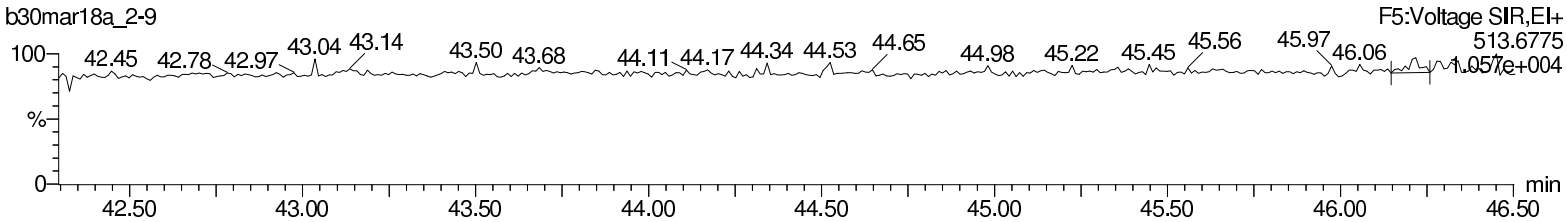
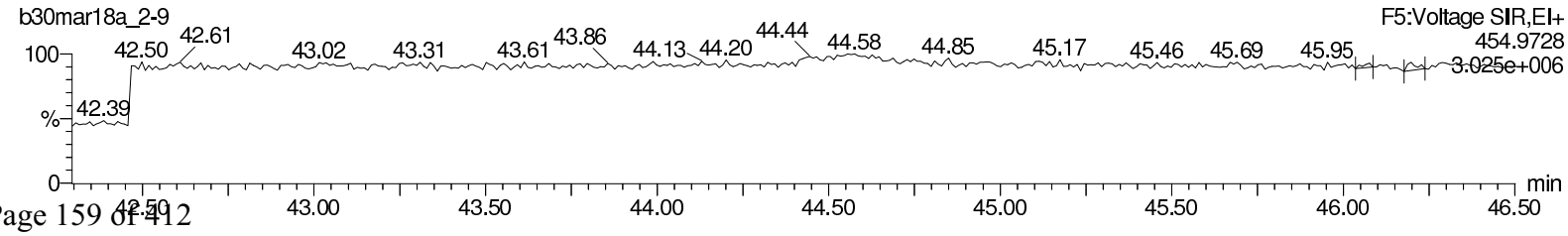


DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123007**	**Date Collected:**	**03/22/2018 14:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**FBQW1853Q001**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-10**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1060.8 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.00072	ng/L	0.00072	0.00943
40321-76-4	1,2,3,7,8-PeCDD	U	0.000494	ng/L	0.000494	0.0471
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000584	ng/L	0.000584	0.0471
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000552	ng/L	0.000552	0.0471
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000584	ng/L	0.000584	0.0471
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	0.000654	ng/L	0.000654	0.0471
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.00117	ng/L	0.00114	0.0943
51207-31-9	2,3,7,8-TCDF	U	0.000441	ng/L	0.000441	0.00943
57117-41-6	1,2,3,7,8-PeCDF	U	0.000322	ng/L	0.000322	0.0471
57117-31-4	2,3,4,7,8-PeCDF	U	0.000279	ng/L	0.000279	0.0471
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000341	ng/L	0.000341	0.0471
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000354	ng/L	0.000354	0.0471
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000358	ng/L	0.000358	0.0471
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.000773	ng/L	0.000469	0.0471
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	0.000394	ng/L	0.000394	0.0471
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000586	ng/L	0.000586	0.0471
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.00112	ng/L	0.00112	0.0943
41903-57-5	Total TeCDD	U	0.00072	ng/L	0.00072	0.00943
36088-22-9	Total PeCDD	U	0.000494	ng/L	0.000494	0.0471
34465-46-8	Total HxCDD	JK	0.000603	ng/L	0.000552	0.0471
37871-00-4	Total HpCDD	U	0.000654	ng/L	0.000654	0.0471
30402-14-3	Total TeCDF	U	0.000441	ng/L	0.000441	0.00943
30402-15-4	Total PeCDF	U	0.000279	ng/L	0.000279	0.0471
55684-94-1	Total HxCDF	J	0.000773	ng/L	0.000341	0.0471
38998-75-3	Total HpCDF	U	0.000394	ng/L	0.000394	0.0471
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0000777	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.000901	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.25	1.89	ng/L	66.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.01	1.89	ng/L	53.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.07	1.89	ng/L	56.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.20	1.89	ng/L	63.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.19	1.89	ng/L	63.2	(23%-140%)
13C-OCDD		2.02	3.77	ng/L	53.6	(17%-157%)
13C-2,3,7,8-TCDF		1.27	1.89	ng/L	67.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.18	1.89	ng/L	62.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.14	1.89	ng/L	60.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.08	1.89	ng/L	57.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.13	1.89	ng/L	59.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.16	1.89	ng/L	61.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.22	1.89	ng/L	64.7	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123007**	**Date Collected:**	**03/22/2018 14:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**FBQW1853Q001**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-10**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1060.8 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.05	1.89	ng/L	55.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.09	1.89	ng/L	57.8	(26%-138%)
37Cl-2,3,7,8-TCDD		0.122	0.189	ng/L	64.7	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:47:40 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:48:09 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	5.67e1	1.14e2	1.71e2	30.40	1.000	0.50	YES	0.014	0.0382	2.43e3	1076	2.3	3.14e3	991	3.2	bb	db
2	12378-PeCDD							NO		0.0262		1191			652			
3	123478-HxCDD							NO		0.0310		830			818			
4	123678-HxCDD							NO		0.0293		830			818			
5	123789-HxCDD							NO		0.0310		830			818			
6	1234678-HpCDD							NO		0.0347		568			616			
7	OCDD	1.42e2	1.47e2	2.89e2	43.15	1.001	0.97	NO	0.062	0.0605	2.17e3	542	4.0	2.67e3	599	4.5	MM	MM
8	2378-TCDF							NO		0.0234		601			1027			
9	12378-PeCDF	1.24e2	5.42e1	1.78e2	32.85	1.001	2.29	YES	0.015	0.0171	2.38e3	767	3.1	1.82e3	1046	1.7	bb	db
10	23478-PeCDF							NO		0.0148		767			1046			
11	123478-HxCDF							NO		0.0181		724			565			
12	123678-HxCDF							NO		0.0188		724			565			
13	234678-HxCDF							NO		0.0190		724			565			
14	123789-HxCDF	1.87e2	1.40e2	3.27e2	36.67	1.001	1.33	NO	0.041	0.0249	4.21e3	724	5.8	2.98e3	565	5.3	bb	MM
15	1234678-HpCDF							NO		0.0209		479			435			
16	1234789-HpCDF							NO		0.0311		479			435			
17	OCDF							NO		0.0596		447			692			
18	13C-2378-TCDD	6.03e5	7.92e5	1.40e6	30.39	1.025	0.76	NO	66.472	0.0700	6.57e6	3844	1708.4	8.55e6	2880	2970.2	bb	bb
19	13C-12378-PeCDD	5.83e5	3.67e5	9.50e5	33.60	1.133	1.59	NO	53.770	0.0467	1.37e7	1839	7425.9	8.62e6	1935	4455.0	bb	bb
20	13C-123478-HxCDD	4.19e5	3.42e5	7.61e5	36.05	0.991	1.23	NO	56.500	0.101	8.73e6	3596	2428.2	7.09e6	6163	1150.8	bd	bd
21	13C-123678-HxCDD	5.05e5	4.31e5	9.36e5	36.14	0.994	1.17	NO	63.523	0.0927	9.03e6	3596	2511.6	7.44e6	6163	1207.3	db	dd
22	13C-1234678-HpCDD	3.17e5	3.07e5	6.24e5	39.21	1.078	1.03	NO	63.163	0.111	4.32e6	4028	1071.5	4.13e6	3807	1083.7	bd	bb
23	13C-OCDD	4.77e5	5.42e5	1.02e6	43.12	1.186	0.88	NO	107.119	0.136	4.85e6	4892	991.6	5.49e6	4367	1257.9	bd	bd
24	13C-2378-TCDF	7.22e5	9.35e5	1.66e6	29.44	0.993	0.77	NO	67.464	0.0729	8.22e6	4565	1801.1	1.08e7	3629	2970.4	bd	bb
25	13C-12378-PeCDF	8.78e5	5.55e5	1.43e6	32.83	1.107	1.58	NO	62.742	0.107	1.97e7	5973	3297.3	1.24e7	5212	2370.0	bb	bb
26	13C-23478-PeCDF	8.36e5	5.31e5	1.37e6	33.41	1.127	1.57	NO	60.281	0.108	2.02e7	5973	3379.4	1.27e7	5212	2446.2	db	db
27	13C-123478-HxCDF	2.75e5	5.49e5	8.24e5	35.38	0.973	0.50	NO	57.156	0.125	5.94e6	6509	913.2	1.16e7	6362	1829.4	bd	bd
28	13C-123678-HxCDF	3.36e5	6.63e5	1.00e6	35.47	0.975	0.51	NO	59.916	0.108	6.18e6	6509	948.8	1.24e7	6362	1956.1	db	db
29	13C-234678-HxCDF	2.91e5	5.76e5	8.67e5	35.92	0.988	0.51	NO	61.283	0.127	5.52e6	6509	847.9	1.10e7	6362	1733.0	bb	bb
30	13C-123789-HxCDF	2.78e5	5.60e5	8.37e5	36.65	1.008	0.50	NO	64.680	0.139	4.50e6	6509	691.3	8.95e6	6362	1406.9	bd	bd
31	13C-1234678-HpCDF	1.86e5	4.37e5	6.23e5	38.04	1.046	0.43	NO	55.928	0.0943	2.98e6	3233	921.7	6.80e6	4272	1592.1	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:47:40 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:48:09 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	1.54e5	3.58e5	5.12e5	39.81	1.095	0.43	NO	57.822	0.119	2.00e6	3233	617.7	4.61e6	4272	1079.2	bd	bd
33	13C-1234-TCDD	8.01e5	1.04e6	1.84e6	29.65	0.000	0.77	NO	100.000	0.0799	9.17e6	3844	2385.2	1.21e7	2880	4211.4	bb	bb
34	13C-123789-HxCDD	6.92e5	6.20e5	1.31e6	36.36	0.000	1.12	NO	100.000	0.104	1.23e7	3596	3433.5	1.01e7	6163	1642.7	bb	dd
35	37Cl-2378-TCDD	1.38e5		1.38e5	30.40	1.025			6.471	0.0118	1.52e6	1154	1316.8				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:47:40 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:48:09 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	5.67e1	1.14e2	1.71e2	30.40	0.50	YES	0.014	0.0382	2.43e3	1076	2.3	3.14e3	991	3.2	bb	db

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentadioxins	1.01e2	7.91e1	1.80e2	32.84	1.28	YES	0.024	0.0262	1.99e3	1191	1.7	2.09e3	652	3.2	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-hexadioxins	1.42e2	8.30e1	2.25e2	35.94	1.72	YES	0.032	0.0304	2.88e3	830	3.5	2.14e3	818	2.6	bb	MM
2	Total-hexadioxins	2.09e2	8.99e1	2.99e2	35.48	2.32	YES	0.042	0.0304	3.98e3	830	4.8	1.82e3	818	2.2	db	MM
3	Total-hexadioxins	1.98e2	5.57e1	2.53e2	35.38	3.55	YES	0.036	0.0304	3.62e3	830	4.4	1.38e3	818	1.7	bd	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptadioxins	2.44e2	7.20e1	3.16e2	39.83	3.39	YES	0.051	0.0347	7.09e3	568	12.5	1.57e3	616	2.6	MM	MM
2	Total-heptadioxins	2.52e2	1.02e2	3.54e2	38.03	2.47	YES	0.057	0.0347	4.70e3	568	8.3	2.38e3	616	3.9	bb	MM

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	1.42e2	6.31e1	2.05e2	29.65	2.25	YES	0.013	0.0234	1.61e3	601	2.7	2.02e3	1027	2.0	bb	db
2	Total-tetrafurans	6.70e1	8.59e1	1.53e2	28.29	0.78	NO	0.010	0.0234	1.46e3	601	2.4	5.12e3	1027	5.0	bb	bb

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	7.39e2	5.92e1	7.98e2	30.16	12.47	YES	0.065	0.0178	9.26e3	769	12.0	2.23e3	1263	1.8	bb	bd

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:47:40 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:48:09 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDF	1.24e2	5.42e1	1.78e2	32.85	2.29	YES	0.015	0.0171	2.38e3	767	3.1	1.82e3	1046	1.7	bb	db

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDF	1.87e2	1.40e2	3.27e2	36.67	1.33	NO	0.041	0.0249	4.21e3	724	5.8	2.98e3	565	5.3	bb	MM

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1																	

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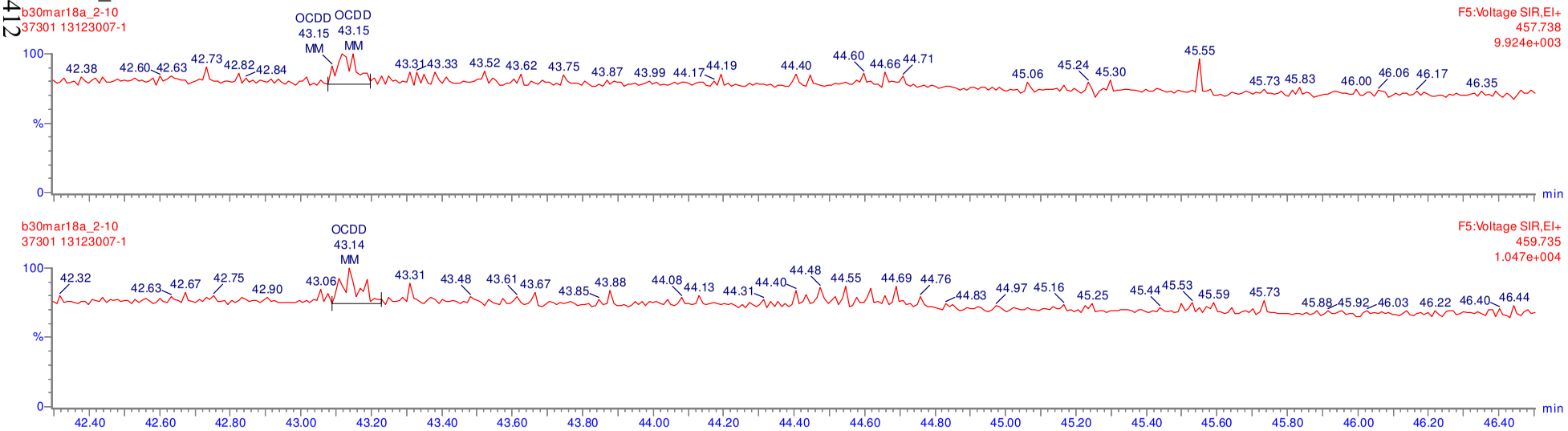
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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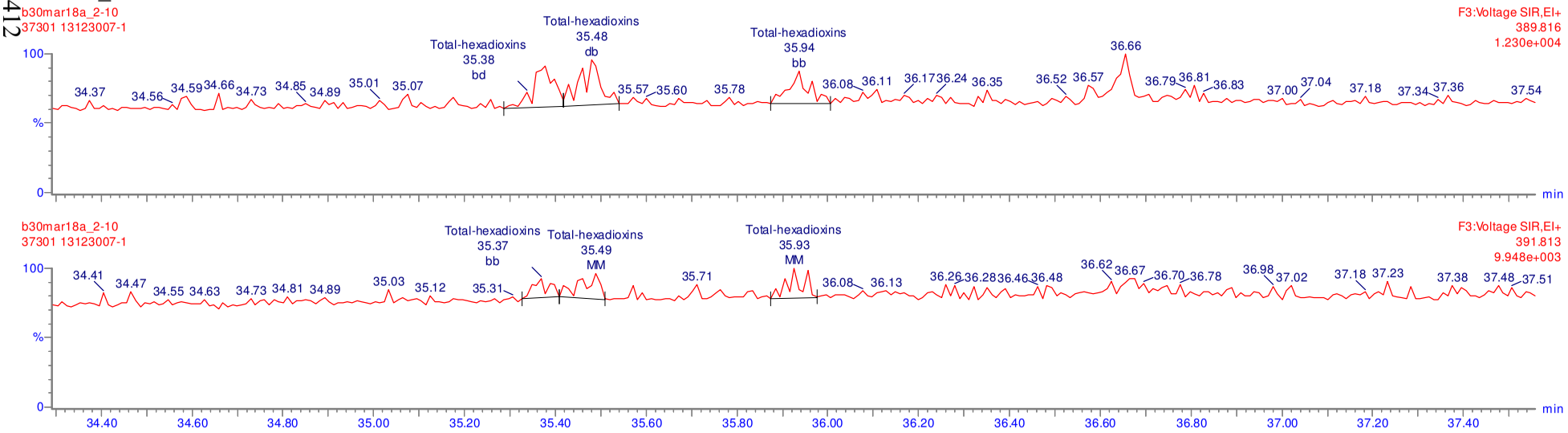
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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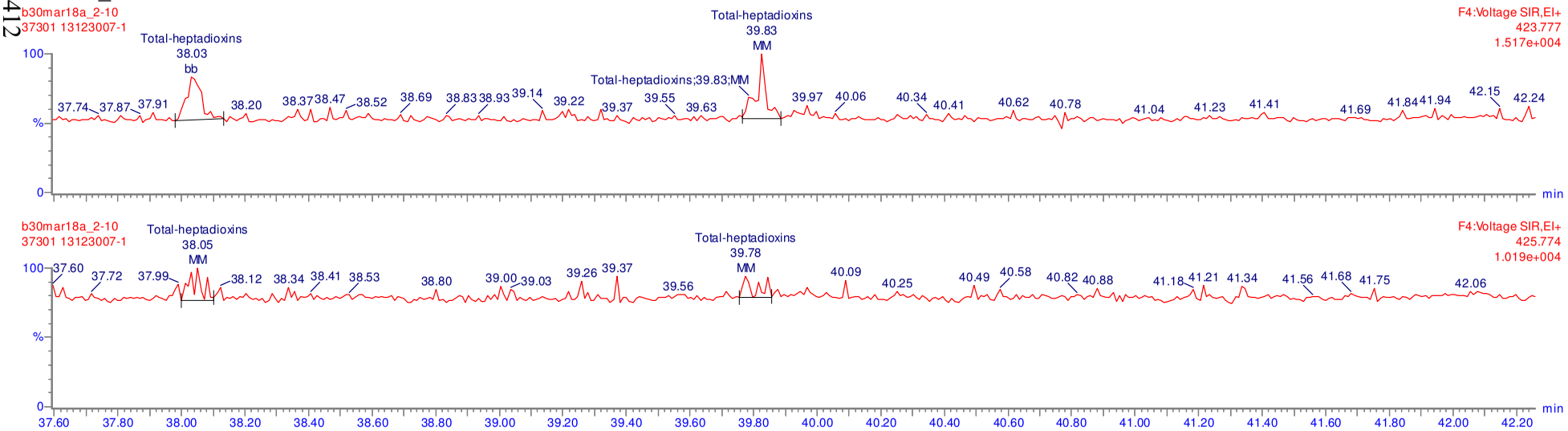
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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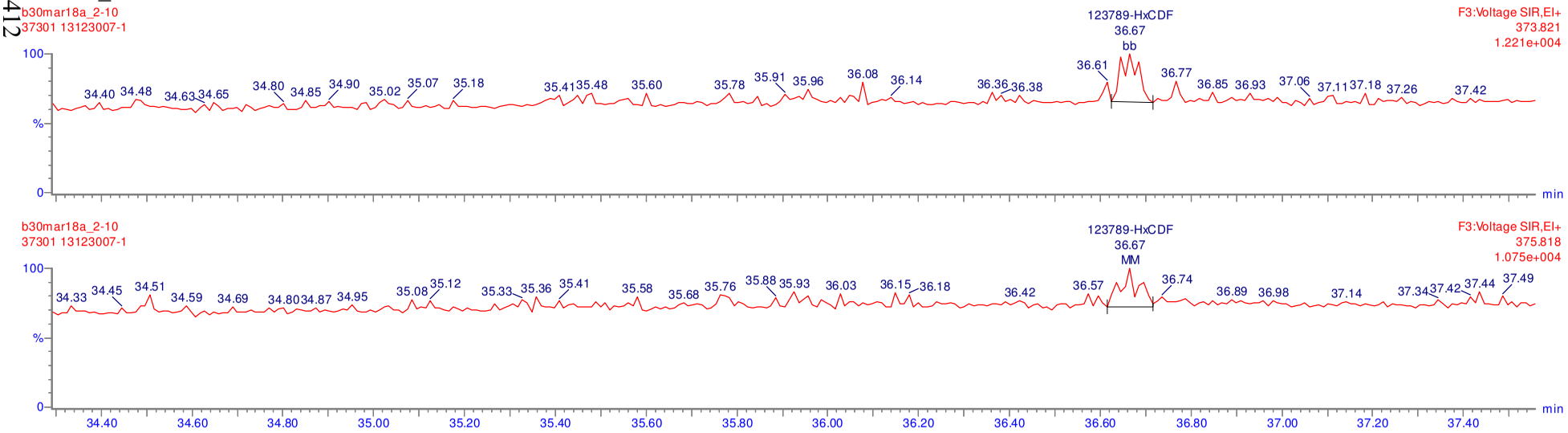
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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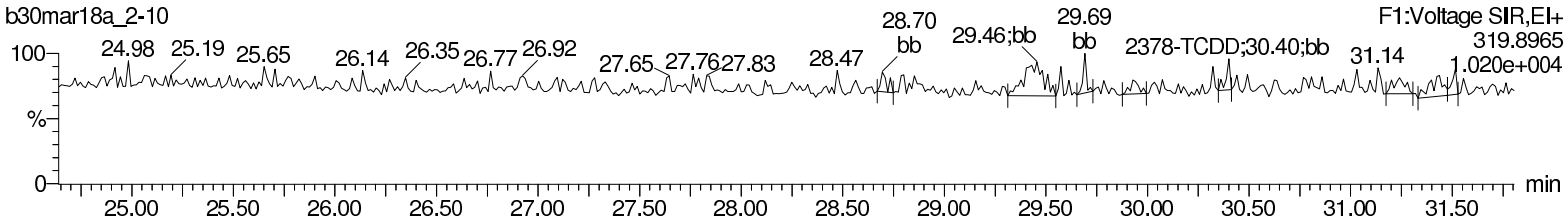
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

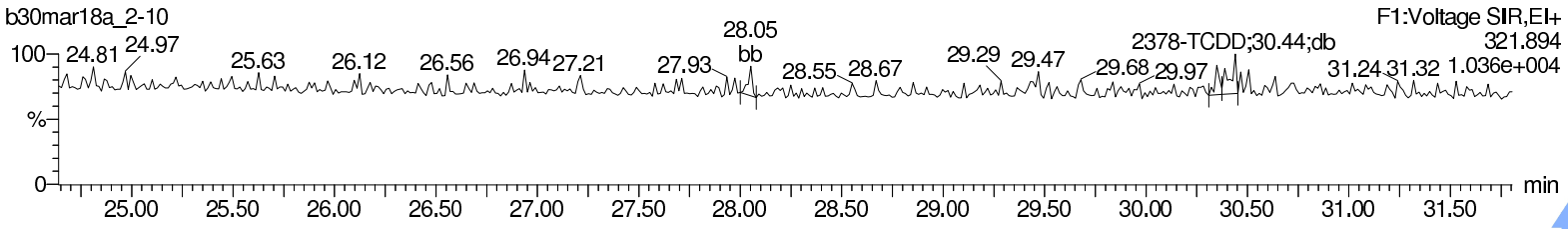
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-tetradioxins



Total-tetradioxins



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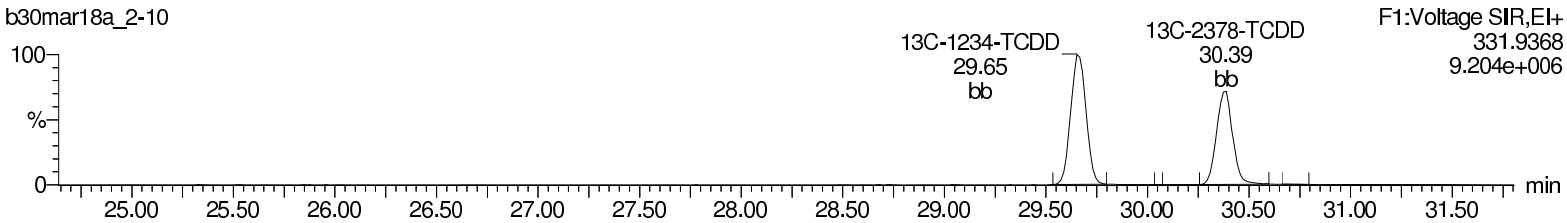

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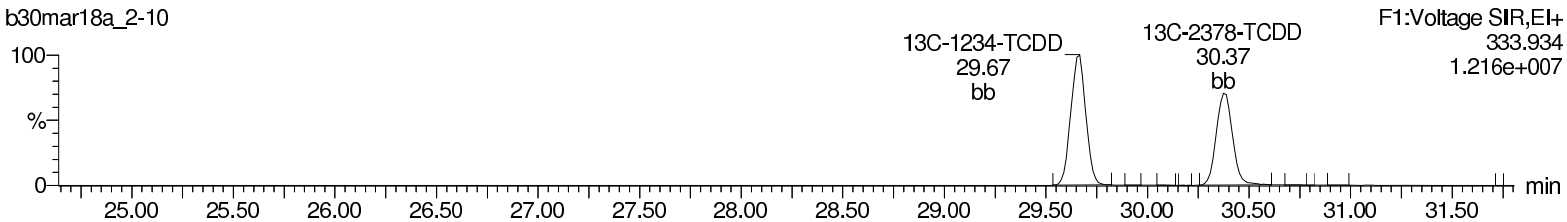

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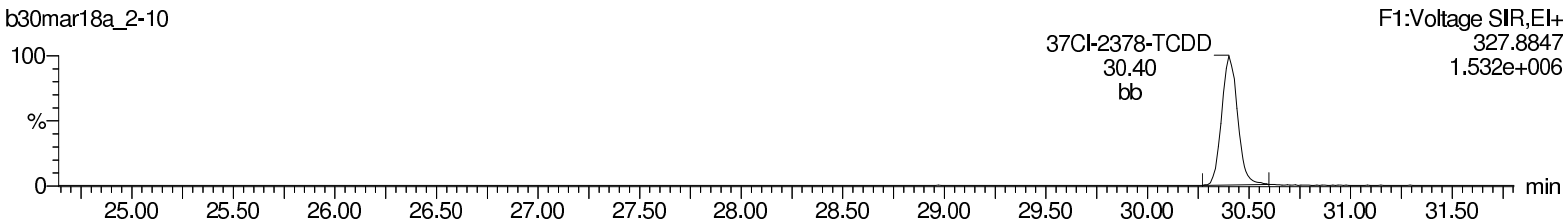
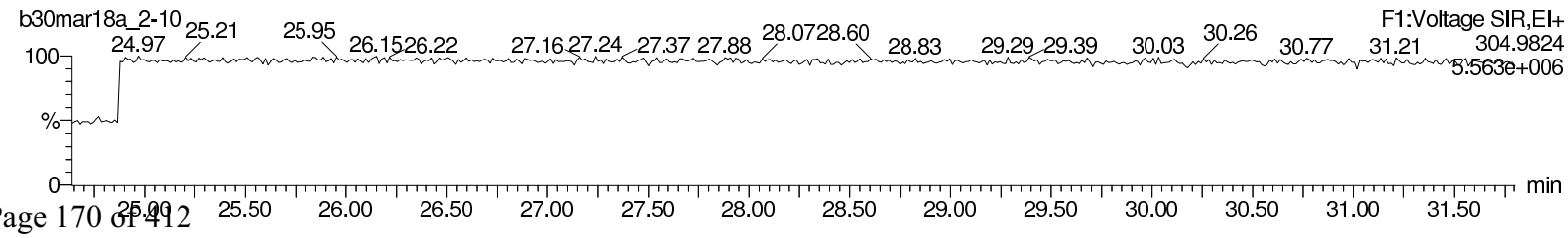


Lock Mass F1

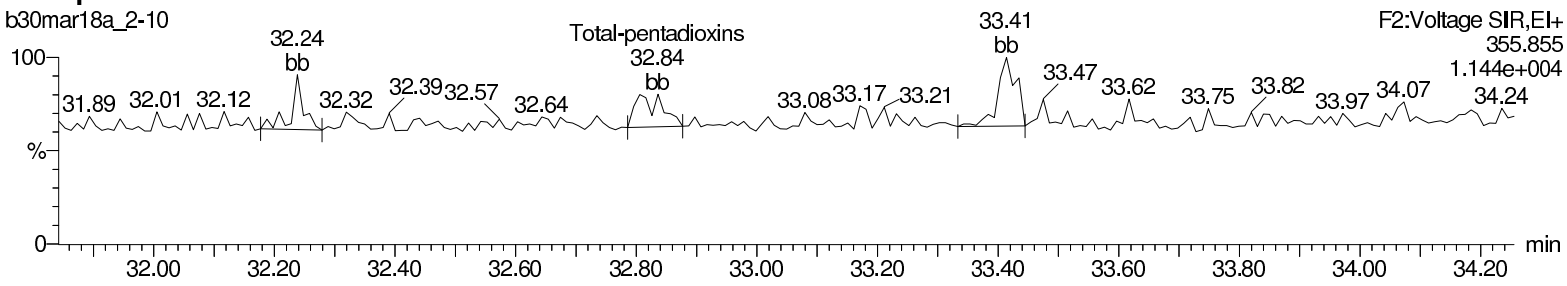


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



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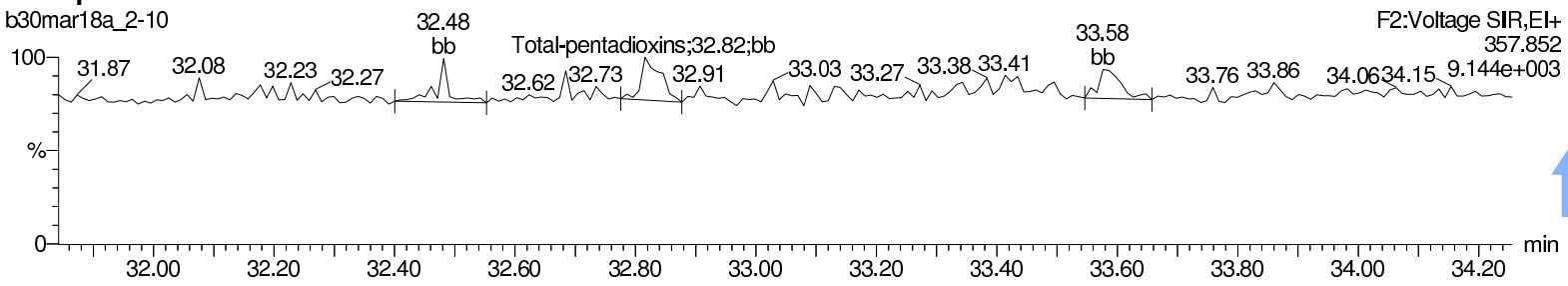

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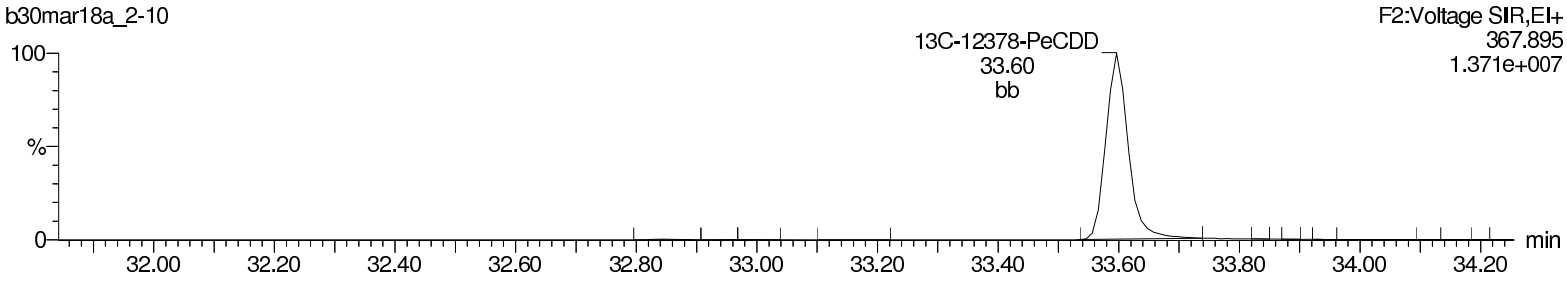

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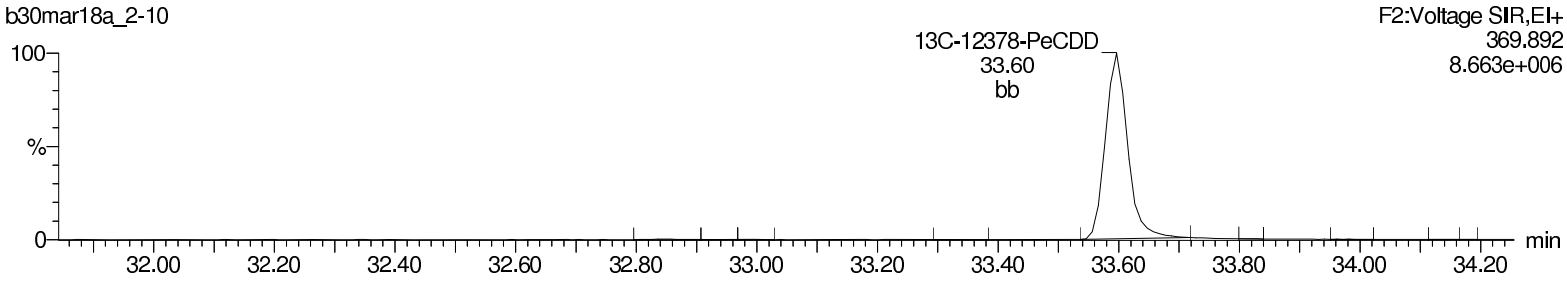

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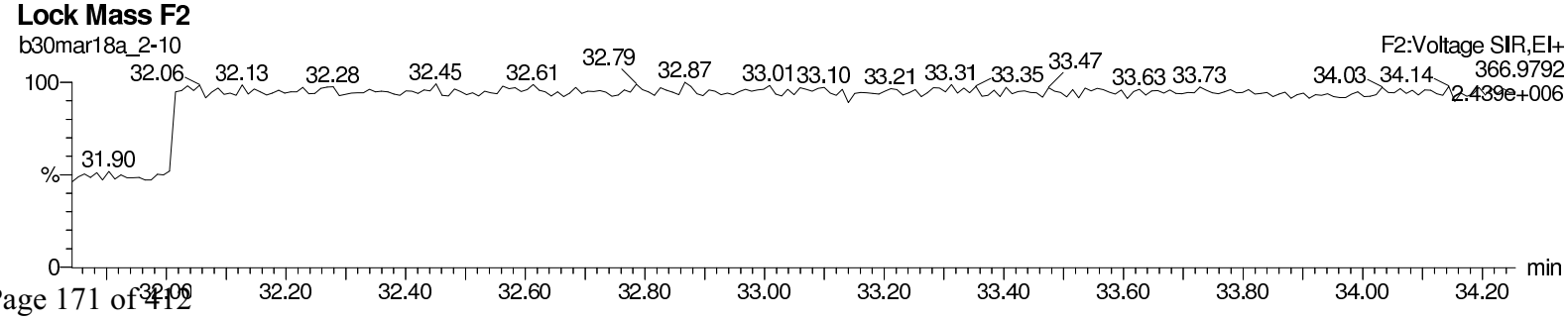

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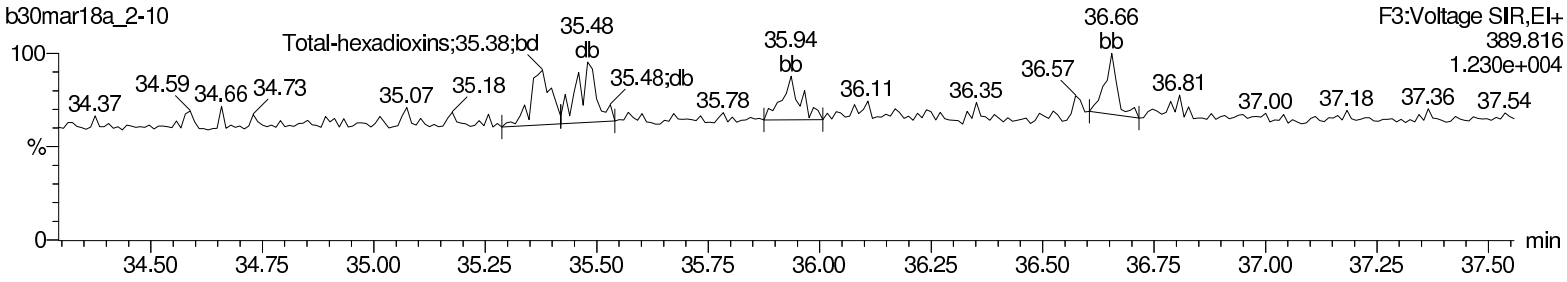
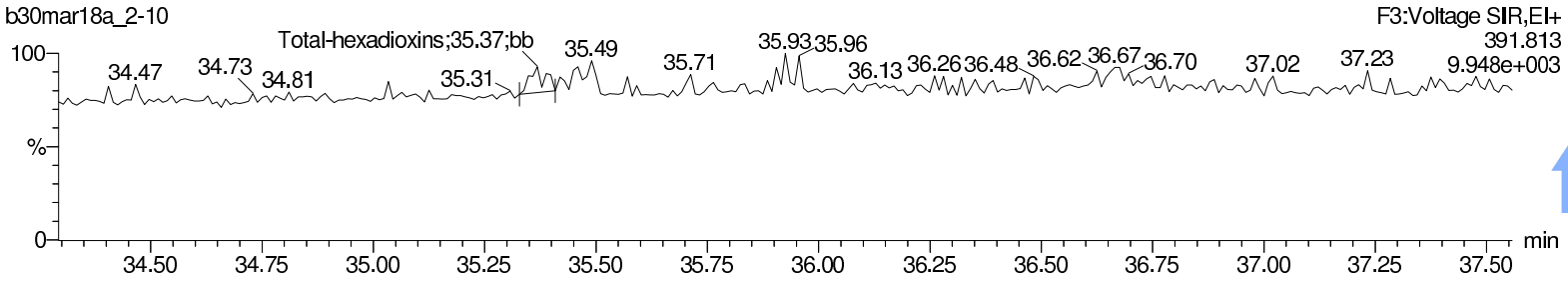
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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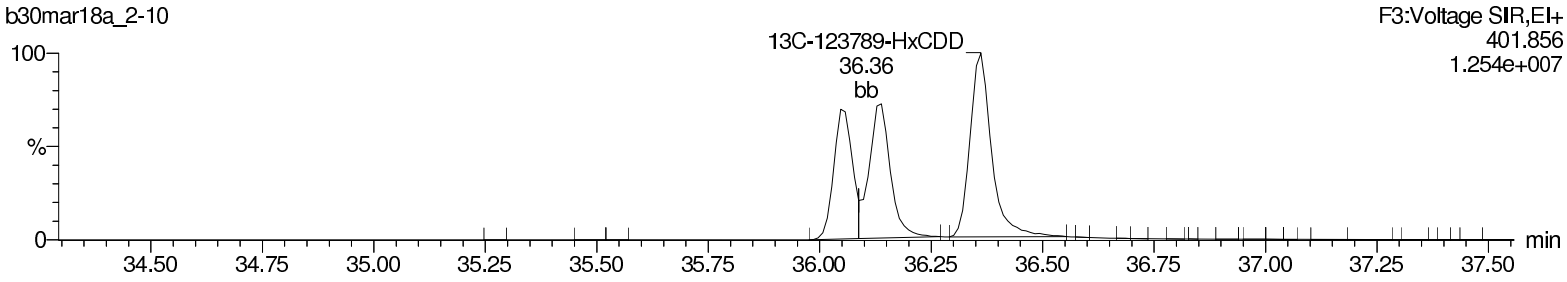

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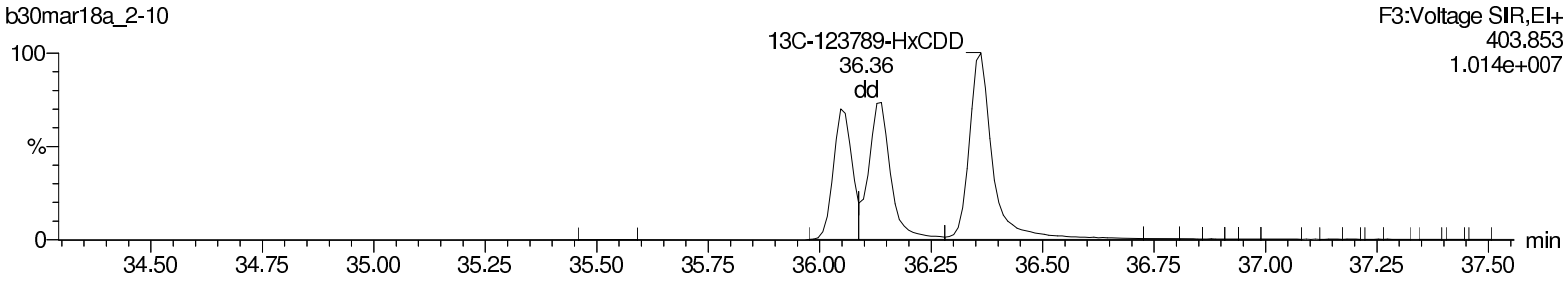

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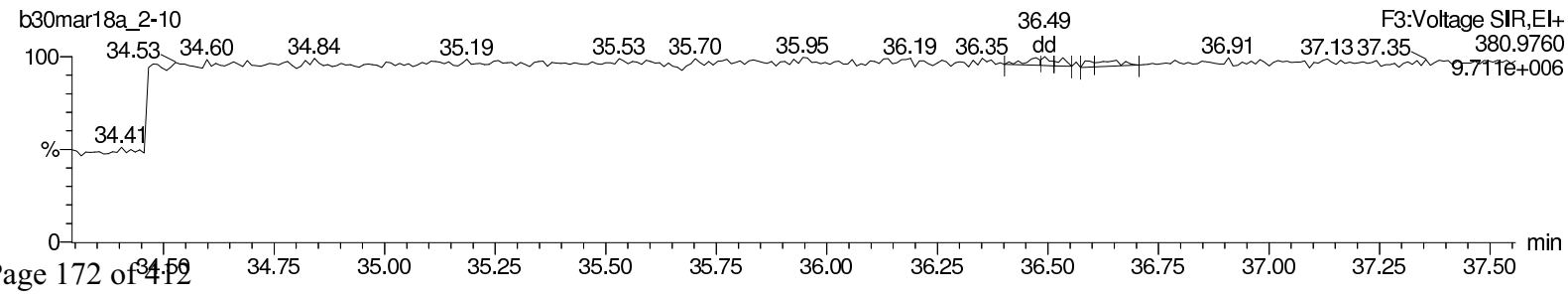

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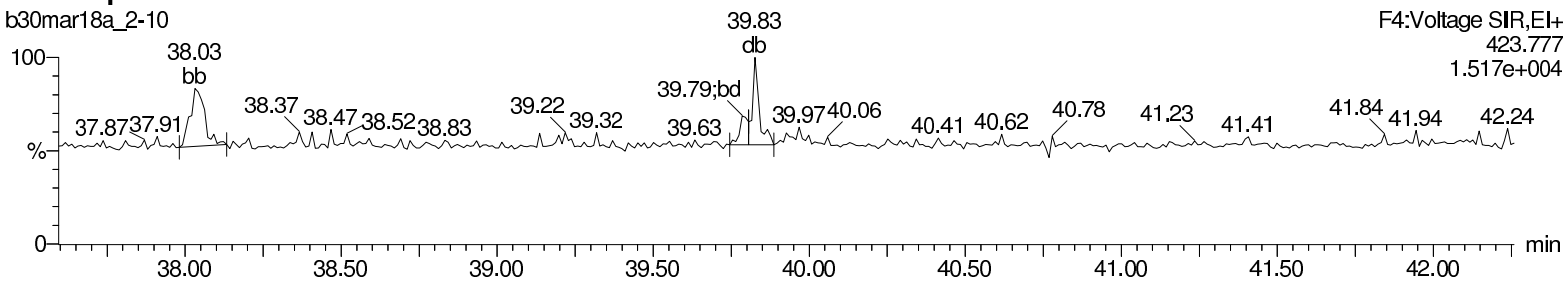
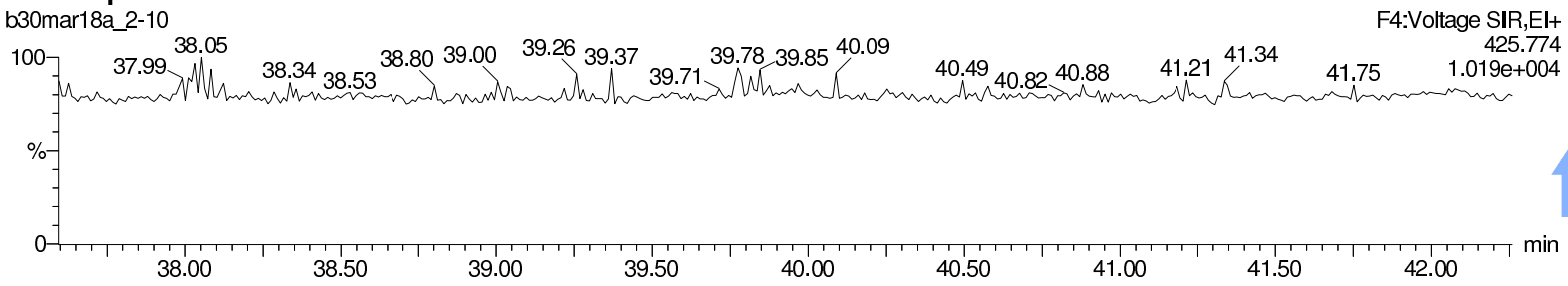
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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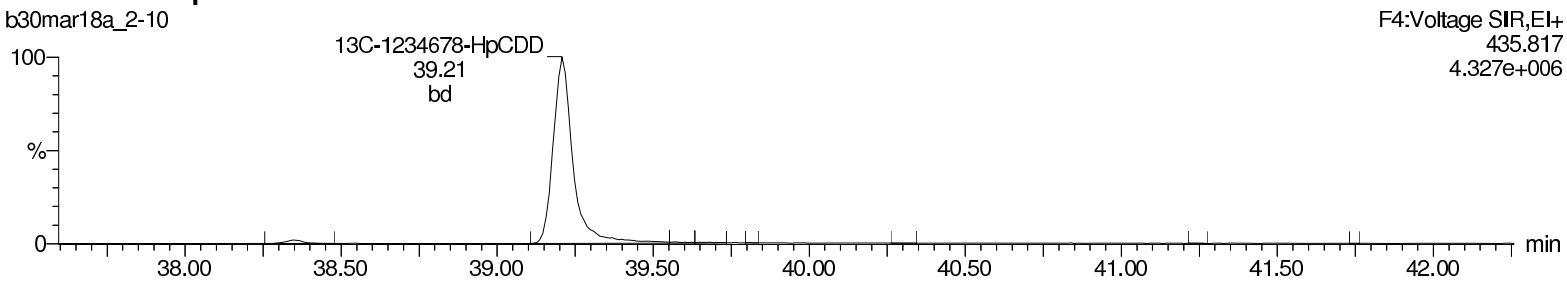

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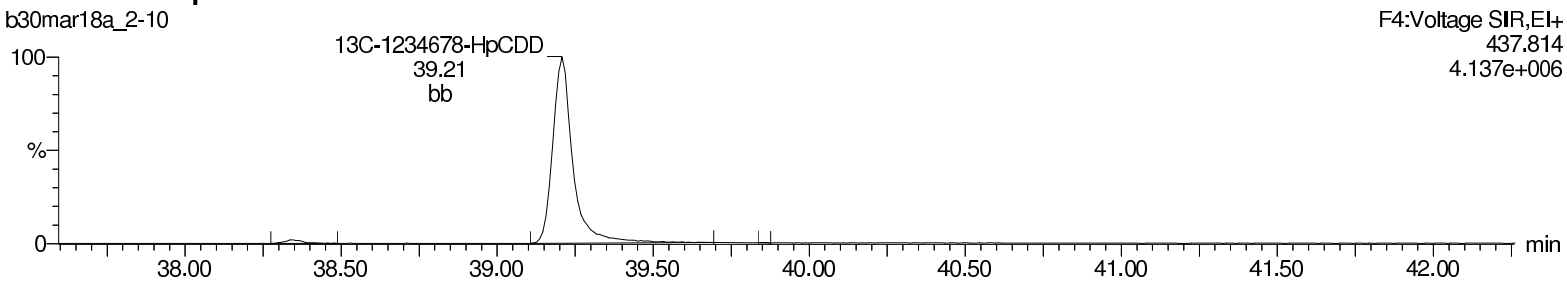

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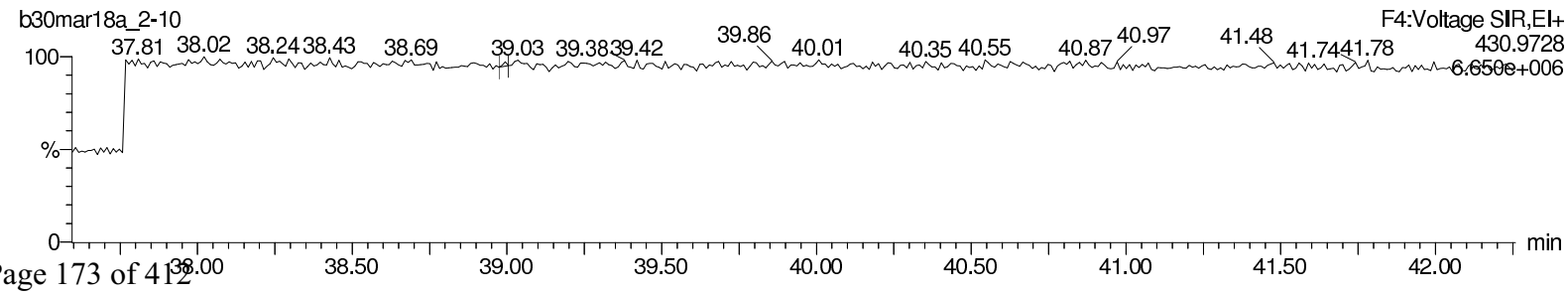

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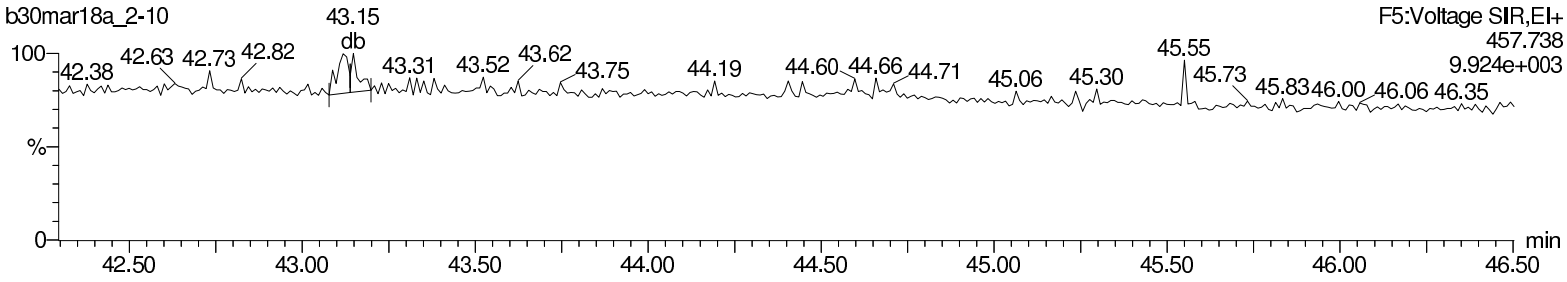
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



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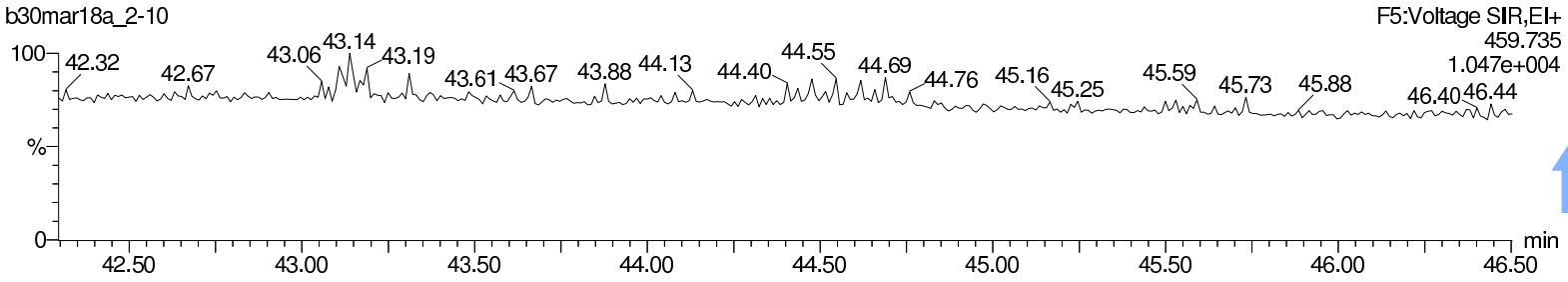

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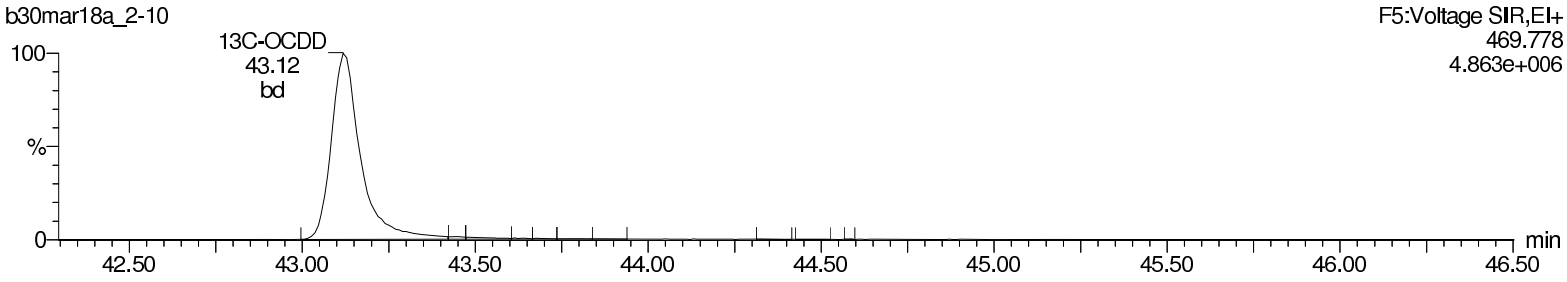

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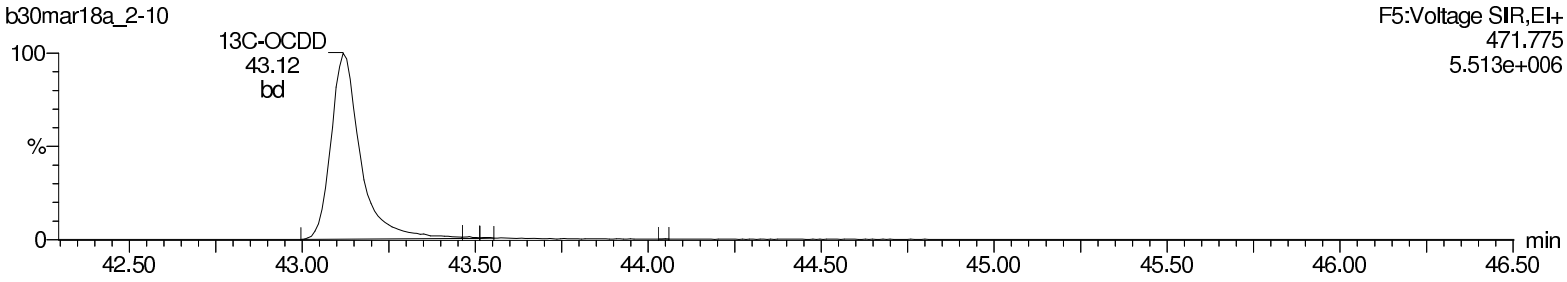

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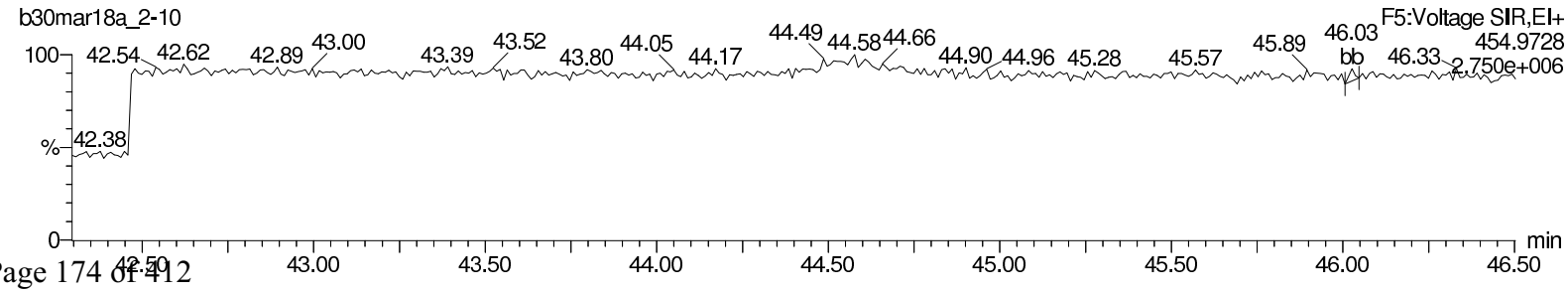

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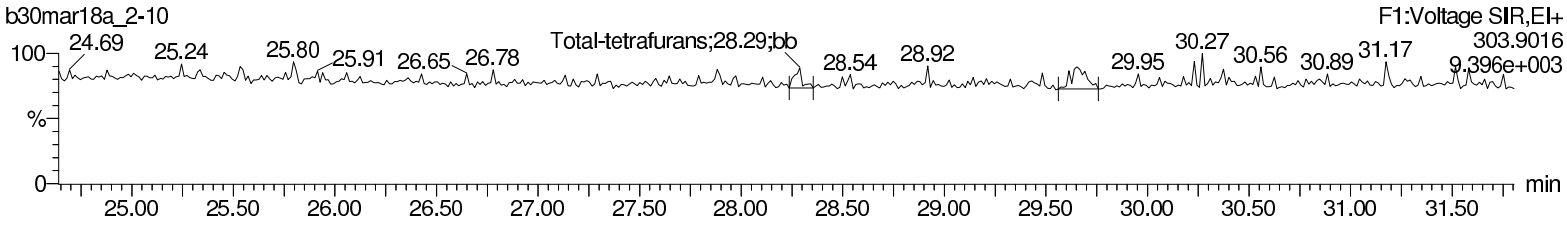
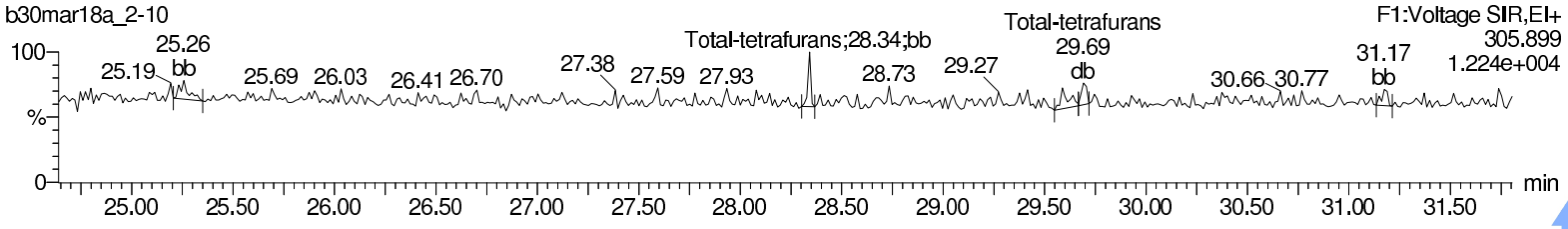
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-tetrafurans



Total-tetrafurans



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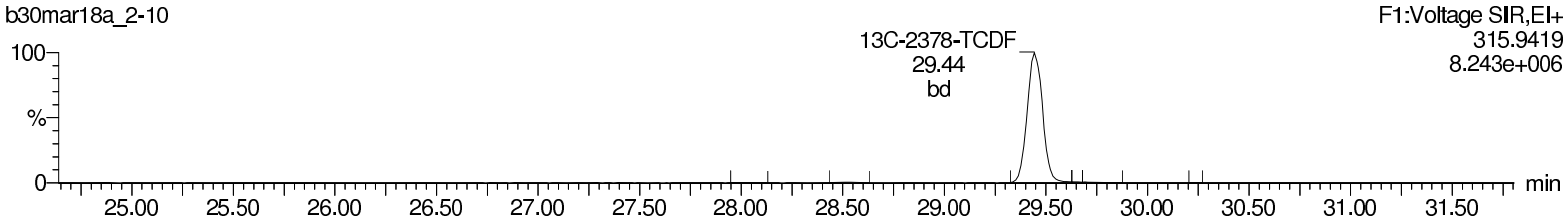

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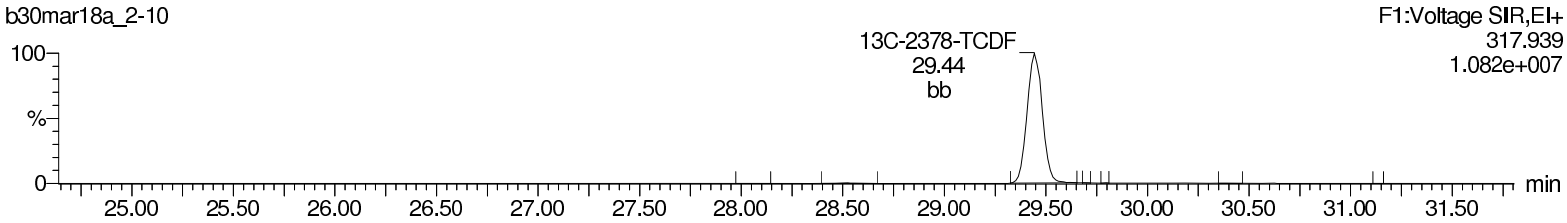
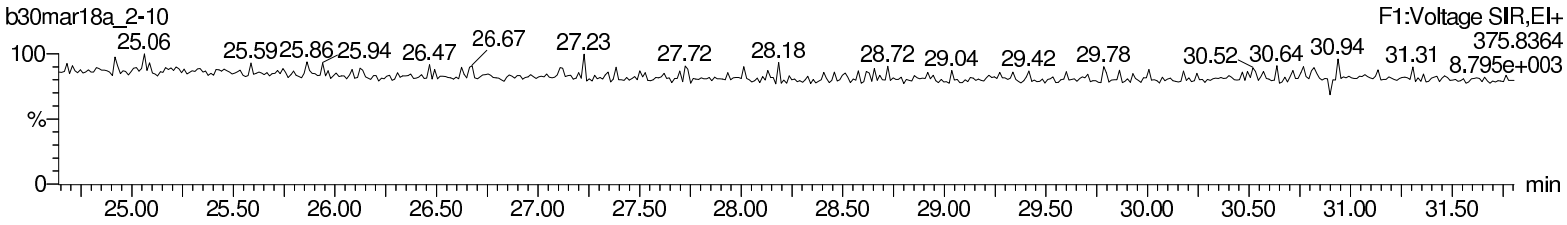
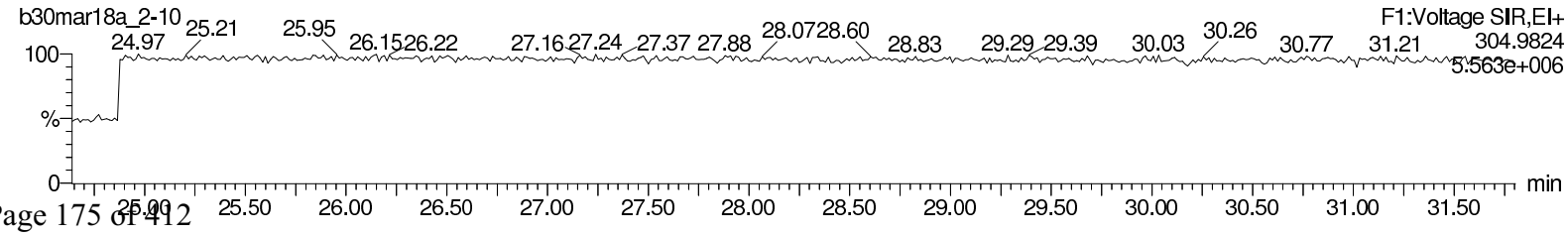


HxDPE



Lock Mass F1

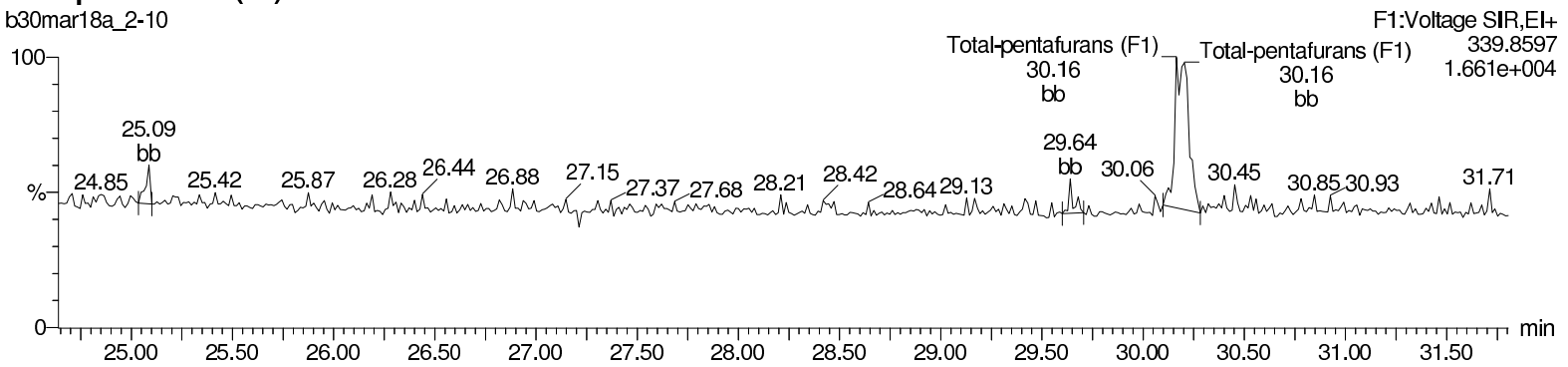


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

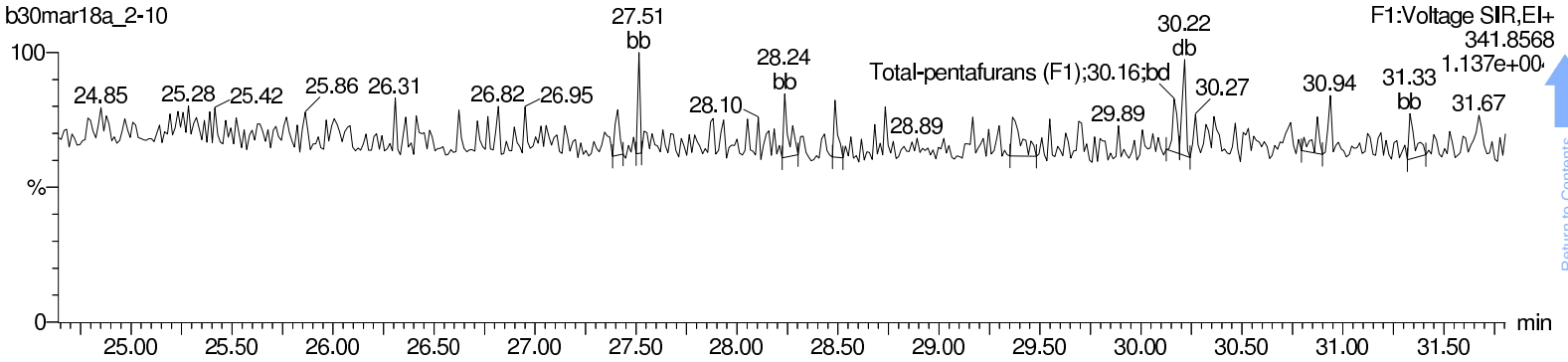
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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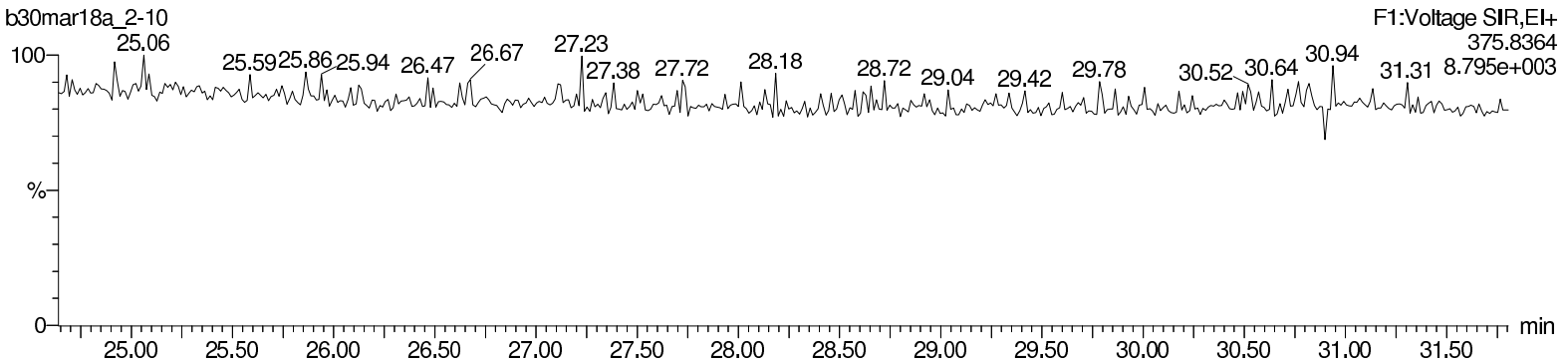
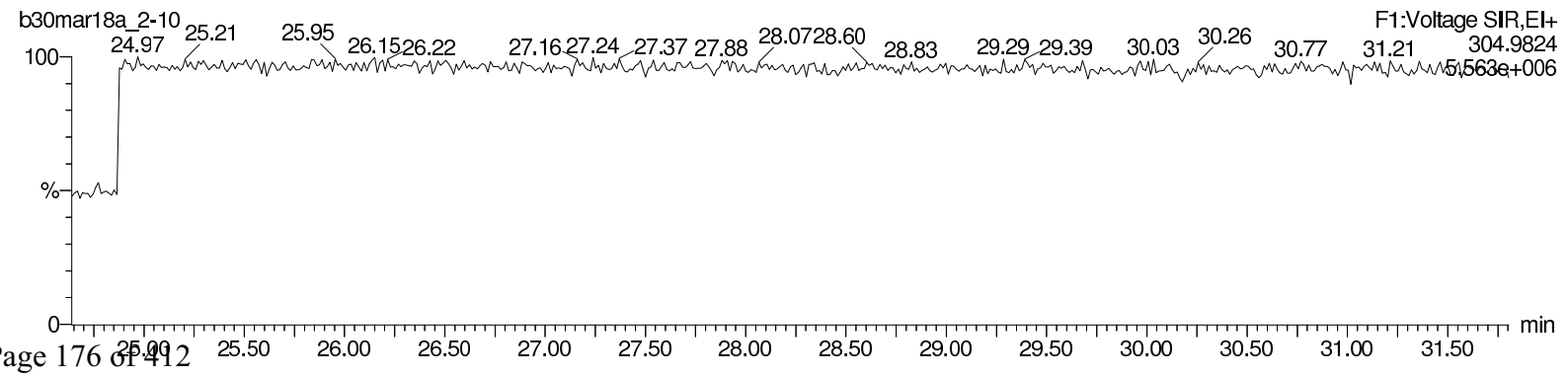


Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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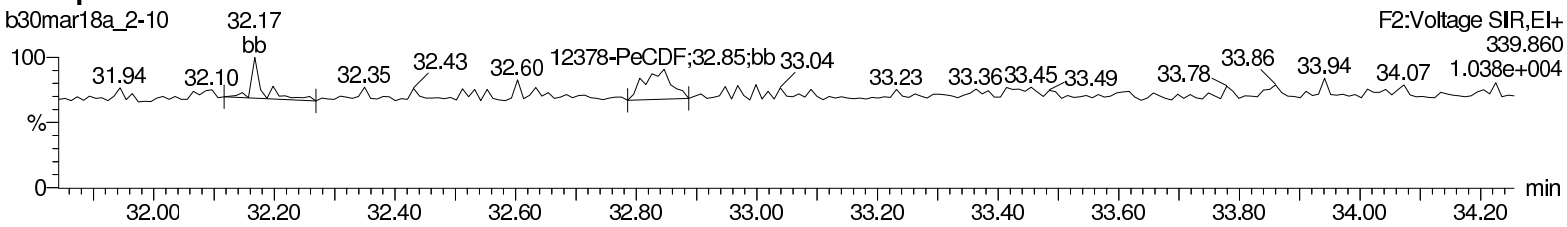
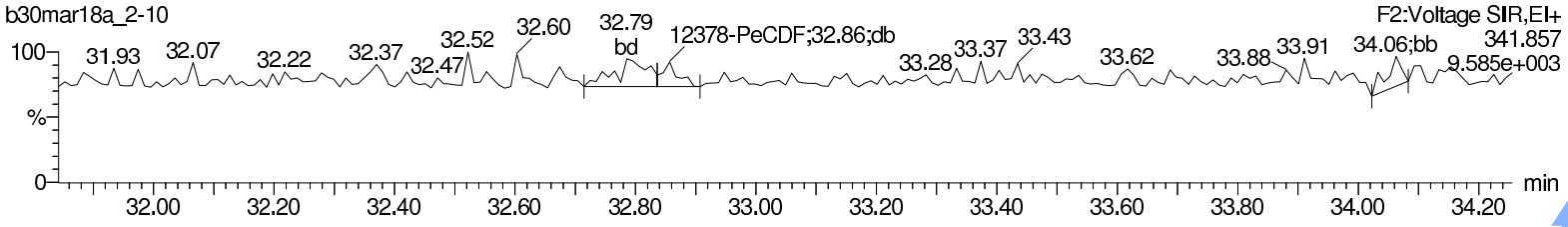
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

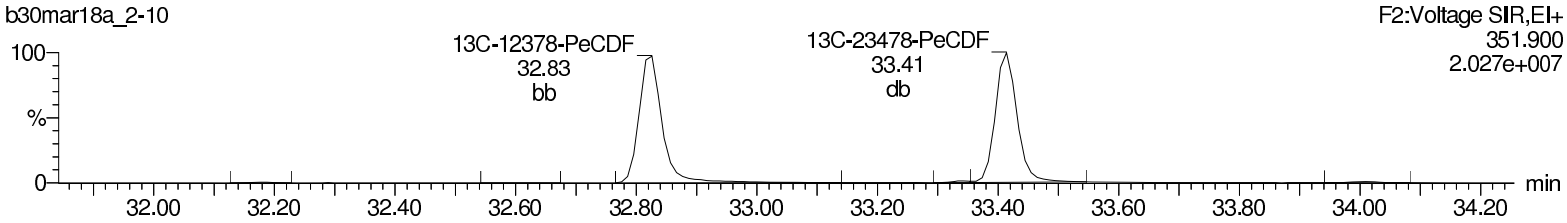
Total-pentafurans



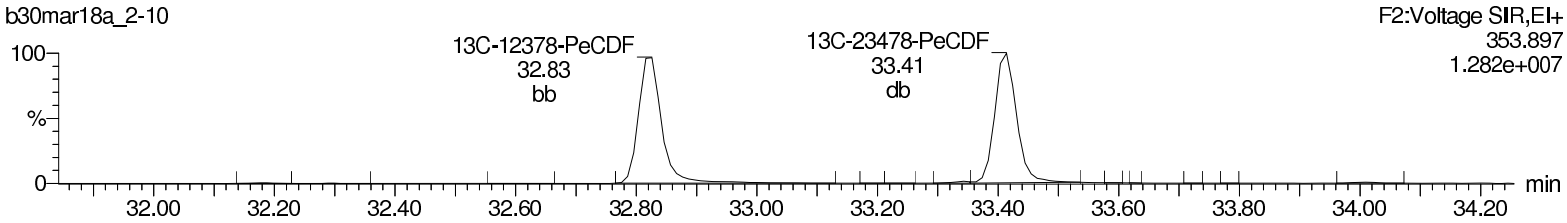
Total-pentafurans



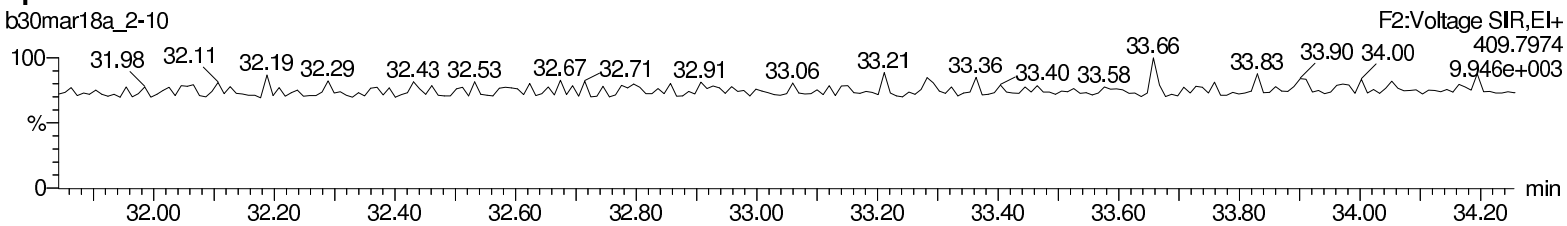
13C-12378-PeCDF



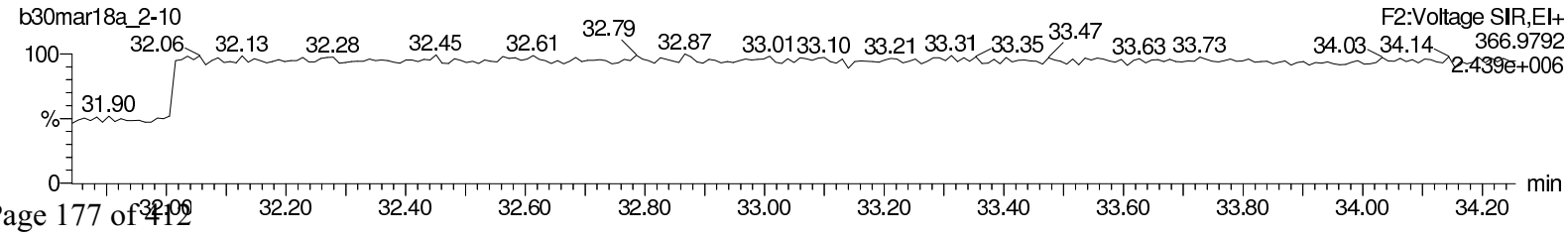
13C-12378-PeCDF



HpDPE



Lock Mass F2



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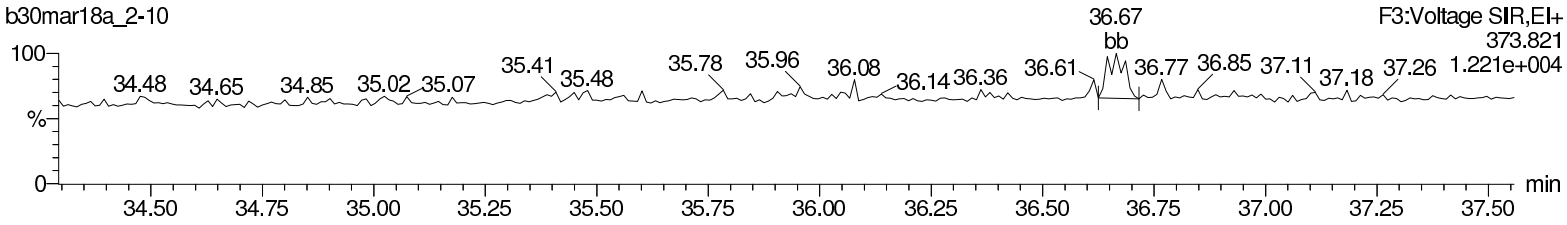
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

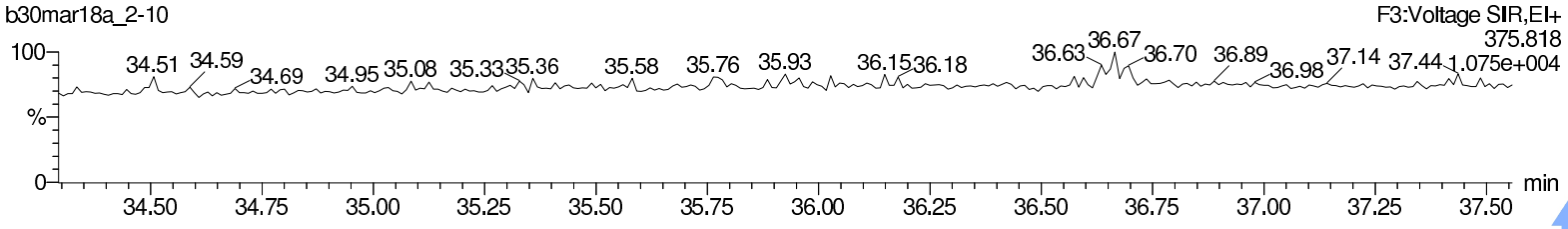
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

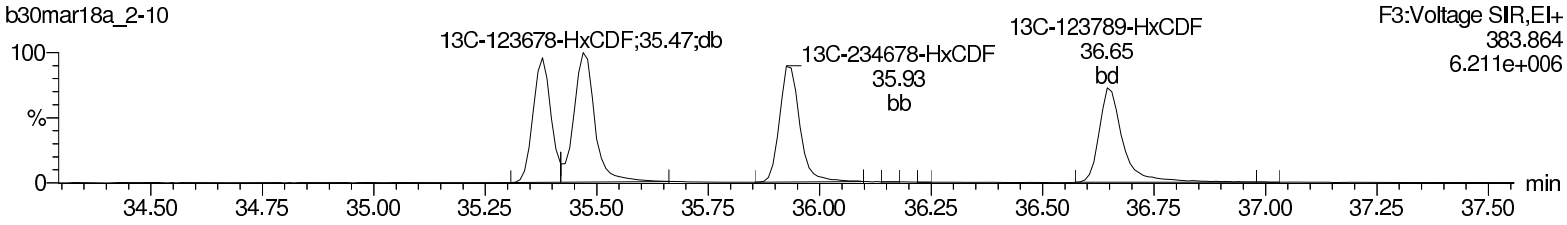
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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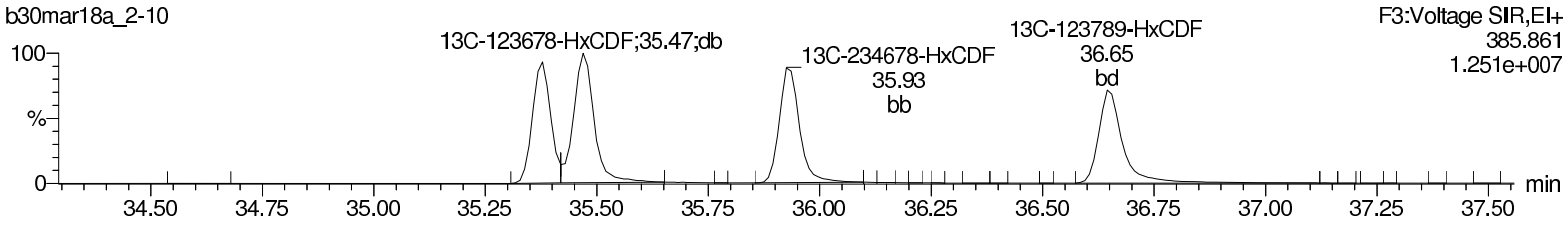
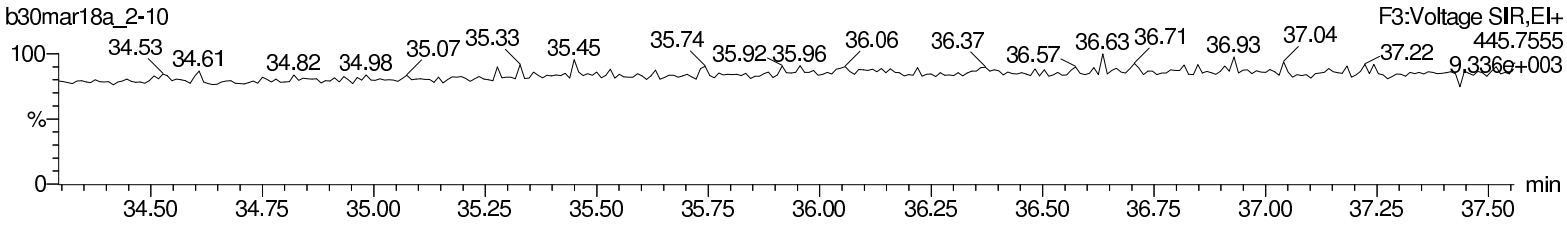
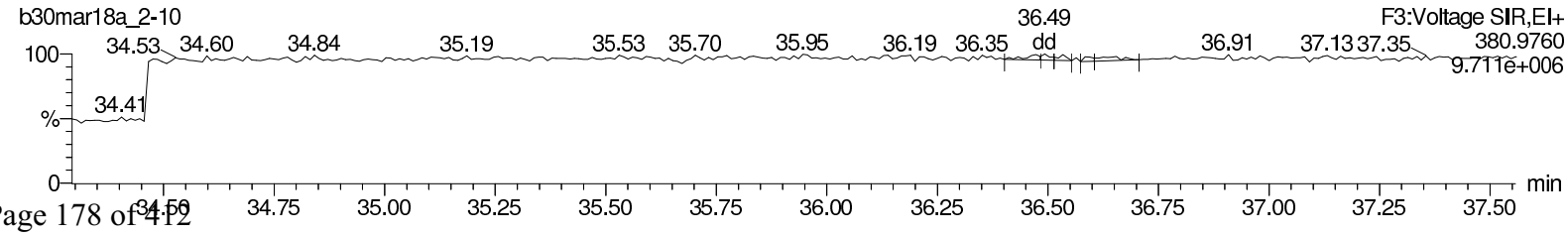


OcDPE



Lock Mass F3



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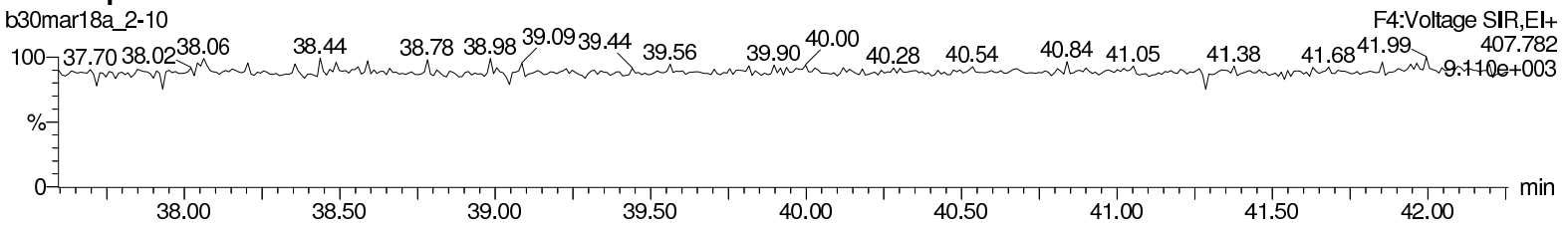
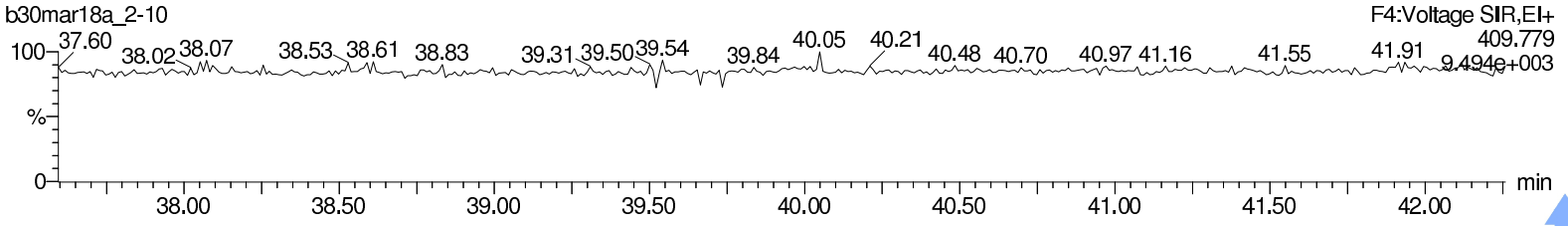
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

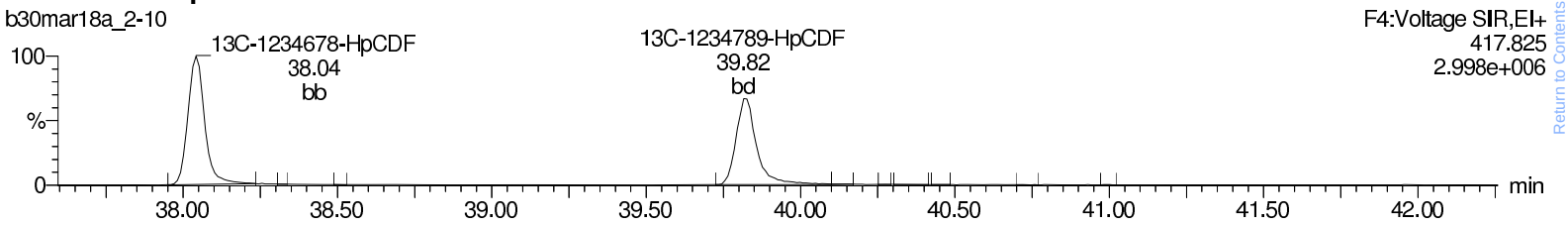
Total-heptafurans



Total-heptafurans



13C-1234678-HpCDF



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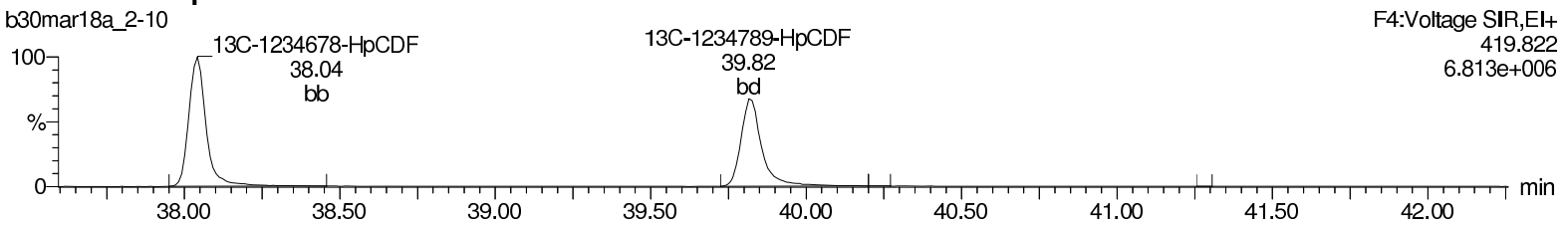
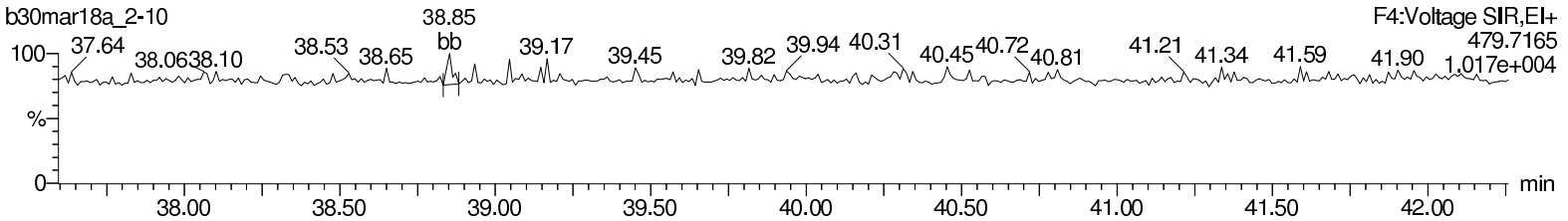
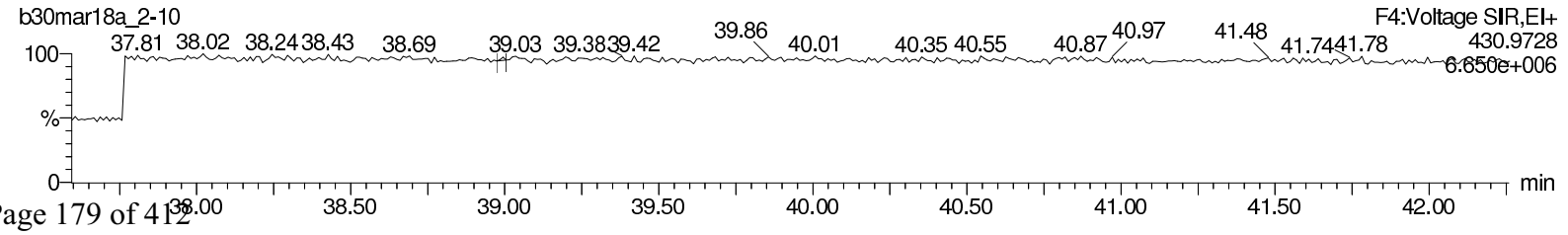


NoDPE



Lock Mass F4



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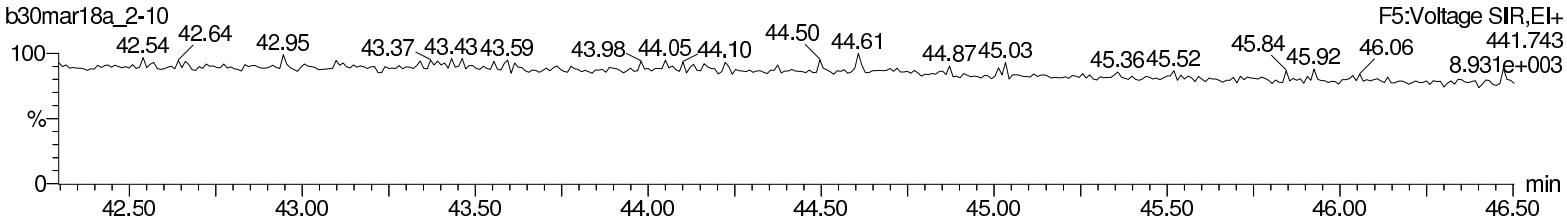
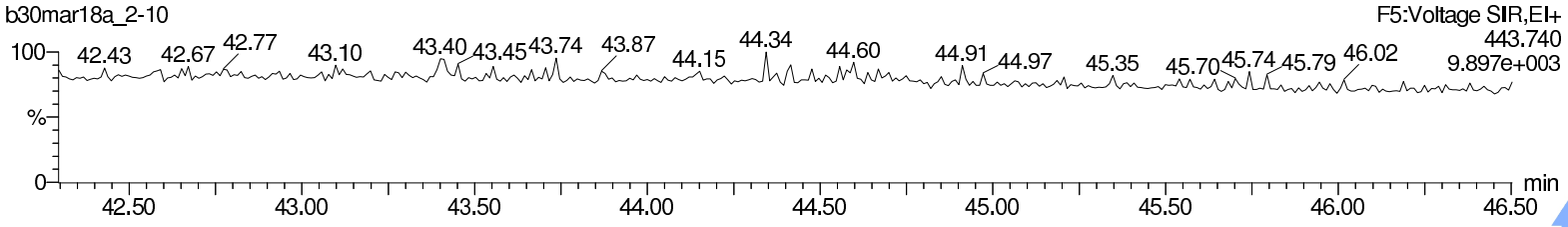
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

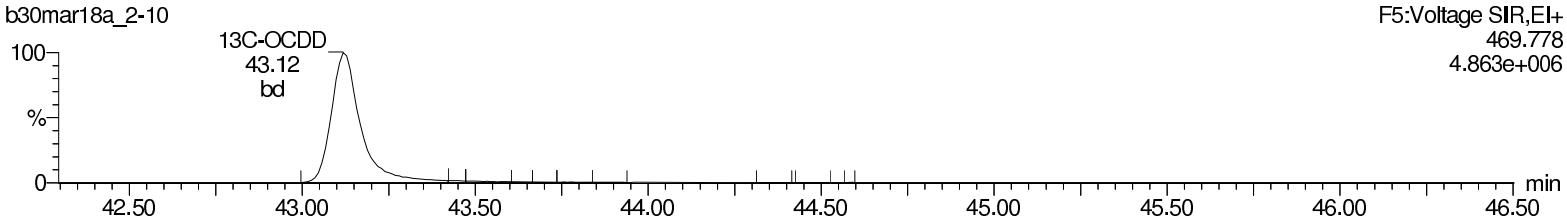
OCDF



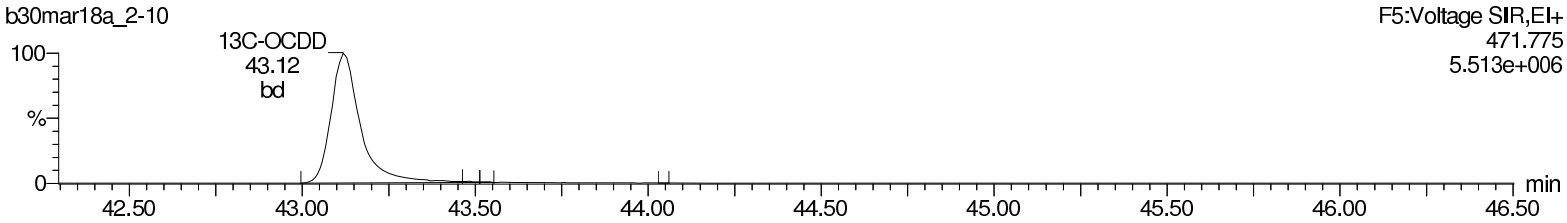
OCDF



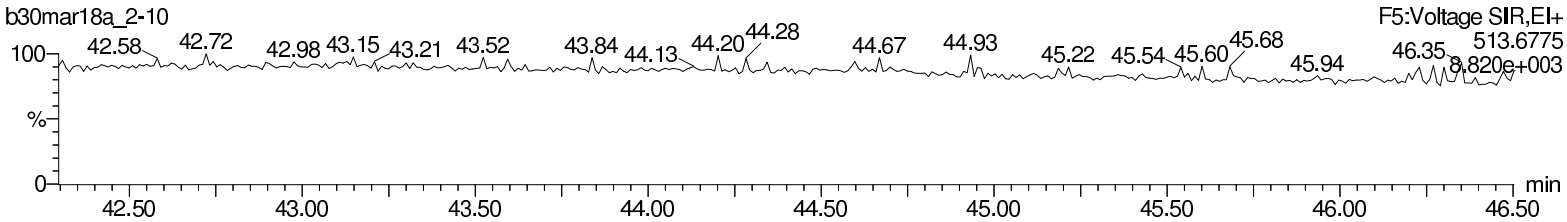
13C-OCDD



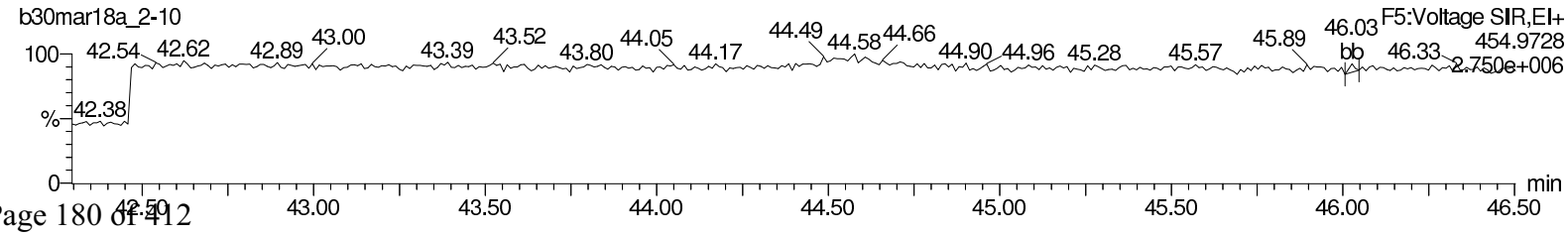
13C-OCDD



DeDPE



Lock Mass F5



Quality Control Raw Data

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**12020981**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 37284**				
Client ID:	**MB for batch 37284**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/29/2018 22:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b28mar18b_4-3**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000736	ng/L	0.000736	0.010
40321-76-4	1,2,3,7,8-PeCDD	U	0.000476	ng/L	0.000476	0.050
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000774	ng/L	0.000774	0.050
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000758	ng/L	0.000758	0.050
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000788	ng/L	0.000788	0.050
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.00076	ng/L	0.000616	0.050
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.00126	ng/L	0.00094	0.100
51207-31-9	2,3,7,8-TCDF	U	0.000468	ng/L	0.000468	0.010
57117-41-6	1,2,3,7,8-PeCDF	JK	0.00078	ng/L	0.000306	0.050
57117-31-4	2,3,4,7,8-PeCDF	JK	0.00056	ng/L	0.00026	0.050
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000404	ng/L	0.000404	0.050
57117-44-9	1,2,3,6,7,8-HxCDF	JK	0.00052	ng/L	0.000406	0.050
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.00068	ng/L	0.00042	0.050
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.00078	ng/L	0.000554	0.050
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00058	ng/L	0.000382	0.050
55673-89-7	1,2,3,4,7,8,9-HpCDF	JK	0.00066	ng/L	0.00055	0.050
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.00103	ng/L	0.00103	0.100
41903-57-5	Total TeCDD	U	0.000736	ng/L	0.000736	0.010
36088-22-9	Total PeCDD	U	0.000476	ng/L	0.000476	0.050
34465-46-8	Total HxCDD	U	0.000758	ng/L	0.000758	0.050
37871-00-4	Total HpCDD	JK	0.00076	ng/L	0.000616	0.050
30402-14-3	Total TeCDF	U	0.000468	ng/L	0.000468	0.010
30402-15-4	Total PeCDF	JK	0.00134	ng/L	0.00026	0.050
55684-94-1	Total HxCDF	JK	0.00198	ng/L	0.000404	0.050
38998-75-3	Total HpCDF	JK	0.00124	ng/L	0.000382	0.050
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00041	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00118	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.71	2.00	ng/L	85.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.57	2.00	ng/L	78.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.59	2.00	ng/L	79.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.67	2.00	ng/L	83.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.77	2.00	ng/L	88.7	(23%-140%)
13C-OCDD		3.21	4.00	ng/L	80.2	(17%-157%)
13C-2,3,7,8-TCDF		1.83	2.00	ng/L	91.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.82	2.00	ng/L	90.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.78	2.00	ng/L	88.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.62	2.00	ng/L	81.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.68	2.00	ng/L	83.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.68	2.00	ng/L	84.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.75	2.00	ng/L	87.3	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**12020981**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 37284**				
Client ID:	**MB for batch 37284**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/29/2018 22:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b28mar18b_4-3**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.62	2.00	ng/L	80.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.72	2.00	ng/L	85.9	(26%-138%)
37Cl-2,3,7,8-TCDD		0.176	0.200	ng/L	88.1	(35%-197%)

Comments:

J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, April 06, 2018 14:51:30 Eastern Standard Time
Printed: Friday, April 06, 2018 14:52:05 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD							NO		0.0368		1339			893			
2	12378-PeCDD	1.63e2	1.52e2	3.16e2	33.61	1.000	1.07	YES	0.031	0.0238	2.86e3	1329	2.2	3.42e3	730	4.7	MM	bb
3	123478-HxCDD	9.34e1	8.03e1	1.74e2	36.08	1.000	1.16	NO	0.019	0.0387	3.50e3	1613	2.2	2.40e3	1113	2.2	bd	bd
4	123678-HxCDD	1.27e2	1.02e2	2.29e2	36.17	1.001	1.24	NO	0.022	0.0379	3.76e3	1613	2.3	3.03e3	1113	2.7	db	dd
5	123789-HxCDD	1.68e2	8.30e1	2.51e2	36.39	1.007	2.02	YES	0.026	0.0394	2.80e3	1613	1.7	2.64e3	1113	2.4	bb	bb
6	1234678-HpCDD	1.51e2	1.89e2	3.39e2	39.25	1.001	0.80	YES	0.038	0.0308	3.32e3	849	3.9	3.41e3	688	5.0	bb	bb
7	OCDD	2.06e2	2.35e2	4.41e2	43.15	1.000	0.88	NO	0.063	0.0470	3.81e3	526	7.2	4.63e3	854	5.4	MM	bb
8	2378-TCDF	6.27e1	6.95e1	1.32e2	29.43	0.999	0.90	YES	0.007	0.0234	2.67e3	726	3.7	1.50e3	1105	1.4	bb	bd
9	12378-PeCDF	3.22e2	2.84e2	6.06e2	32.85	1.000	1.14	YES	0.039	0.0153	7.67e3	848	9.0	5.77e3	1174	4.9	MM	bb
10	23478-PeCDF	2.16e2	2.58e2	4.75e2	33.44	1.001	0.84	YES	0.028	0.0130	7.03e3	848	8.3	6.24e3	1174	5.3	MM	bb
11	123478-HxCDF	2.01e2	9.39e1	2.94e2	35.40	1.000	2.14	YES	0.025	0.0202	5.83e3	1083	5.4	1.94e3	821	2.4	bd	bd
12	123678-HxCDF	1.70e2	1.79e2	3.49e2	35.48	1.000	0.95	YES	0.026	0.0203	3.28e3	1083	3.0	2.99e3	821	3.6	db	MM
13	234678-HxCDF	2.39e2	1.91e2	4.30e2	35.97	1.001	1.25	NO	0.034	0.0210	4.80e3	1083	4.4	4.40e3	821	5.4	MM	MM
14	123789-HxCDF	2.35e2	1.93e2	4.28e2	36.67	1.000	1.22	NO	0.039	0.0277	5.51e3	1083	5.1	3.83e3	821	4.7	bb	MM
15	1234678-HpCDF	1.46e2	1.42e2	2.87e2	38.06	1.000	1.03	NO	0.029	0.0191	2.10e3	669	3.1	2.57e3	581	4.4	bb	bb
16	1234789-HpCDF	1.72e2	1.09e2	2.80e2	39.83	1.000	1.58	YES	0.033	0.0275	5.59e3	669	8.4	1.94e3	581	3.3	bb	bb
17	OCDF	1.63e2	1.74e2	3.36e2	43.42	1.007	0.94	NO	0.047	0.0516	2.26e3	663	3.4	4.10e3	873	4.7	MM	MM
18	13C-2378-TCDD	7.16e5	9.29e5	1.64e6	30.39	1.024	0.77	NO	85.251	0.0789	7.41e6	3521	2104.7	9.53e6	2767	3445.5	bb	bb
19	13C-12378-PeCDD	7.82e5	4.95e5	1.28e6	33.61	1.133	1.58	NO	78.612	0.0869	1.68e7	2915	5753.9	1.05e7	2911	3606.9	bb	bb
20	13C-123478-HxCDD	5.98e5	4.84e5	1.08e6	36.07	0.992	1.24	NO	79.282	0.104	1.16e7	5111	2277.1	9.35e6	4543	2057.6	bd	bd
21	13C-123678-HxCDD	6.85e5	5.59e5	1.24e6	36.15	0.994	1.23	NO	83.371	0.0952	1.18e7	5111	2304.8	9.60e6	4543	2112.4	db	db
22	13C-1234678-HpCDD	4.51e5	4.37e5	8.88e5	39.22	1.078	1.03	NO	88.682	0.132	6.31e6	4443	1421.2	6.04e6	4517	1337.2	bb	bb
23	13C-OCDD	7.26e5	8.20e5	1.55e6	43.13	1.186	0.88	NO	160.391	0.140	7.57e6	4586	1651.0	8.51e6	4605	1848.1	bd	bd
24	13C-2378-TCDF	9.08e5	1.16e6	2.07e6	29.46	0.993	0.78	NO	91.742	0.0926	9.30e6	5364	1733.8	1.19e7	3274	3632.8	bb	bb
25	13C-12378-PeCDF	1.17e6	7.41e5	1.91e6	32.83	1.107	1.57	NO	90.886	0.127	2.45e7	7334	3343.8	1.57e7	3646	4293.8	bd	bd
26	13C-23478-PeCDF	1.13e6	7.23e5	1.85e6	33.42	1.127	1.56	NO	88.871	0.128	2.57e7	7334	3501.5	1.64e7	3646	4501.7	bb	bb
27	13C-123478-HxCDF	3.99e5	7.86e5	1.18e6	35.39	0.973	0.51	NO	81.149	0.150	7.93e6	7386	1073.2	1.58e7	7468	2116.3	bd	bd
28	13C-123678-HxCDF	4.90e5	9.27e5	1.42e6	35.48	0.975	0.53	NO	83.876	0.129	8.66e6	7386	1172.8	1.68e7	7468	2256.2	db	db
29	13C-234678-HxCDF	4.04e5	8.04e5	1.21e6	35.94	0.988	0.50	NO	84.247	0.152	7.34e6	7386	993.5	1.45e7	7468	1946.0	bb	bb
30	13C-123789-HxCDF	3.95e5	7.50e5	1.14e6	36.67	1.008	0.53	NO	87.303	0.167	6.21e6	7386	840.7	1.18e7	7468	1586.7	bd	bb
31	13C-1234678-HpCDF	2.75e5	6.37e5	9.12e5	38.05	1.046	0.43	NO	80.843	0.117	4.51e6	3854	1170.6	1.02e7	5139	1984.8	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, April 06, 2018 14:51:30 Eastern Standard Time
Printed: Friday, April 06, 2018 14:52:05 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.32e5	5.39e5	7.71e5	39.83	1.095	0.43	NO	85.946	0.147	3.08e6	3854	800.4	6.85e6	5139	1333.2	bb	bd
33	13C-1234-TCDD	7.35e5	9.54e5	1.69e6	29.67	0.000	0.77	NO	100.000	0.0901	7.59e6	3521	2156.7	9.72e6	2767	3512.4	bb	bb
34	13C-123789-HxCDD	7.39e5	5.90e5	1.33e6	36.37	0.000	1.25	NO	100.000	0.107	1.25e7	5111	2455.4	1.02e7	4543	2249.3	bd	bb
35	37Cl-2378-TCDD	1.73e5		1.73e5	30.40	1.025			8.807	0.0140	1.71e6	1133	1511.0				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, April 06, 2018 14:51:30 Eastern Standard Time
Printed: Friday, April 06, 2018 14:52:05 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1																	

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	1.63e2	1.52e2	3.16e2	33.61	1.07	YES	0.031	0.0238	2.86e3	1329	2.2	3.42e3	730	4.7	MM	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDD	1.68e2	8.30e1	2.51e2	36.39	2.02	YES	0.026	0.0394	2.80e3	1613	1.7	2.64e3	1113	2.4	bb	bb
2	123678-HxCDD	1.27e2	1.02e2	2.29e2	36.17	1.24	NO	0.022	0.0379	3.76e3	1613	2.3	3.03e3	1113	2.7	db	dd
3	123478-HxCDD	9.34e1	8.03e1	1.74e2	36.08	1.16	NO	0.019	0.0387	3.50e3	1613	2.2	2.40e3	1113	2.2	bd	bd
4	Total-hexadioxins	3.00e2	5.70e1	3.57e2	35.94	5.27	YES	0.037	0.0387	6.30e3	1613	3.9	2.16e3	1113	1.9	bb	MM
5	Total-hexadioxins	2.53e2	9.69e1	3.50e2	35.48	2.61	YES	0.036	0.0387	5.24e3	1613	3.2	2.32e3	1113	2.1	db	db
6	Total-hexadioxins	2.65e2	7.13e1	3.36e2	35.38	3.72	YES	0.035	0.0387	5.09e3	1613	3.2	1.30e3	1113	1.2	bd	bd

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptadioxins	4.26e2	1.94e2	6.19e2	39.84	2.20	YES	0.070	0.0308	6.91e3	849	8.1	2.55e3	688	3.7	MM	MM
2	1234678-HpCDD	1.51e2	1.89e2	3.39e2	39.25	0.80	YES	0.038	0.0308	3.32e3	849	3.9	3.41e3	688	5.0	bb	bb
3	Total-heptadioxins	4.41e2	2.23e2	6.64e2	38.05	1.98	YES	0.075	0.0308	9.47e3	849	11.2	4.53e3	688	6.6	bb	bb

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDF	6.27e1	6.95e1	1.32e2	29.43	0.90	YES	0.007	0.0234	2.67e3	726	3.7	1.50e3	1105	1.4	bb	bd

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, April 06, 2018 14:51:30 Eastern Standard Time
Printed: Friday, April 06, 2018 14:52:05 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	6.32e1	5.16e1	1.15e2	29.19	1.23	YES	0.007	0.0131	1.11e3	711	1.6	1.22e3	1169	1.0	bb	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	23478-PeCDF	2.16e2	2.58e2	4.75e2	33.44	0.84	YES	0.028	0.0130	7.03e3	848	8.3	6.24e3	1174	5.3	MM	bb
2	12378-PeCDF	3.22e2	2.84e2	6.06e2	32.85	1.14	YES	0.039	0.0153	7.67e3	848	9.0	5.77e3	1174	4.9	MM	bb

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	234678-HxCDF	2.39e2	1.91e2	4.30e2	35.97	1.25	NO	0.034	0.0210	4.80e3	1083	4.4	4.40e3	821	5.4	MM	MM
2	123678-HxCDF	1.70e2	1.79e2	3.49e2	35.48	0.95	YES	0.026	0.0203	3.28e3	1083	3.0	2.99e3	821	3.6	db	MM
3	123478-HxCDF	2.01e2	9.39e1	2.94e2	35.40	2.14	YES	0.025	0.0202	5.83e3	1083	5.4	1.94e3	821	2.4	bd	bd
4	123789-HxCDF	2.35e2	1.93e2	4.28e2	36.67	1.22	NO	0.039	0.0277	5.51e3	1083	5.1	3.83e3	821	4.7	bb	MM

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	1234789-HpCDF	1.72e2	1.09e2	2.80e2	39.83	1.58	YES	0.033	0.0275	5.59e3	669	8.4	1.94e3	581	3.3	bb	bb
2	1234678-HpCDF	1.46e2	1.42e2	2.87e2	38.06	1.03	NO	0.029	0.0191	2.10e3	669	3.1	2.57e3	581	4.4	bb	bb

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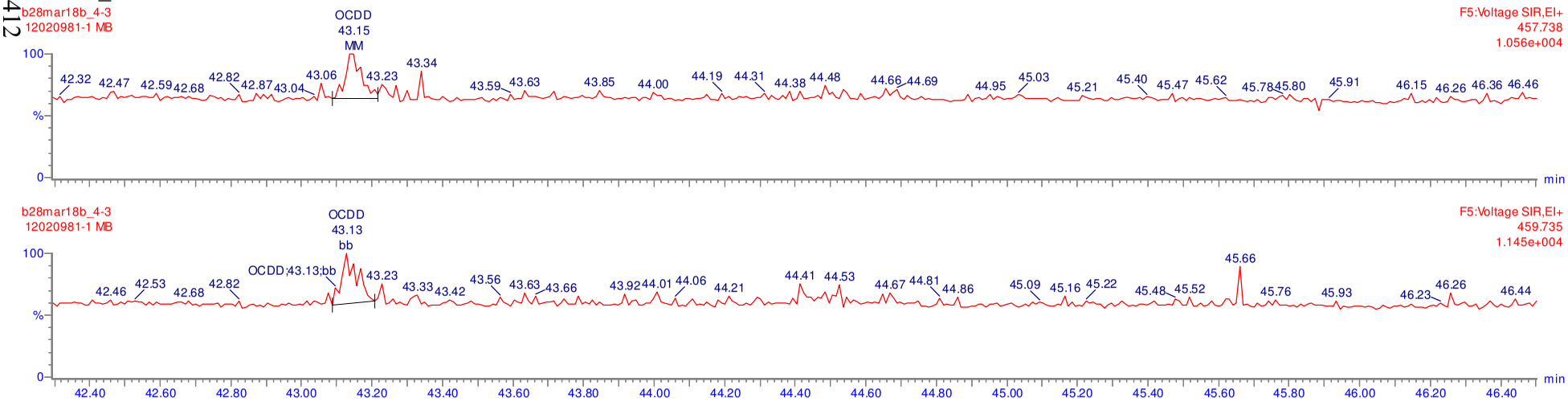
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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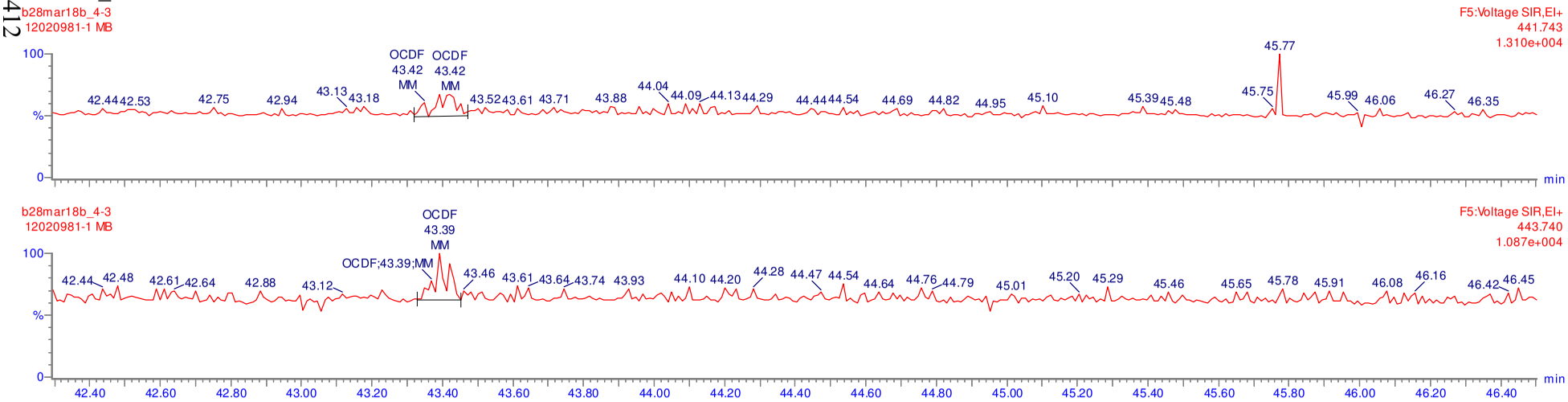
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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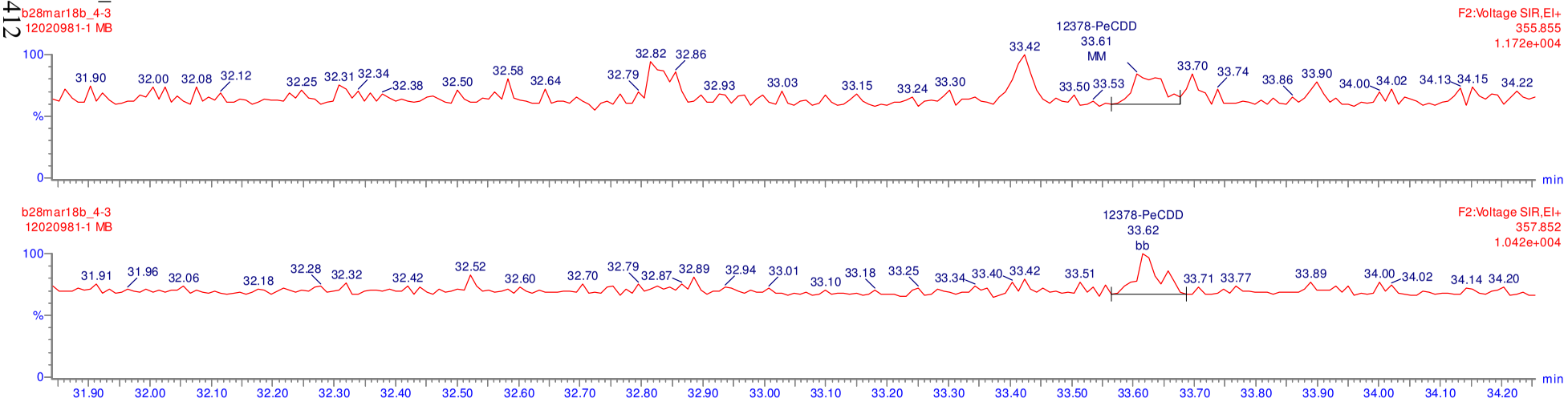
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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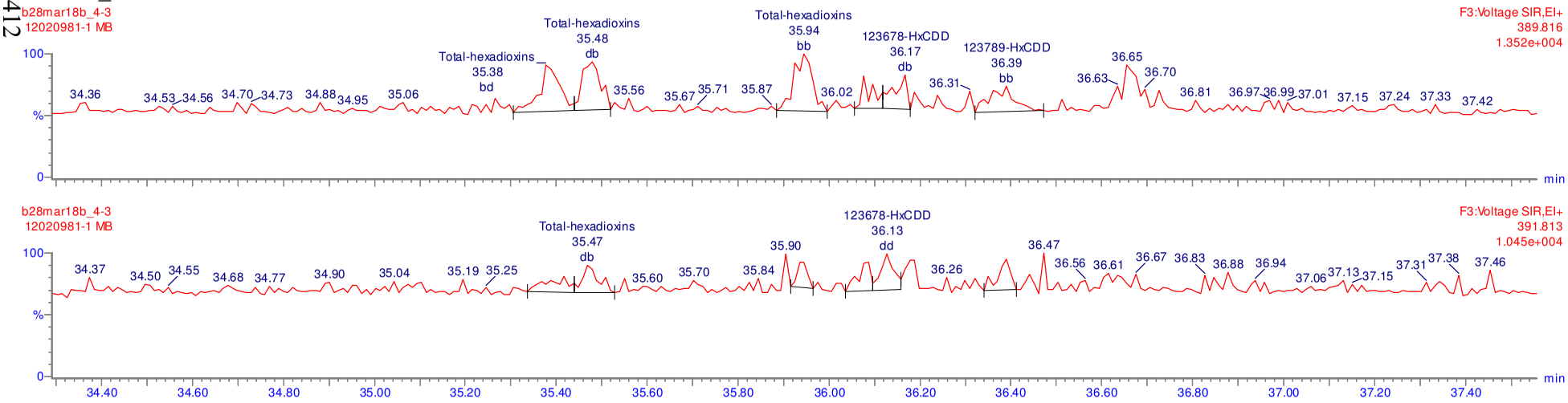
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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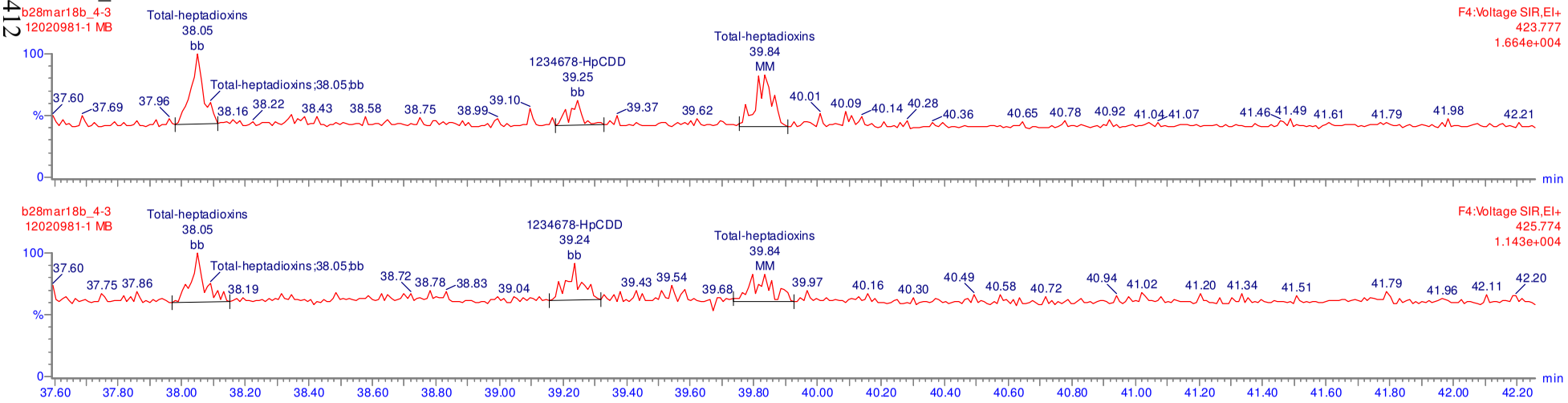
METHOD 1613
HRP763_1



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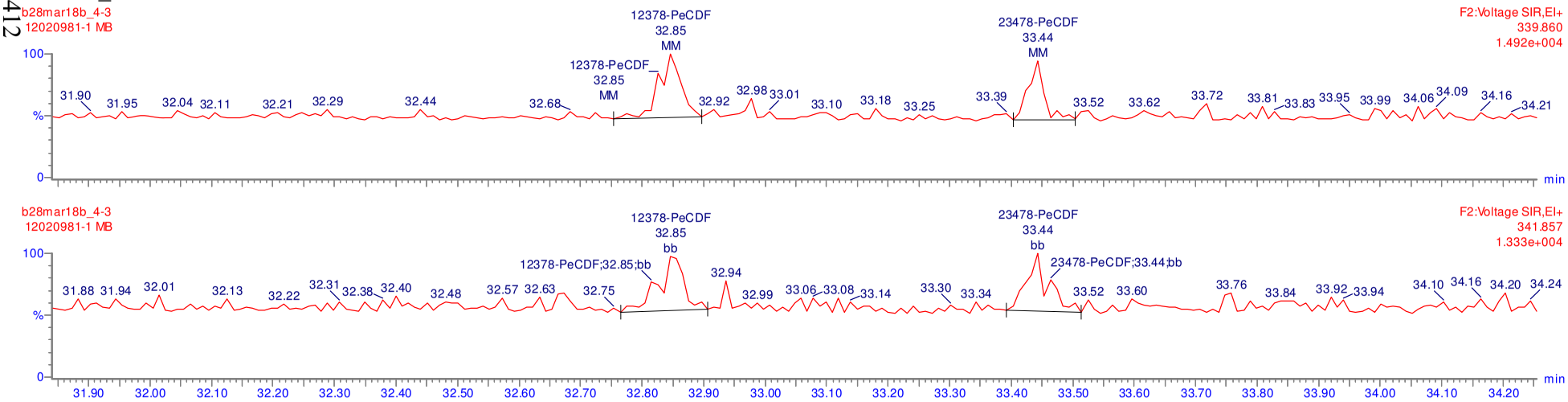
METHOD 1613
HRP763_1



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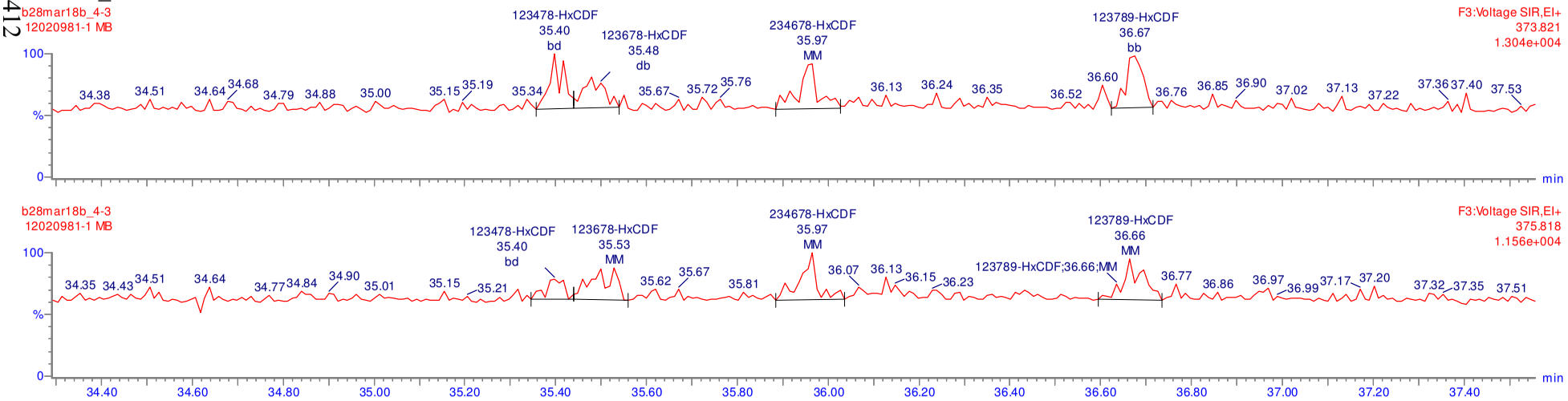
METHOD 1613
HRP763_1



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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

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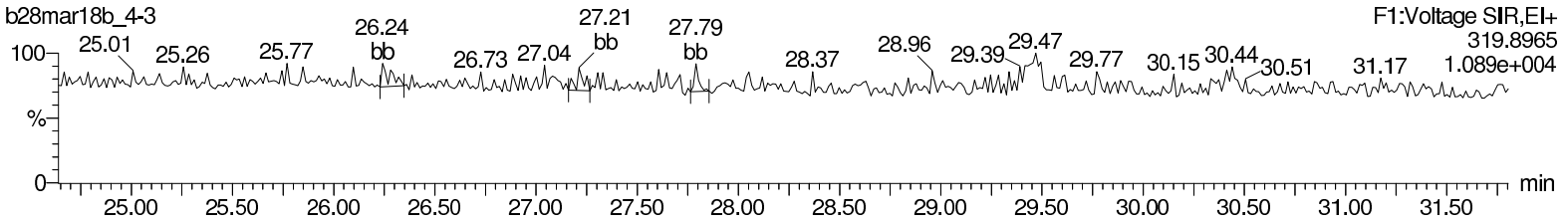

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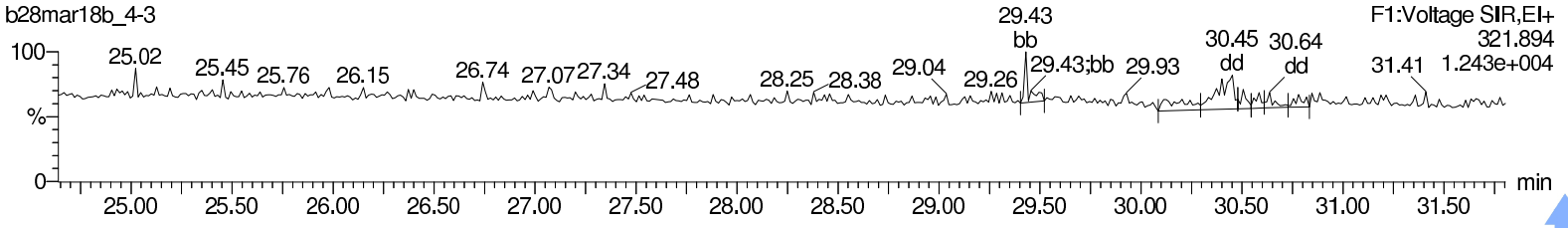

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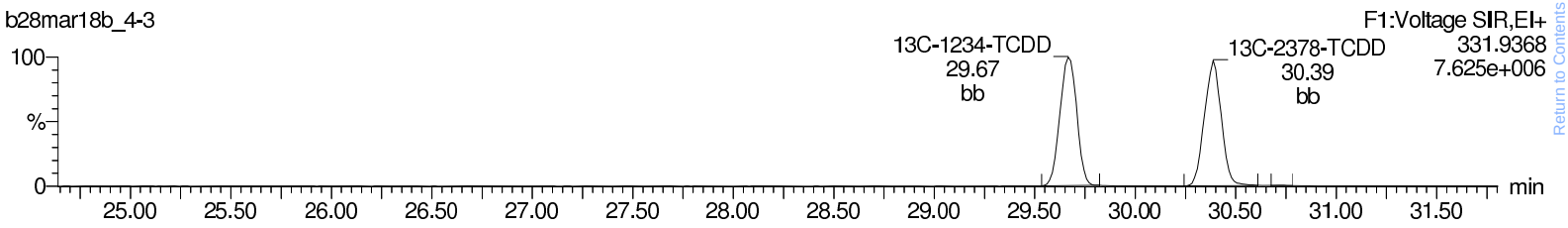

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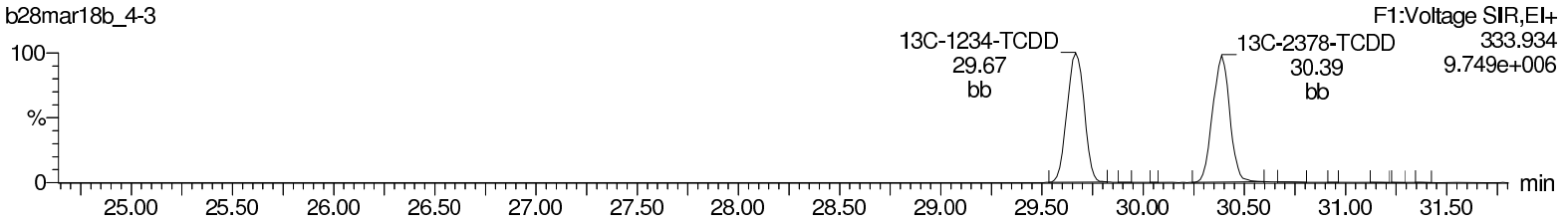

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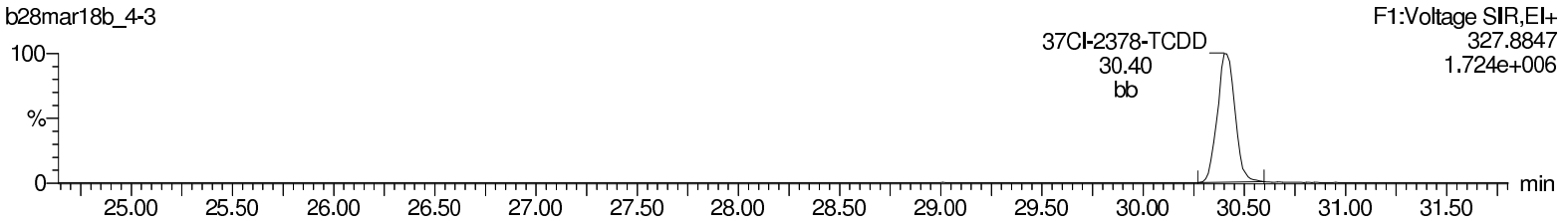

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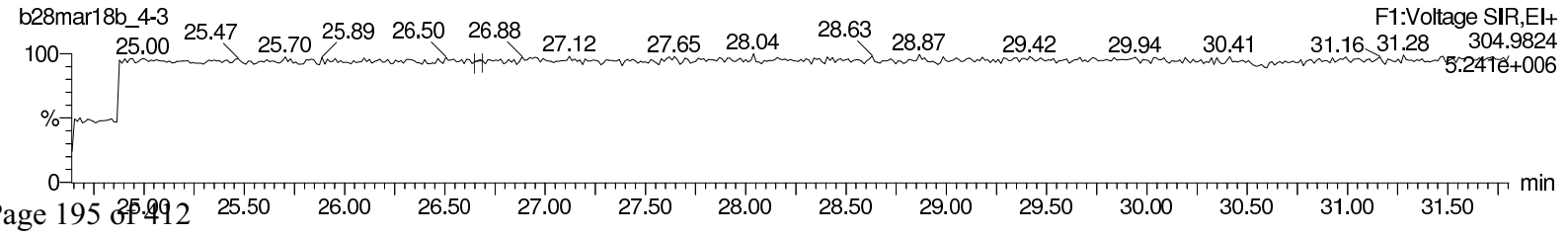

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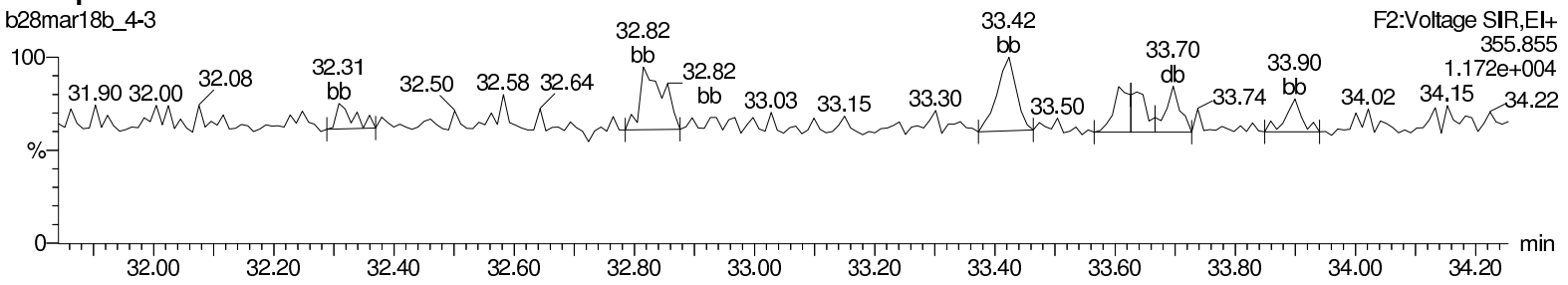
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-pentadioxins



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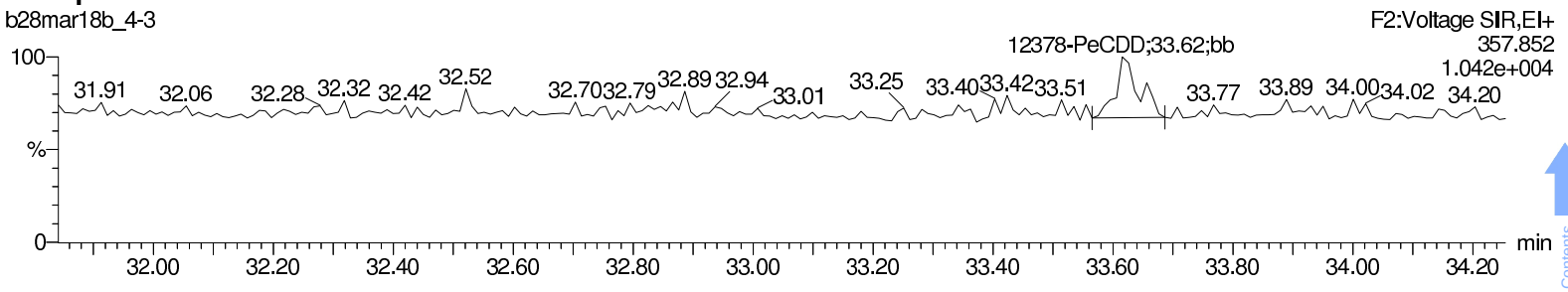

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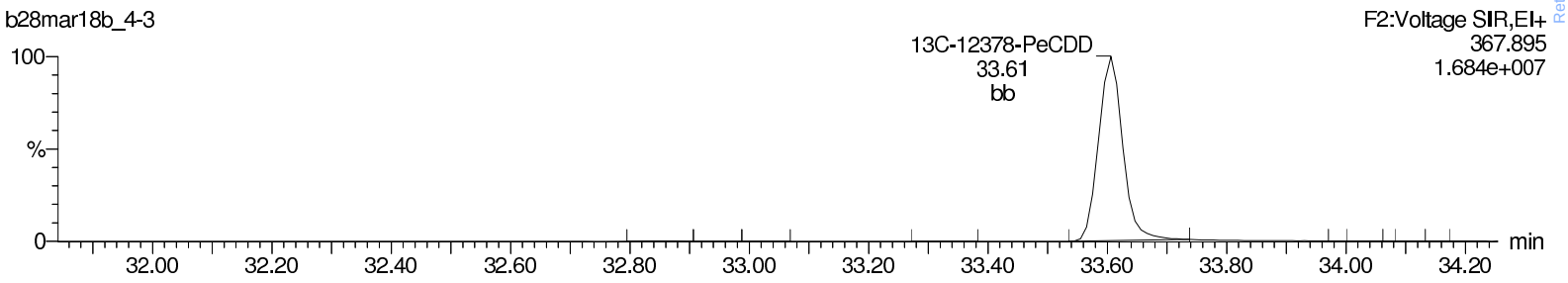

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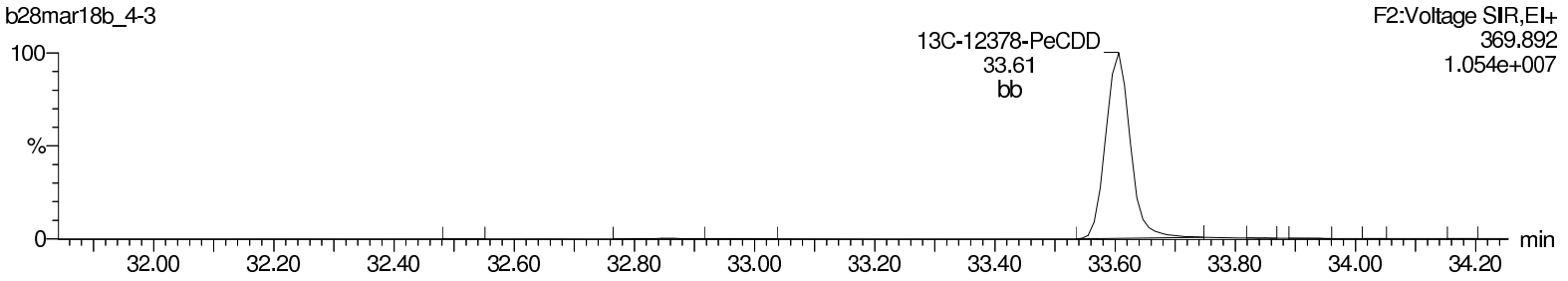

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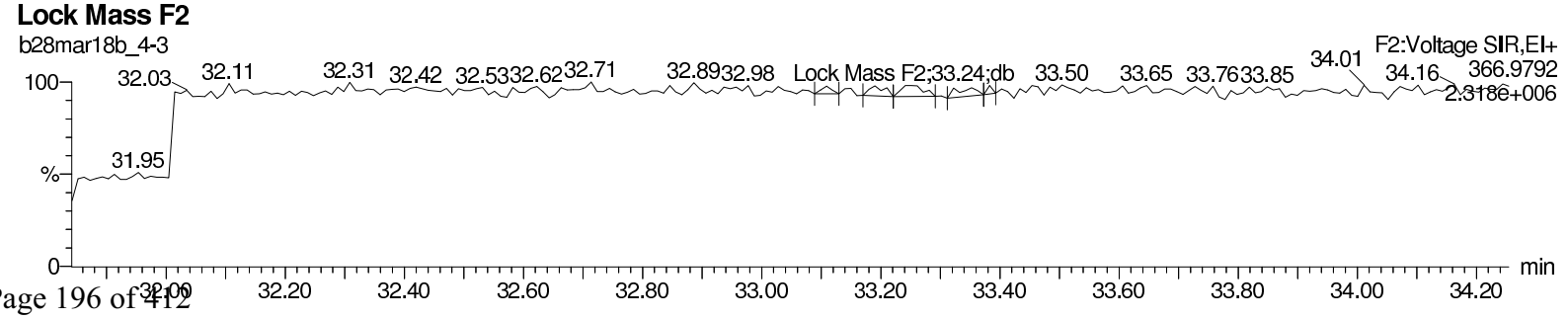

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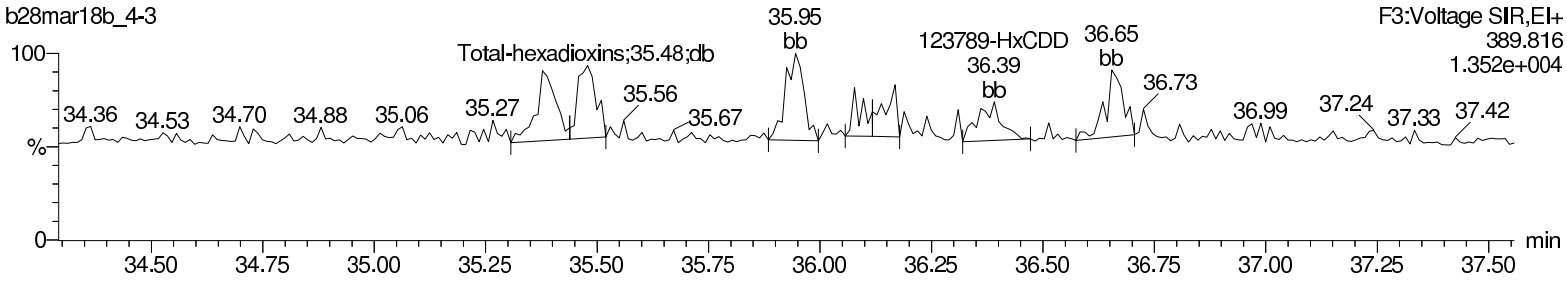
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-hexadioxins



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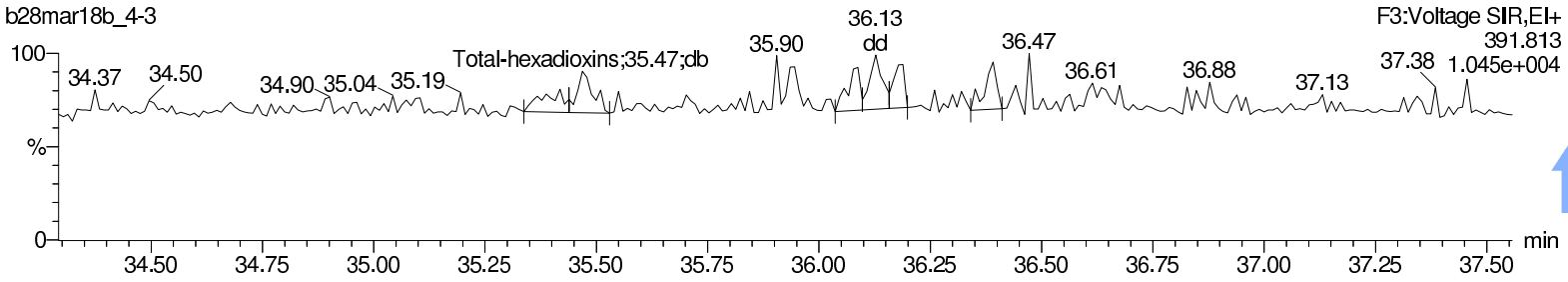

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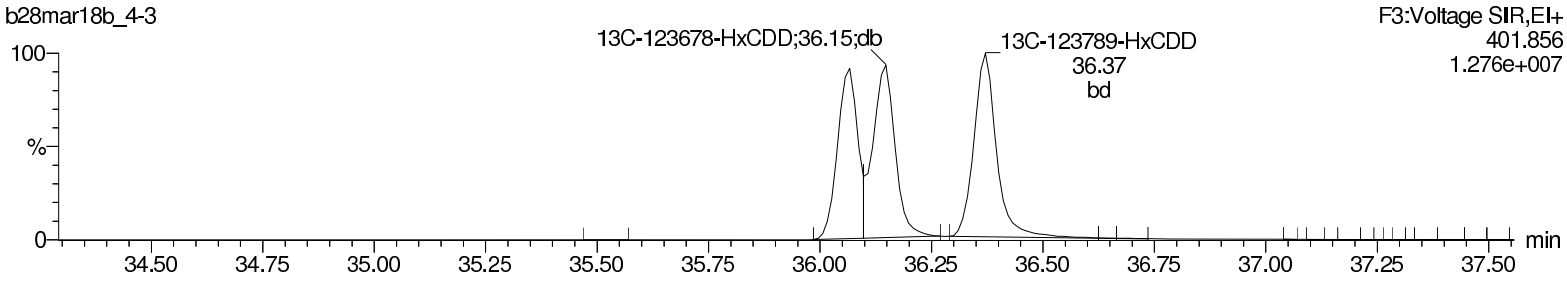

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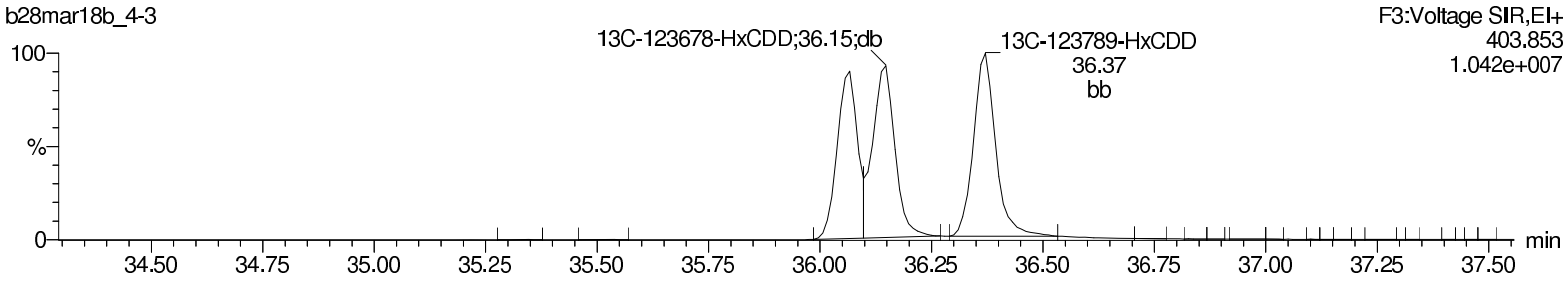

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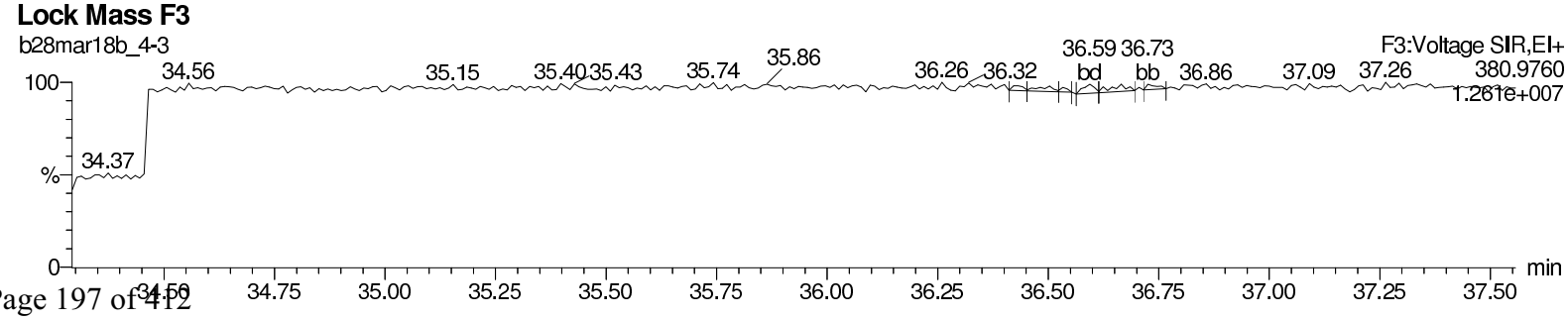

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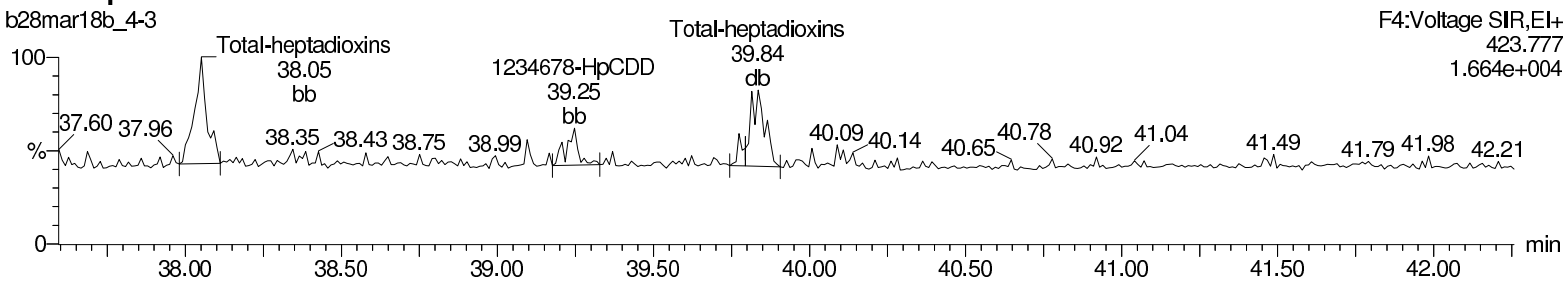
Total-heptadioxins



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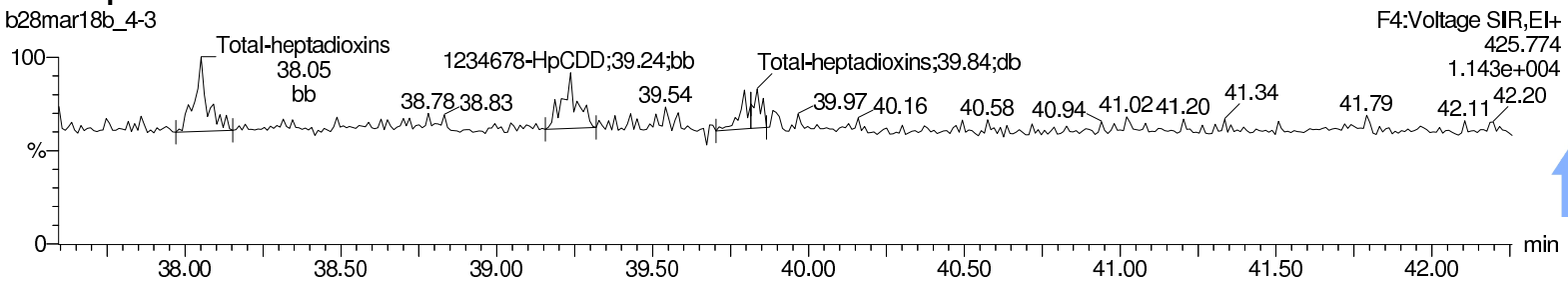

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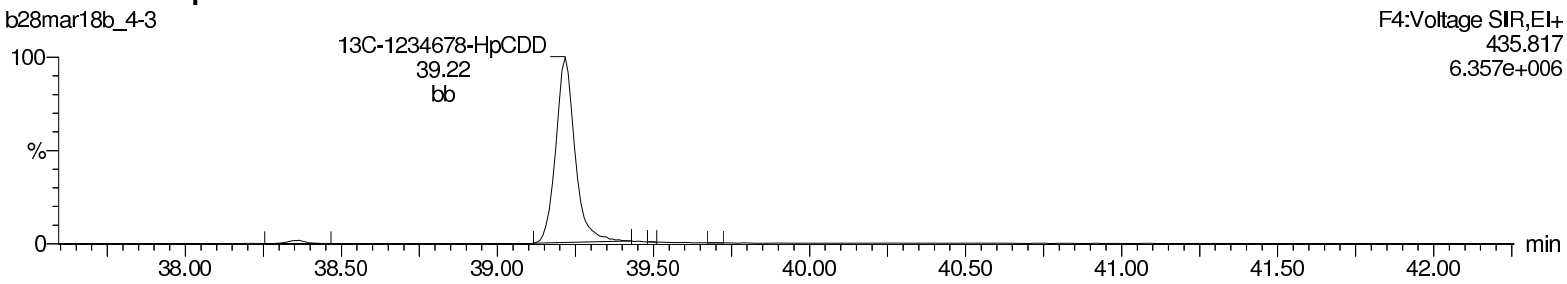

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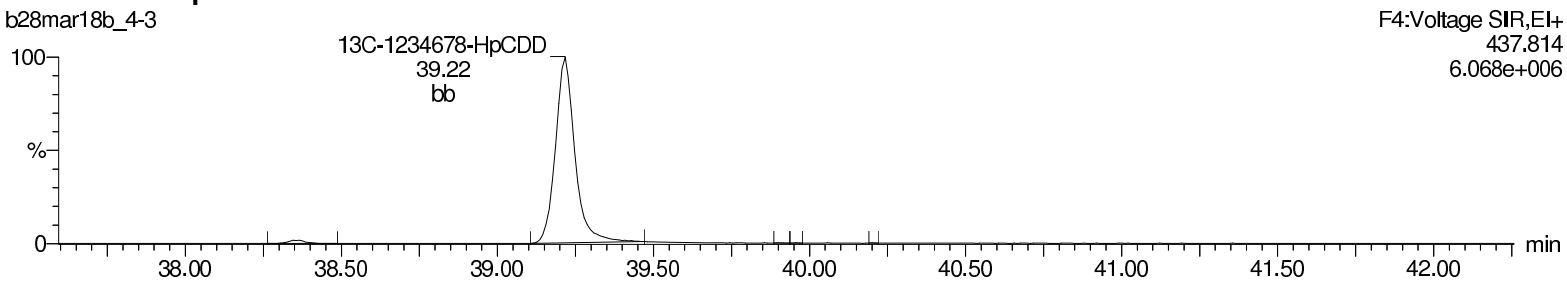
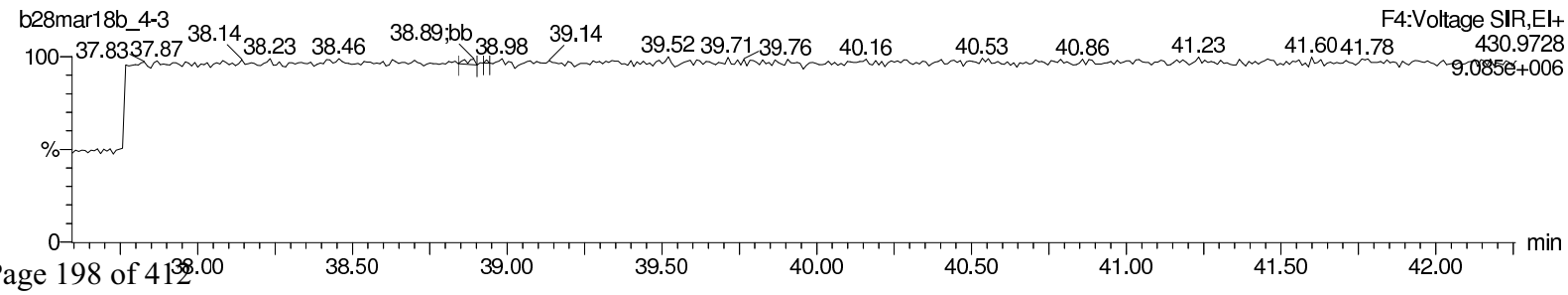


Lock Mass F4

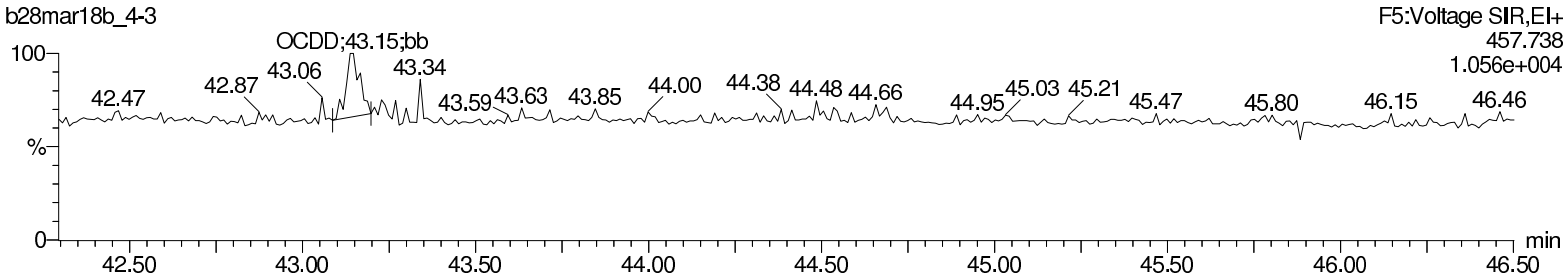


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

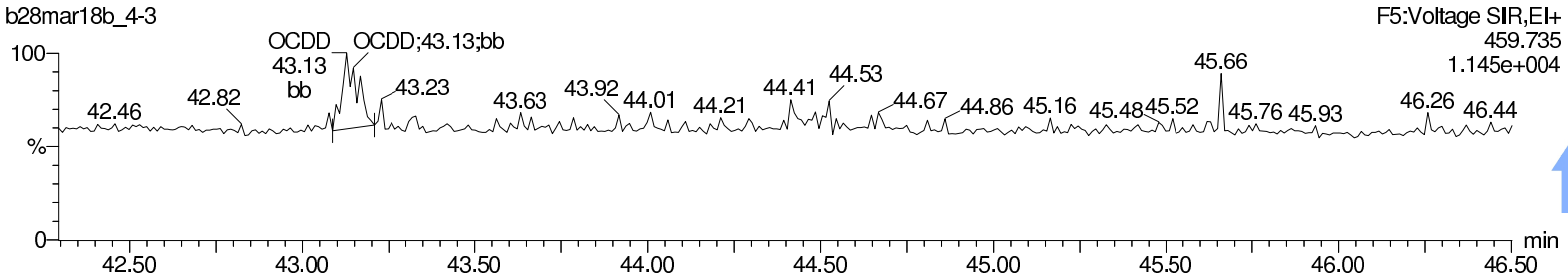
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

OCDD



OCDD



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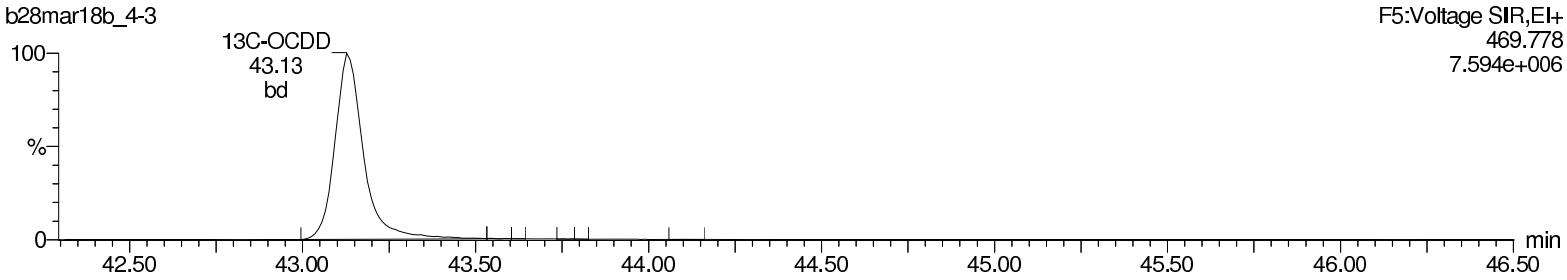
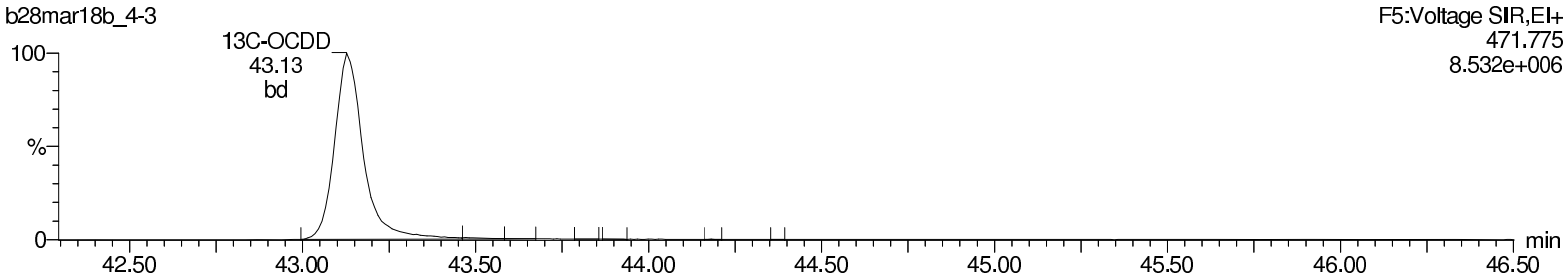


13C-OCDD



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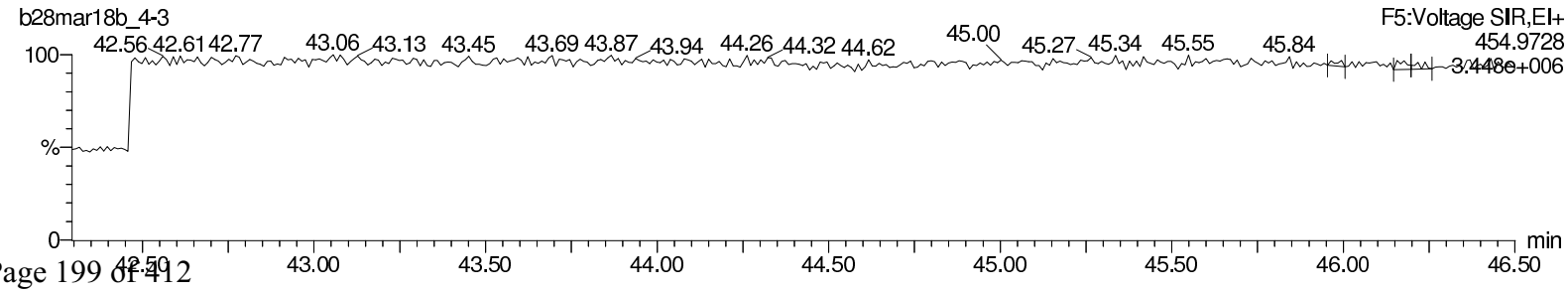

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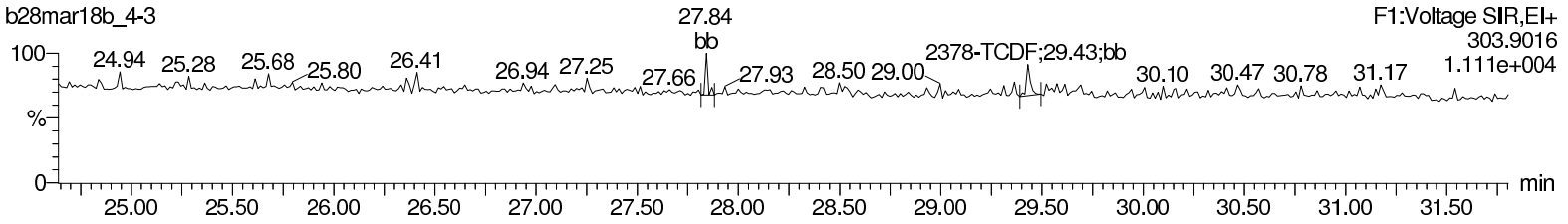
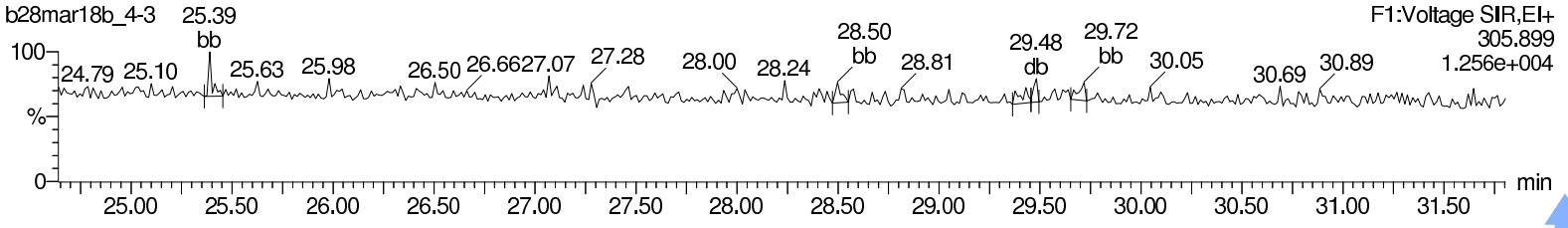
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-tetrafurans



Total-tetrafurans



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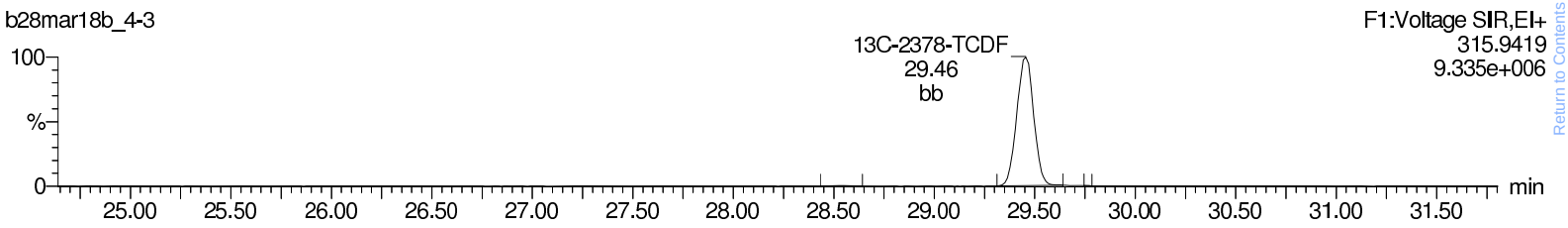

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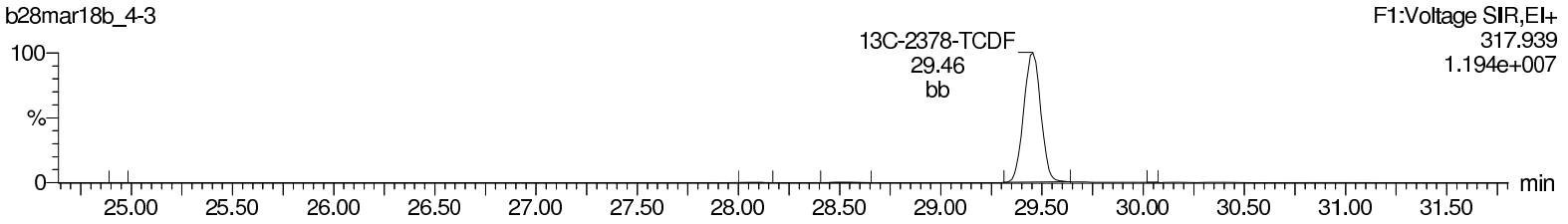
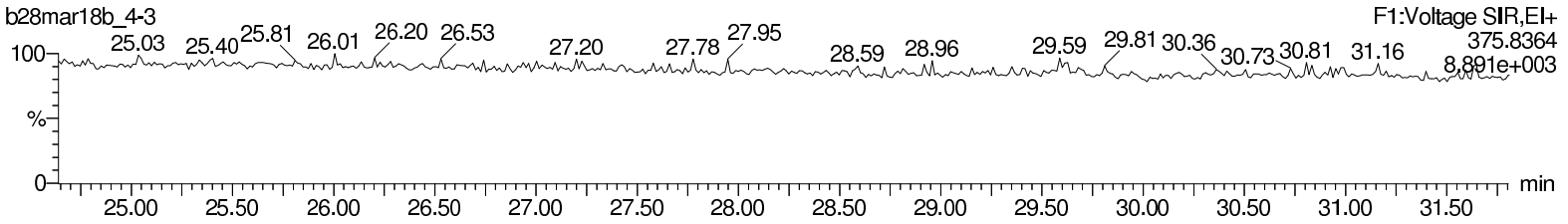
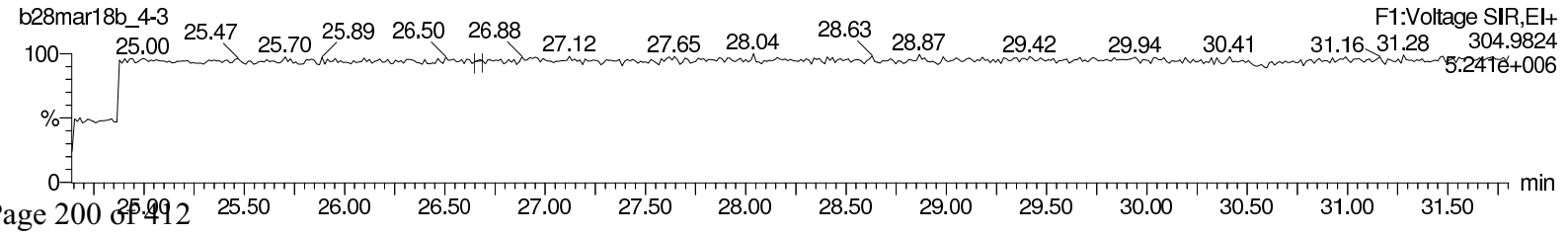


HxDPE



Lock Mass F1

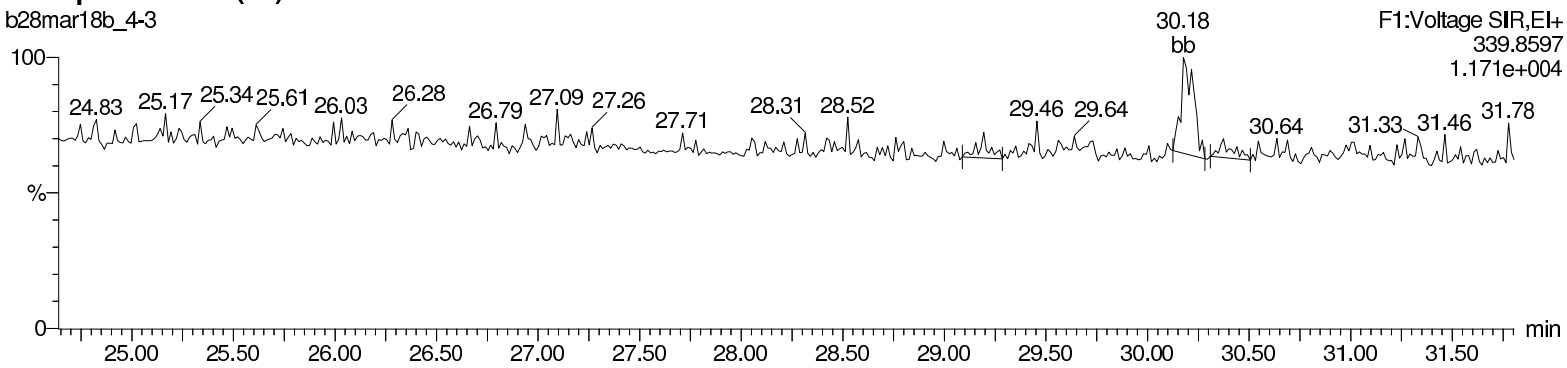


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

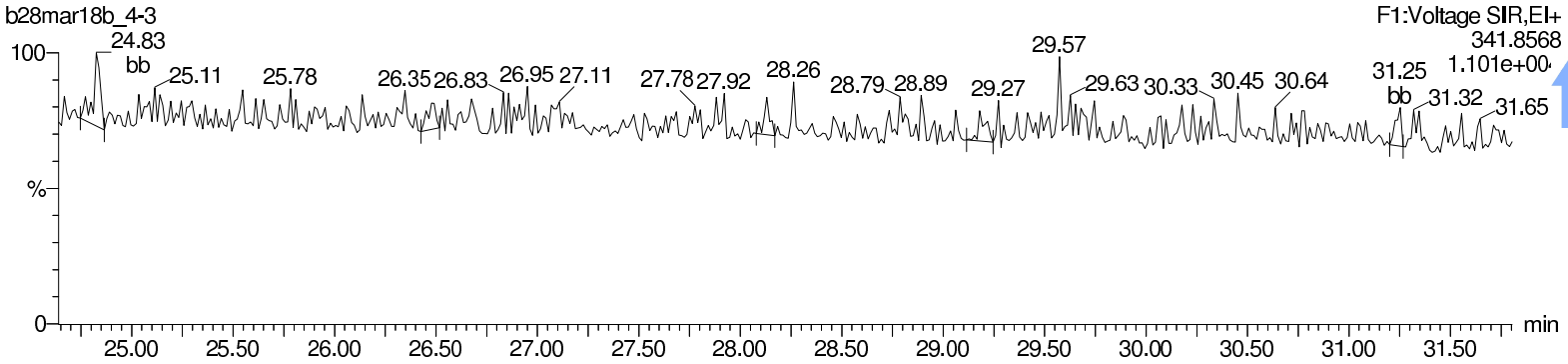
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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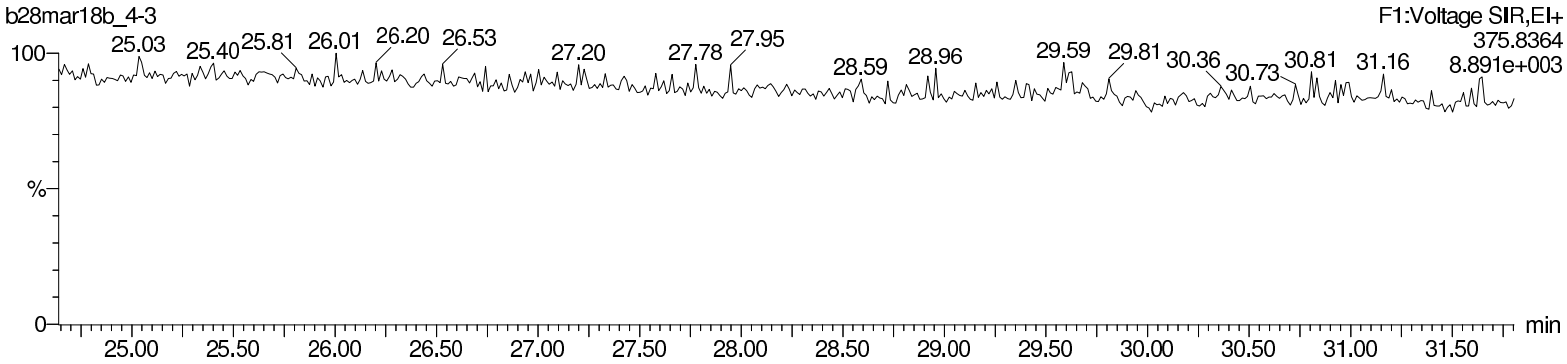
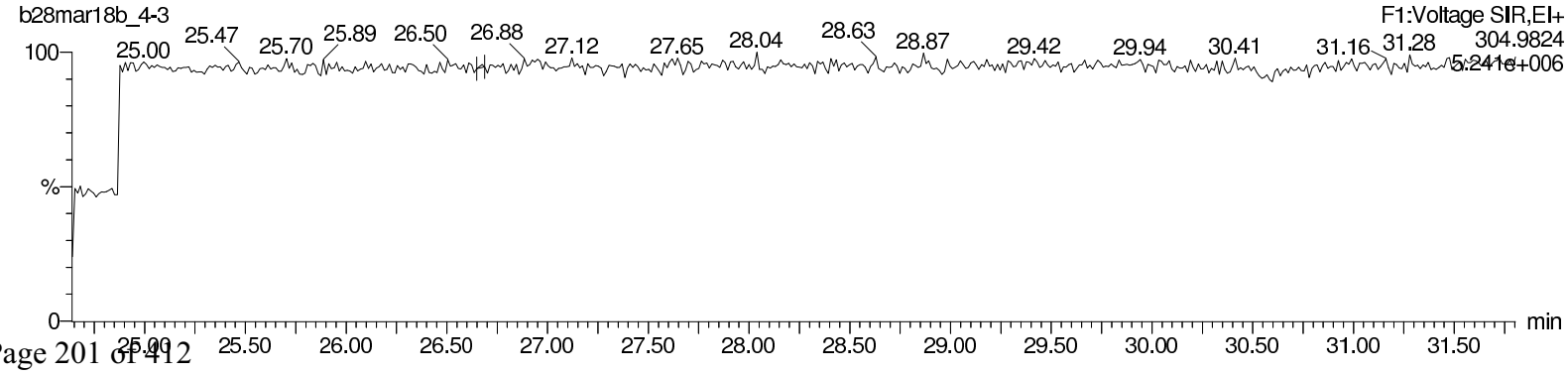


Lock Mass F1



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Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

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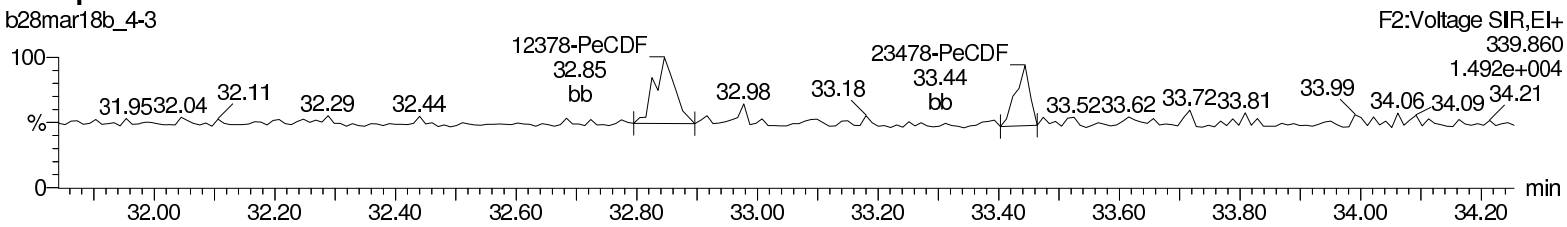
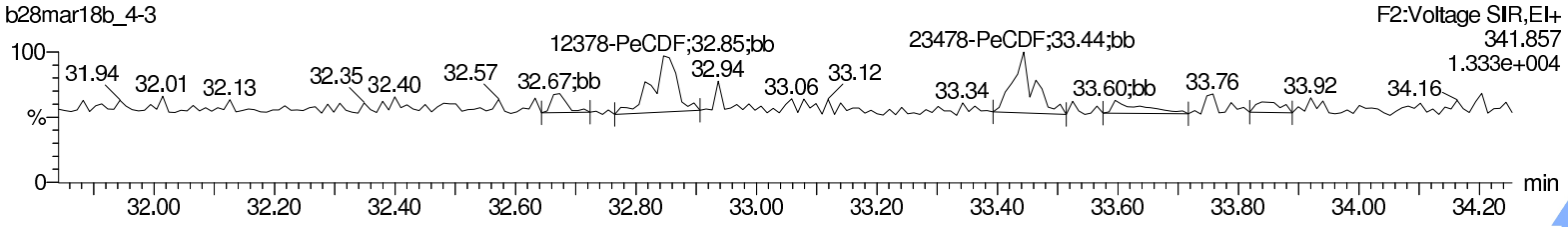
Total-pentafurans



Total-pentafurans



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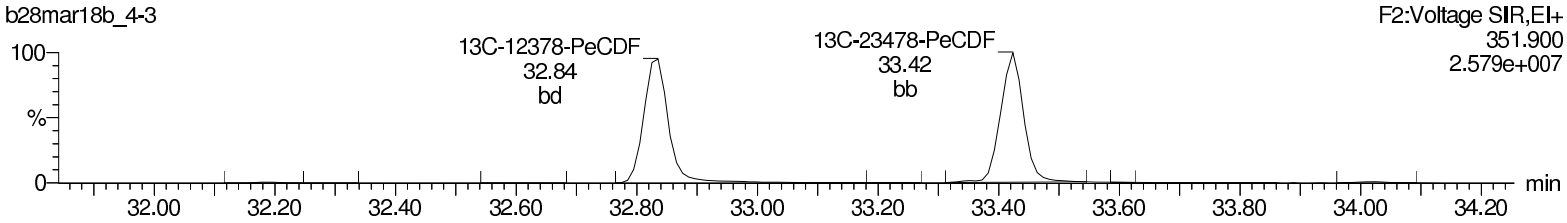

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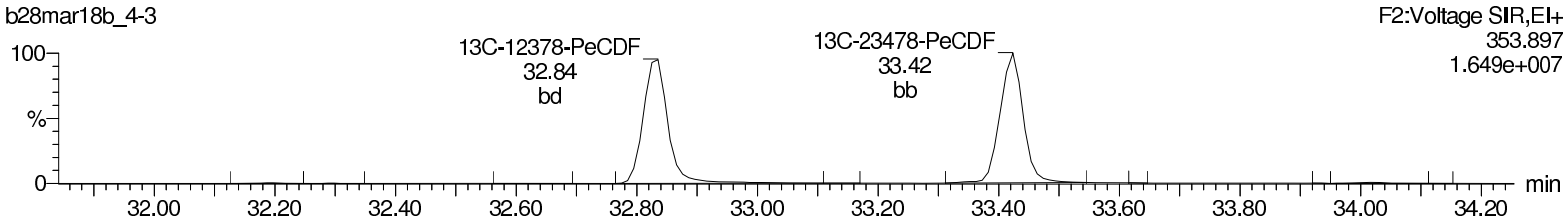

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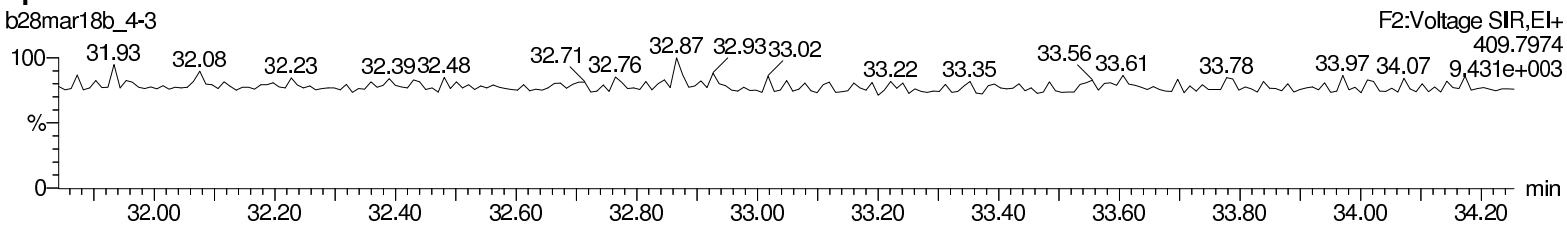
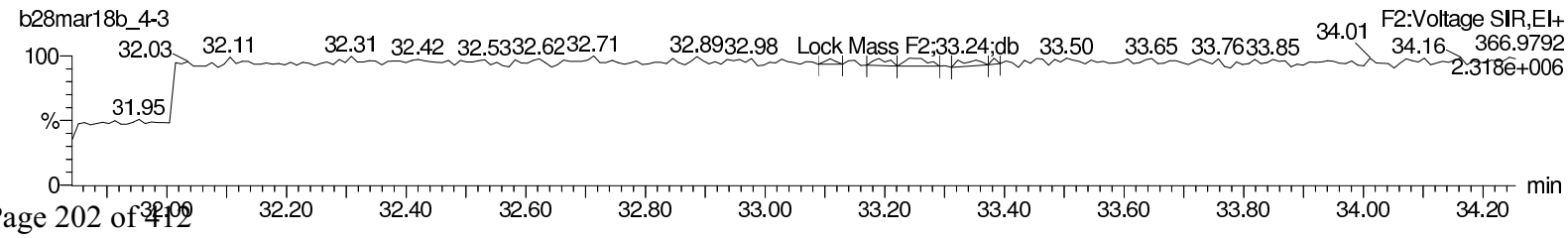


Lock Mass F2



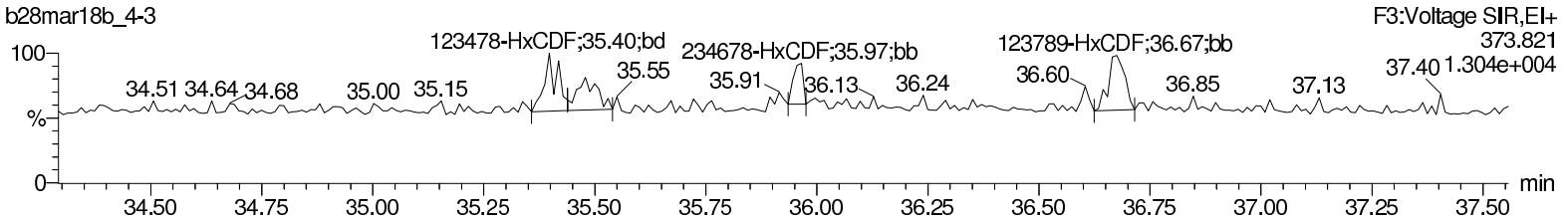
Return to Contents

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

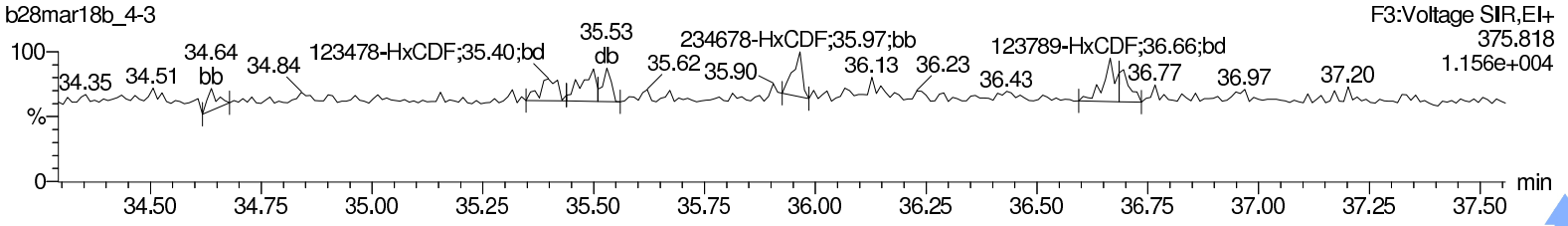
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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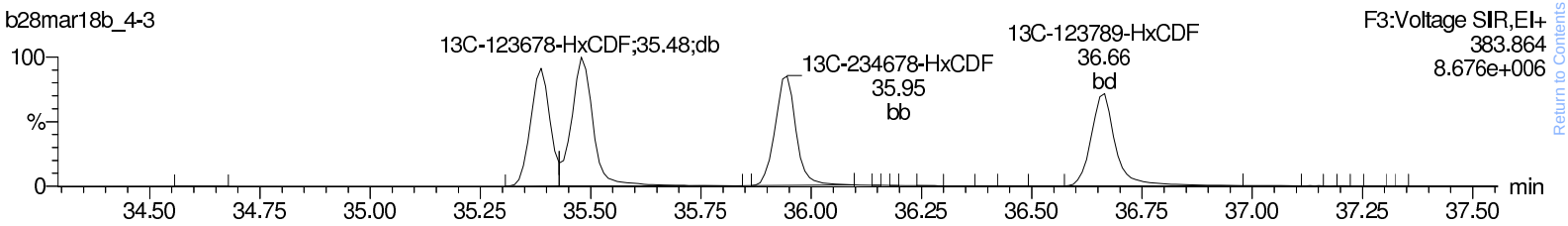

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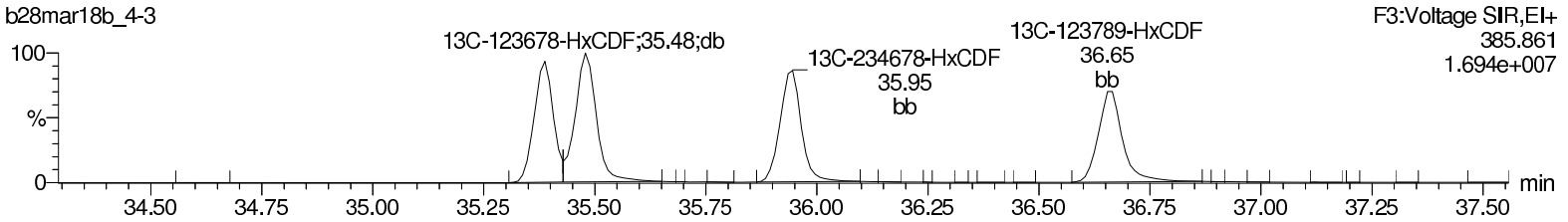

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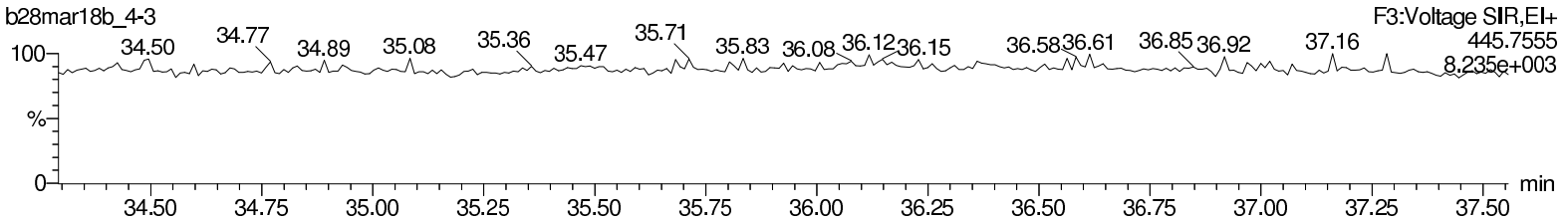
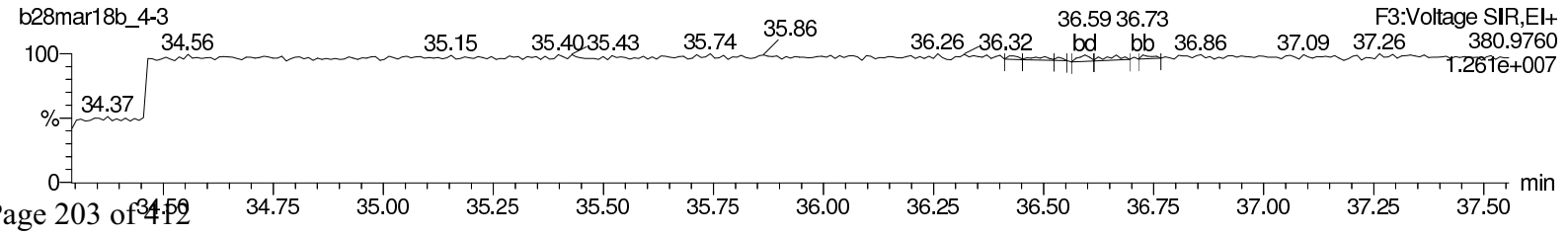


Lock Mass F3



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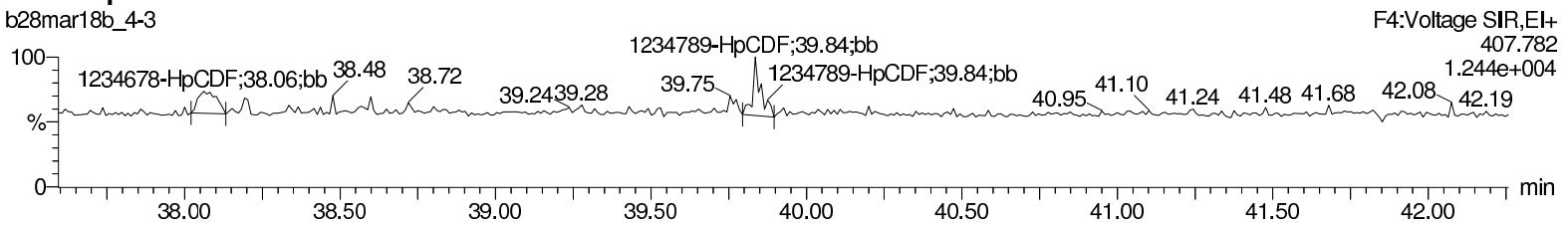
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-heptafurans



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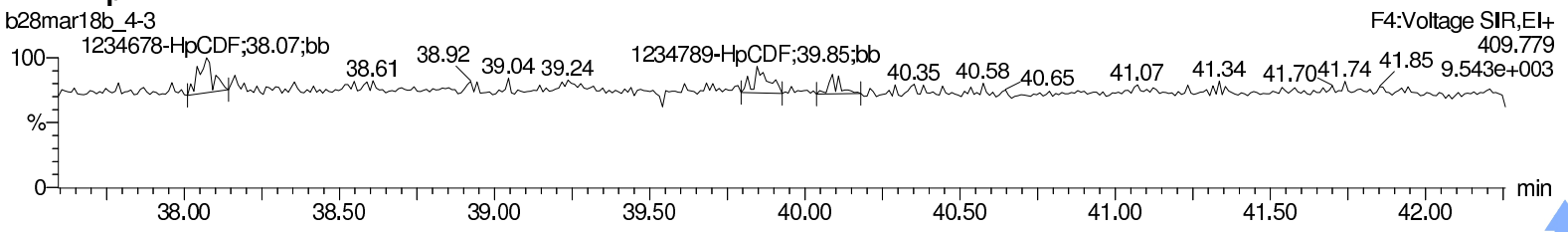

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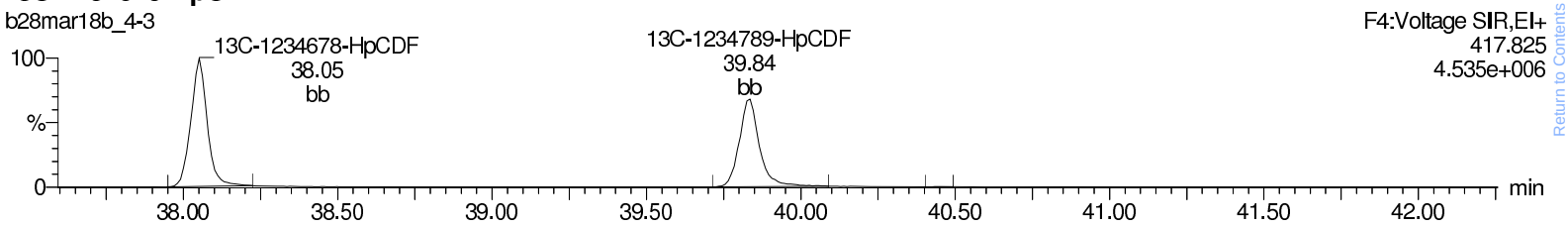

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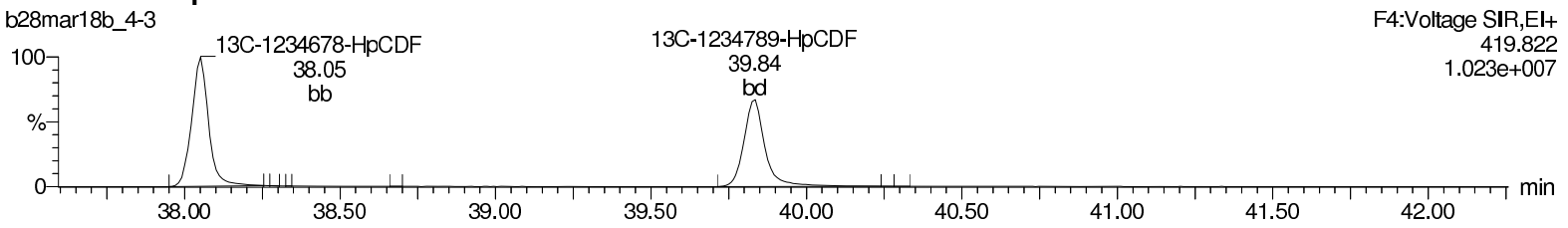

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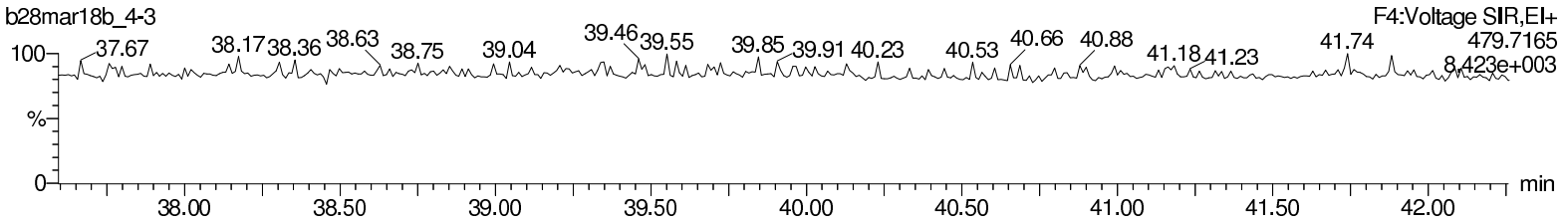

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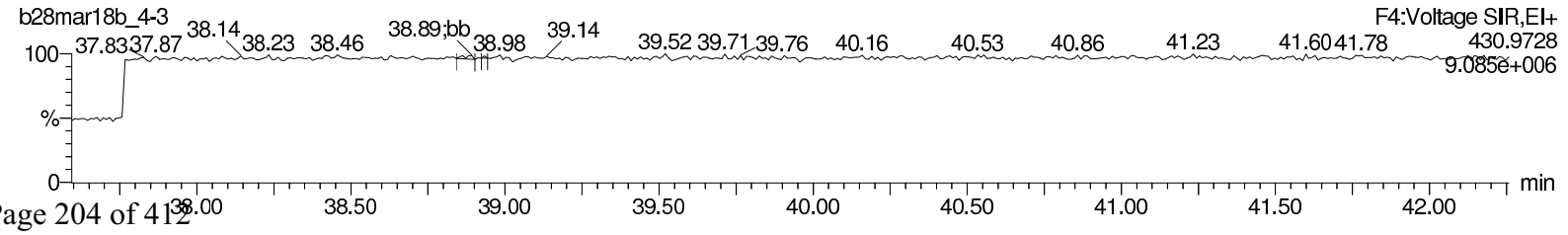

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Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
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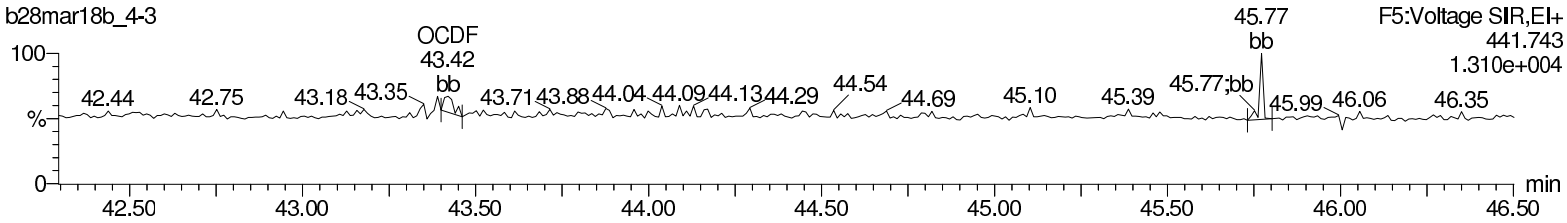
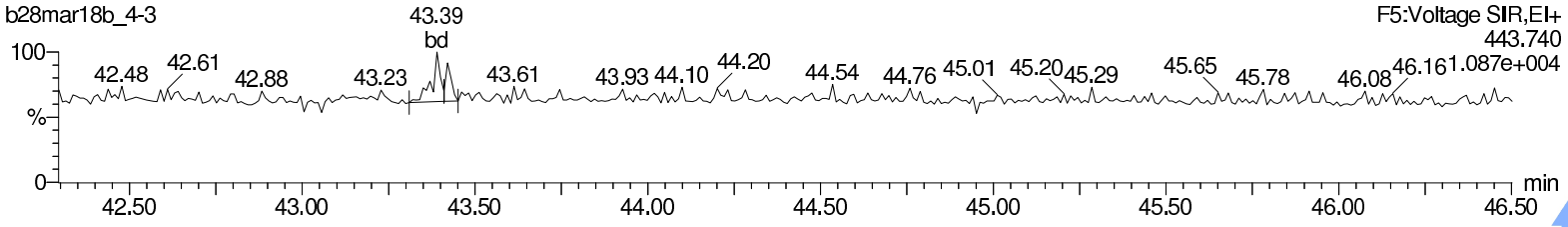
Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

OCDF



OCDF



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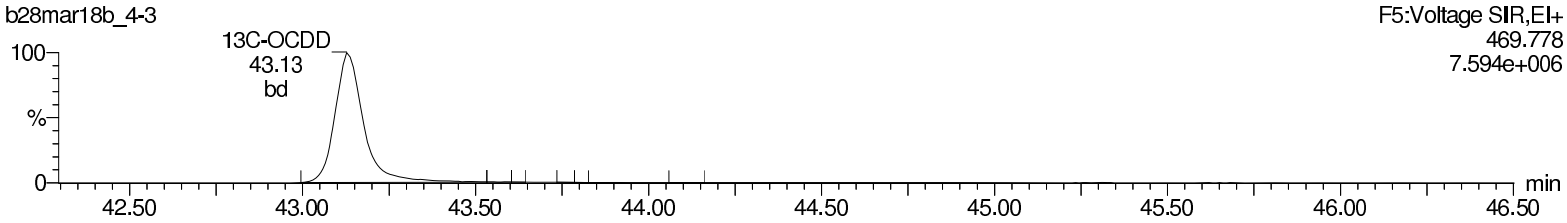

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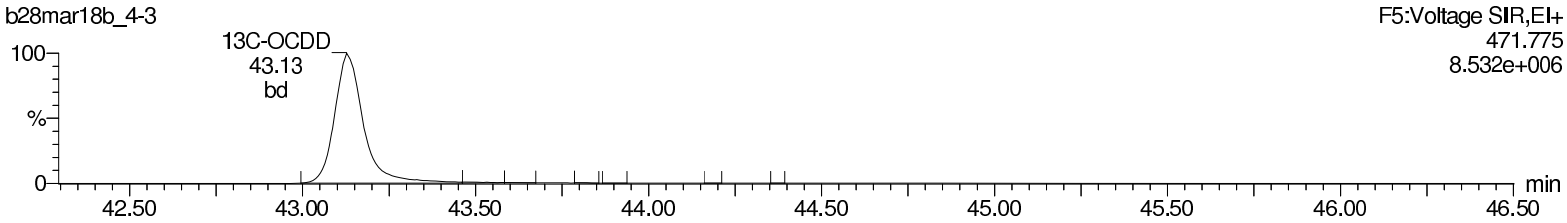

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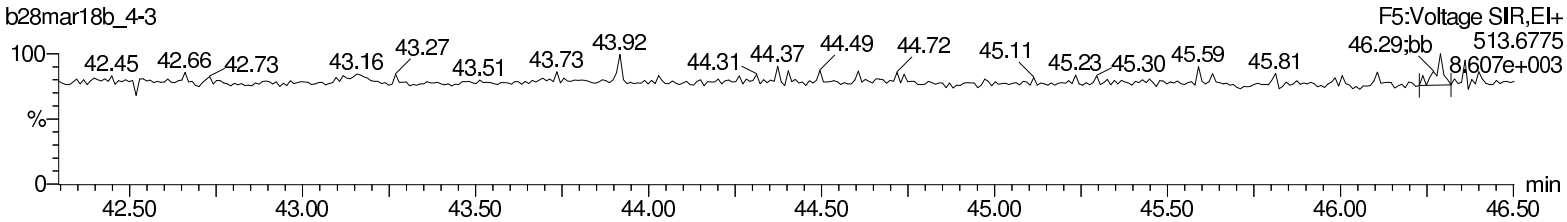
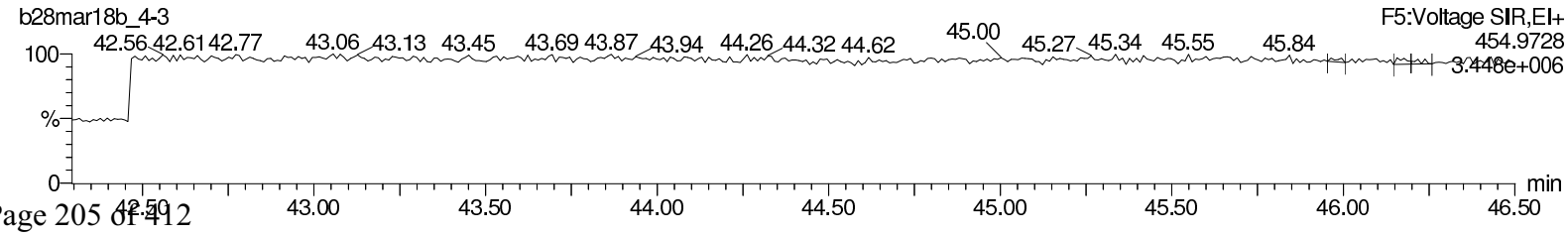


Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**12020982**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 37284**				
Client ID:	**LCS for batch 37284**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/29/2018 21:15**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b28mar18b_4-1**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		0.219	ng/L	0.000884	0.010
40321-76-4	1,2,3,7,8-PeCDD		1.20	ng/L	0.00139	0.050
39227-28-6	1,2,3,4,7,8-HxCDD		1.14	ng/L	0.00173	0.050
57653-85-7	1,2,3,6,7,8-HxCDD		1.13	ng/L	0.00169	0.050
19408-74-3	1,2,3,7,8,9-HxCDD		1.16	ng/L	0.00176	0.050
35822-46-9	1,2,3,4,6,7,8-HpCDD		0.989	ng/L	0.00324	0.050
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2.16	ng/L	0.00354	0.100
51207-31-9	2,3,7,8-TCDF		0.199	ng/L	0.000726	0.010
57117-41-6	1,2,3,7,8-PeCDF		1.01	ng/L	0.00135	0.050
57117-31-4	2,3,4,7,8-PeCDF		1.01	ng/L	0.00123	0.050
70648-26-9	1,2,3,4,7,8-HxCDF		1.09	ng/L	0.00256	0.050
57117-44-9	1,2,3,6,7,8-HxCDF		1.09	ng/L	0.00258	0.050
60851-34-5	2,3,4,6,7,8-HxCDF		1.10	ng/L	0.00258	0.050
72918-21-9	1,2,3,7,8,9-HxCDF		1.11	ng/L	0.00348	0.050
67562-39-4	1,2,3,4,6,7,8-HpCDF		1.08	ng/L	0.00274	0.050
55673-89-7	1,2,3,4,7,8,9-HpCDF		1.13	ng/L	0.00392	0.050
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2.19	ng/L	0.00442	0.100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.74	2.00	ng/L	87.2	(20%-175%)
13C-1,2,3,7,8-PeCDD		1.63	2.00	ng/L	81.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		1.60	2.00	ng/L	80.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		1.62	2.00	ng/L	80.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		1.73	2.00	ng/L	86.6	(22%-166%)
13C-OCDD		3.20	4.00	ng/L	80.1	(13%-199%)
13C-2,3,7,8-TCDF		1.88	2.00	ng/L	94.2	(22%-152%)
13C-1,2,3,7,8-PeCDF		1.88	2.00	ng/L	93.9	(21%-192%)
13C-2,3,4,7,8-PeCDF		1.83	2.00	ng/L	91.7	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		1.61	2.00	ng/L	80.7	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		1.63	2.00	ng/L	81.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		1.65	2.00	ng/L	82.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		1.70	2.00	ng/L	84.9	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		1.57	2.00	ng/L	78.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		1.66	2.00	ng/L	82.9	(20%-186%)
37Cl-2,3,7,8-TCDD		0.178	0.200	ng/L	89.0	(31%-191%)

Comments:

U **Analyte was analyzed for, but not detected above the specified detection limit.**

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, April 06, 2018 14:45:40 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	7.06e4	9.02e4	1.61e5	30.40	1.001	0.78	NO	10.933	0.0442	7.41e5	1566	473.2	9.25e5	1168	792.4	bd	bb
2	12378-PeCDD	3.75e5	2.37e5	6.13e5	33.61	1.000	1.58	NO	59.765	0.0695	8.39e6	3068	2733.8	5.50e6	3306	1665.1	bd	bb
3	123478-HxCDD	2.98e5	2.39e5	5.38e5	36.07	1.000	1.25	NO	56.839	0.0865	6.22e6	3096	2008.7	4.98e6	3690	1350.8	bd	bd
4	123678-HxCDD	3.28e5	2.62e5	5.91e5	36.15	1.000	1.25	NO	56.505	0.0844	6.35e6	3096	2050.4	5.17e6	3690	1400.2	db	db
5	123789-HxCDD	3.09e5	2.52e5	5.60e5	36.37	1.007	1.23	NO	57.966	0.0880	5.80e6	3096	1872.2	4.67e6	3690	1266.0	bb	bb
6	1234678-HpCDD	2.25e5	2.18e5	4.43e5	39.23	1.000	1.03	NO	49.428	0.162	3.37e6	3882	867.9	3.21e6	4586	699.3	bb	bd
7	OCDD	3.68e5	4.14e5	7.82e5	43.14	1.000	0.89	NO	107.812	0.177	4.06e6	2602	1560.9	4.46e6	2918	1527.9	bd	bd
8	2378-TCDF	8.18e4	1.09e5	1.91e5	29.47	1.001	0.75	NO	9.938	0.0363	8.71e5	1457	597.7	1.20e6	1635	733.3	bb	bb
9	12378-PeCDF	4.85e5	3.18e5	8.03e5	32.83	1.000	1.53	NO	50.505	0.0676	1.18e7	5514	2131.4	7.64e6	4597	1662.7	bd	bd
10	23478-PeCDF	5.31e5	3.43e5	8.74e5	33.42	1.000	1.55	NO	50.267	0.0616	1.26e7	5514	2280.6	8.30e6	4597	1805.9	bb	bb
11	123478-HxCDF	3.66e5	2.99e5	6.65e5	35.39	1.000	1.23	NO	54.734	0.128	7.73e6	6853	1128.1	6.34e6	6242	1015.5	bd	bd
12	123678-HxCDF	3.96e5	3.30e5	7.26e5	35.49	1.000	1.20	NO	54.630	0.129	7.87e6	6853	1148.4	6.37e6	6242	1019.9	db	dd
13	234678-HxCDF	3.81e5	3.08e5	6.89e5	35.94	1.000	1.24	NO	54.780	0.129	7.75e6	6853	1130.5	6.26e6	6242	1002.7	bb	bb
14	123789-HxCDF	3.39e5	2.69e5	6.08e5	36.67	1.000	1.26	NO	55.522	0.174	5.63e6	6853	820.8	4.61e6	6242	738.0	bb	bb
15	1234678-HpCDF	2.74e5	2.68e5	5.42e5	38.05	1.000	1.02	NO	53.966	0.137	4.60e6	5123	898.3	4.50e6	4178	1077.1	bb	bb
16	1234789-HpCDF	2.41e5	2.40e5	4.81e5	39.84	1.000	1.00	NO	56.499	0.196	3.19e6	5123	621.7	3.29e6	4178	786.7	bb	bb
17	OCDF	3.80e5	4.23e5	8.03e5	43.41	1.007	0.90	NO	109.316	0.221	4.07e6	2939	1384.4	4.52e6	4039	1120.1	bb	bd
18	13C-2378-TCDD	7.18e5	9.32e5	1.65e6	30.37	1.024	0.77	NO	87.185	0.0819	7.55e6	3948	1913.5	9.97e6	3043	3277.0	bb	bb
19	13C-12378-PeCDD	8.06e5	4.93e5	1.30e6	33.60	1.133	1.64	NO	81.492	0.0992	1.80e7	3737	4822.0	1.15e7	3390	3407.1	bd	bb
20	13C-123478-HxCDD	6.23e5	5.07e5	1.13e6	36.06	0.992	1.23	NO	80.204	0.0886	1.29e7	5181	2489.7	1.04e7	4049	2569.9	bd	bd
21	13C-123678-HxCDD	6.73e5	5.72e5	1.24e6	36.14	0.994	1.18	NO	80.762	0.0810	1.29e7	5181	2496.9	1.07e7	4049	2640.2	db	dd
22	13C-1234678-HpCDD	4.57e5	4.38e5	8.94e5	39.21	1.078	1.04	NO	86.573	0.129	6.68e6	5212	1281.4	6.51e6	4667	1395.6	bb	bb
23	13C-OCDD	7.49e5	8.45e5	1.59e6	43.13	1.186	0.89	NO	160.158	0.138	8.03e6	4302	1866.0	8.98e6	5854	1534.7	bb	bb
24	13C-2378-TCDF	9.12e5	1.17e6	2.09e6	29.44	0.993	0.78	NO	94.193	0.109	1.01e7	5802	1740.6	1.30e7	5132	2540.2	bb	bb
25	13C-12378-PeCDF	1.18e6	7.57e5	1.93e6	32.83	1.107	1.55	NO	93.931	0.144	2.77e7	8716	3173.9	1.77e7	4667	3799.8	bd	bd
26	13C-23478-PeCDF	1.15e6	7.25e5	1.88e6	33.41	1.126	1.59	NO	91.732	0.145	2.72e7	8716	3118.5	1.74e7	4667	3728.3	bb	db
27	13C-123478-HxCDF	4.07e5	8.09e5	1.22e6	35.38	0.973	0.50	NO	80.727	0.118	8.59e6	4915	1748.4	1.72e7	8205	2094.5	bd	bd
28	13C-123678-HxCDF	4.79e5	9.44e5	1.42e6	35.48	0.976	0.51	NO	81.546	0.102	9.15e6	4915	1861.3	1.78e7	8205	2171.4	dd	db
29	13C-234678-HxCDF	4.21e5	7.98e5	1.22e6	35.94	0.988	0.53	NO	82.320	0.120	8.46e6	4915	1722.1	1.64e7	8205	1993.5	bd	bb
30	13C-123789-HxCDF	3.94e5	7.55e5	1.15e6	36.65	1.008	0.52	NO	84.850	0.131	6.77e6	4915	1376.3	1.29e7	8205	1568.8	bb	bb
31	13C-1234678-HpCDF	2.80e5	6.36e5	9.15e5	38.04	1.046	0.44	NO	78.574	0.0988	4.73e6	3665	1291.1	1.05e7	4846	2171.0	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, April 06, 2018 14:45:40 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.35e5	5.32e5	7.67e5	39.83	1.095	0.44	NO	82.869	0.124	3.28e6	3665	893.8	7.38e6	4846	1523.7	bb	bb
33	13C-1234-TCDD	7.28e5	9.29e5	1.66e6	29.67	0.000	0.78	NO	100.000	0.0935	8.21e6	3948	2080.0	1.03e7	3043	3400.9	bb	bb
34	13C-123789-HxCDD	7.20e5	6.52e5	1.37e6	36.36	0.000	1.10	NO	100.000	0.0910	1.33e7	5181	2567.5	1.12e7	4049	2771.6	bb	dd
35	37Cl-2378-TCDD	1.71e5		1.71e5	30.40	1.025			8.901	0.0140	1.81e6	1213	1492.2				bb	

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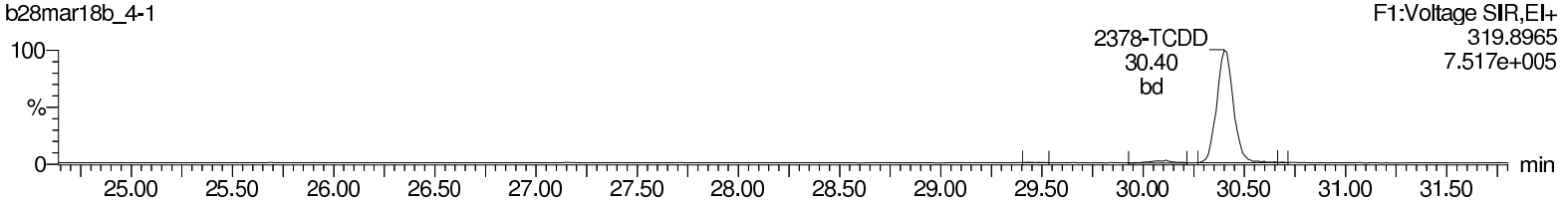
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

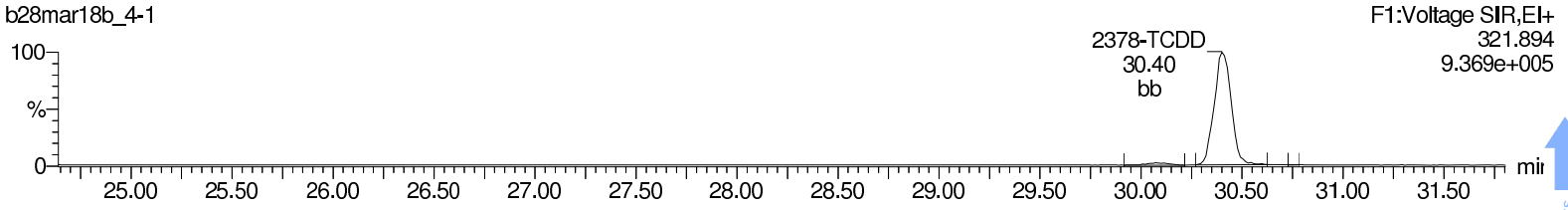
Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-tetradioxins



Total-tetradioxins



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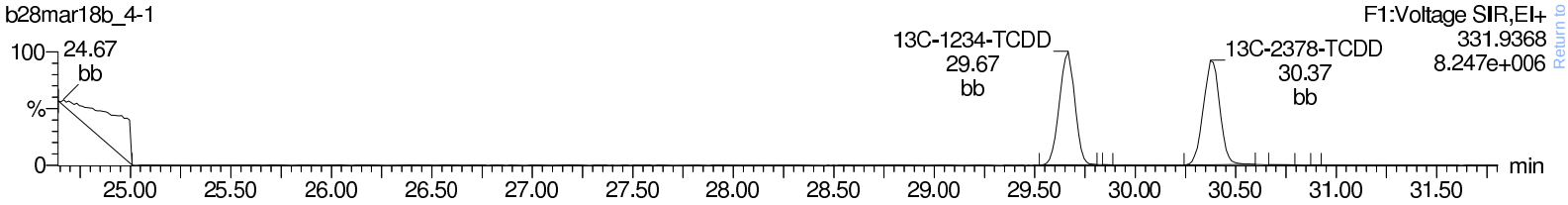

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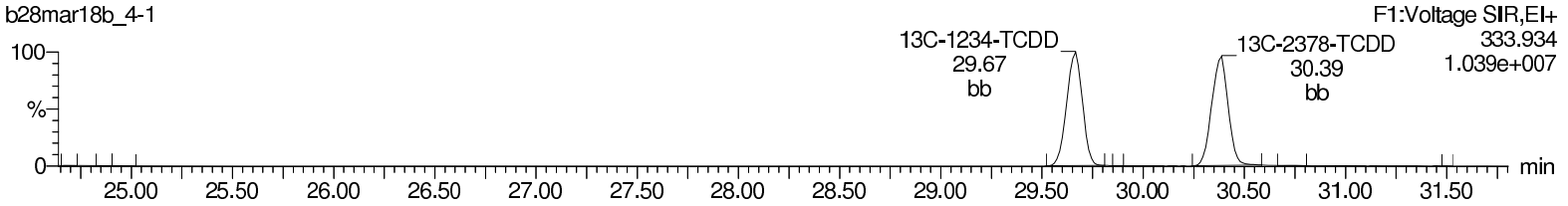

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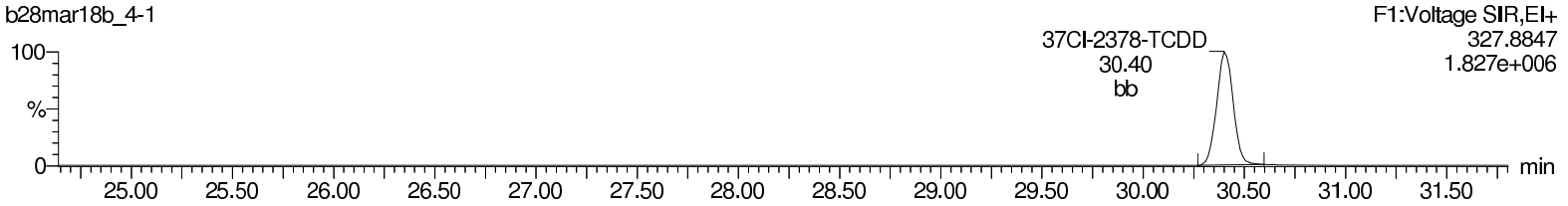

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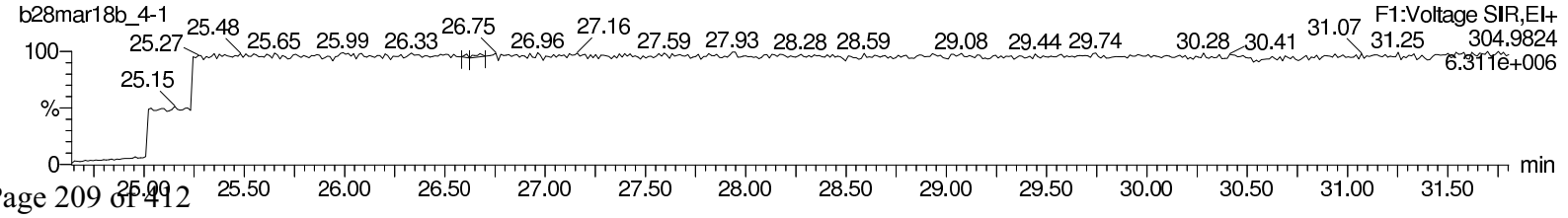
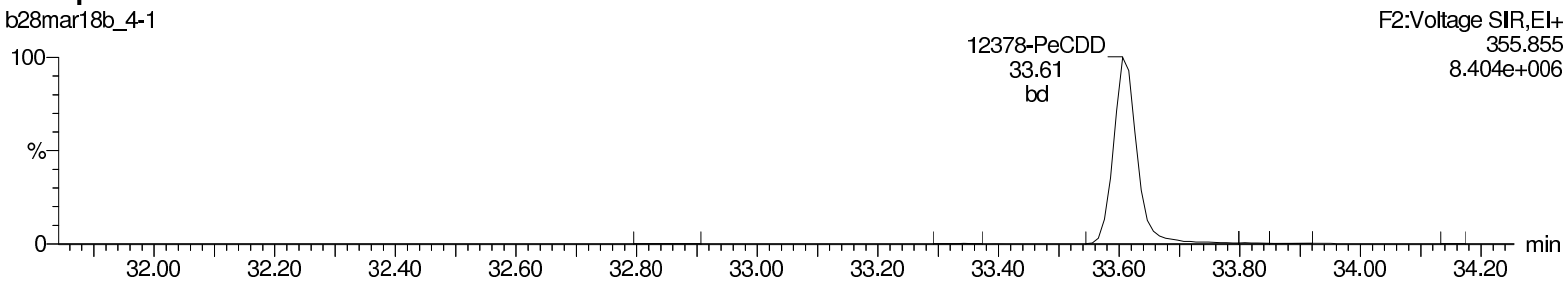


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-pentadioxins



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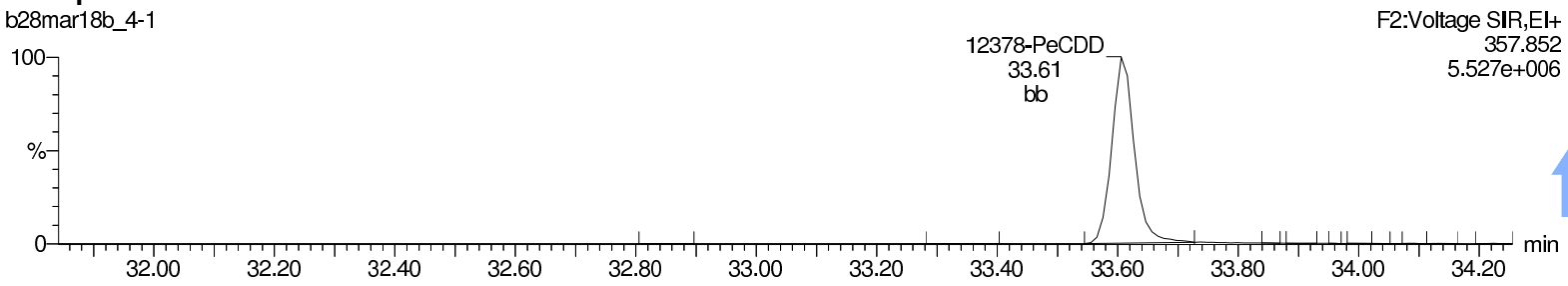

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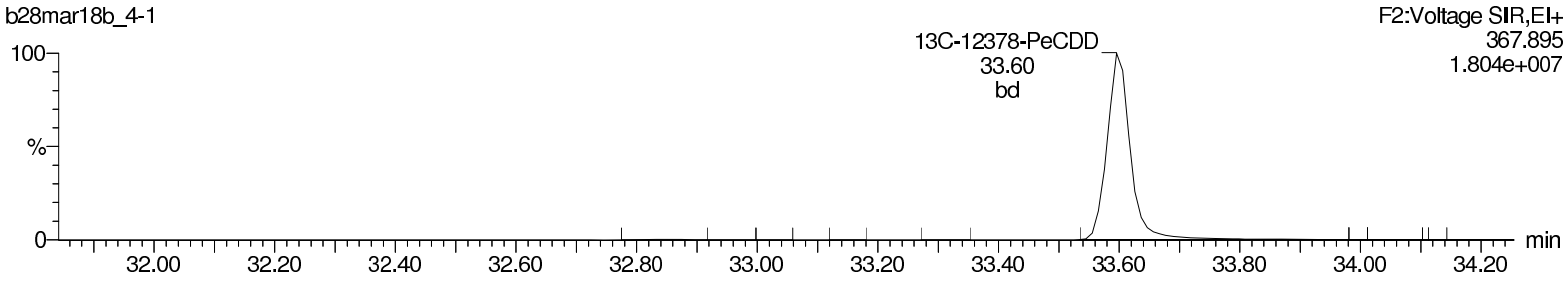

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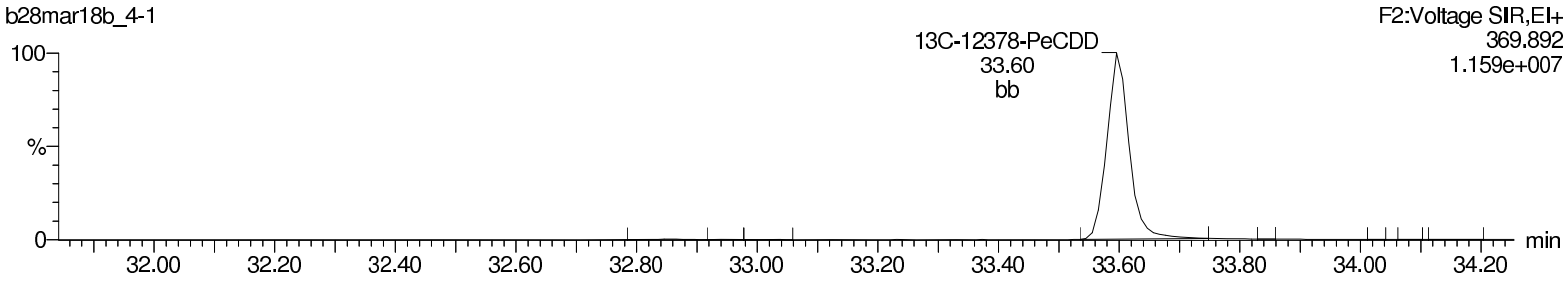

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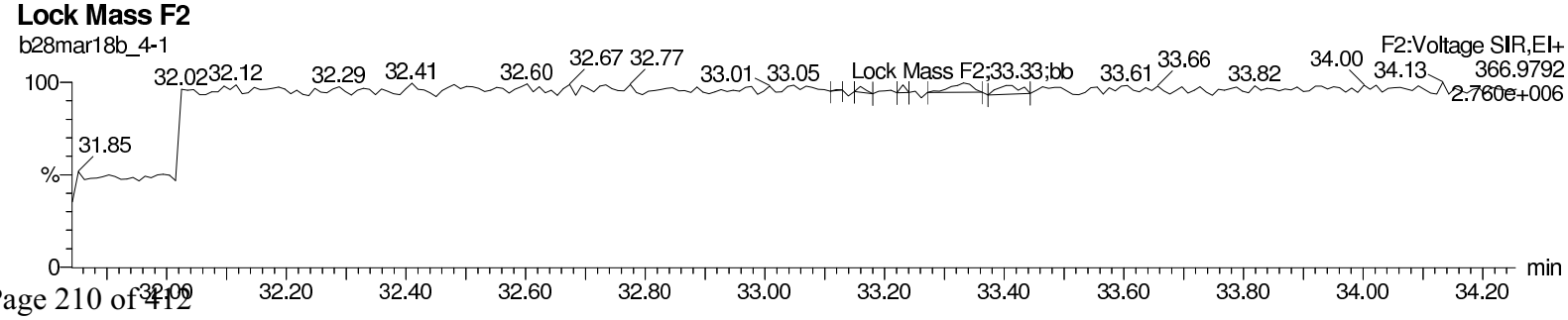
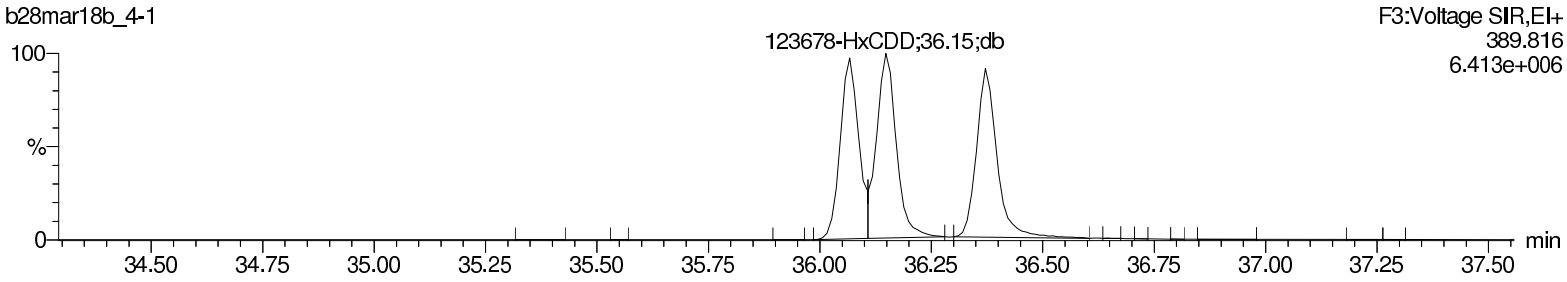


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-hexadioxins



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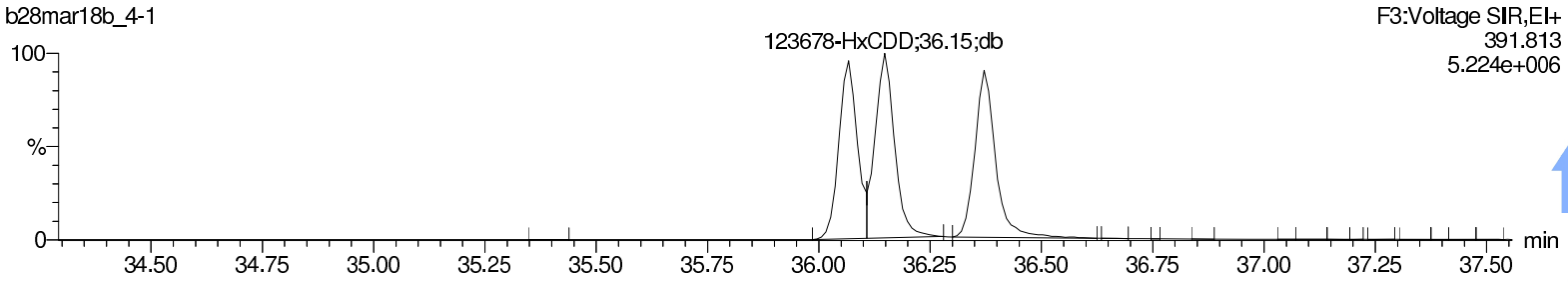

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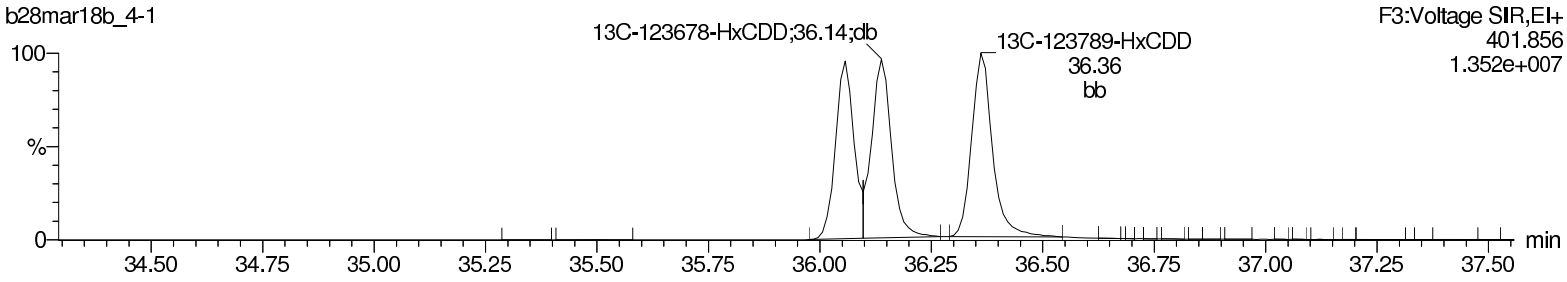

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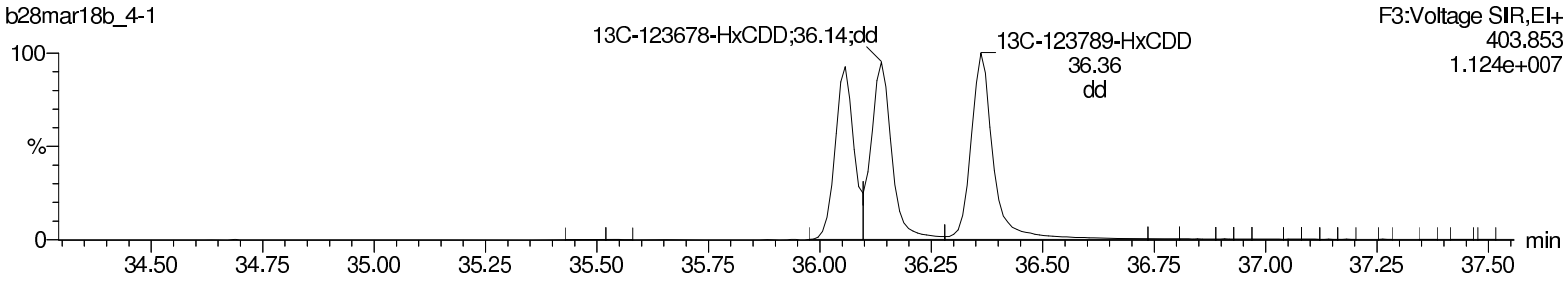

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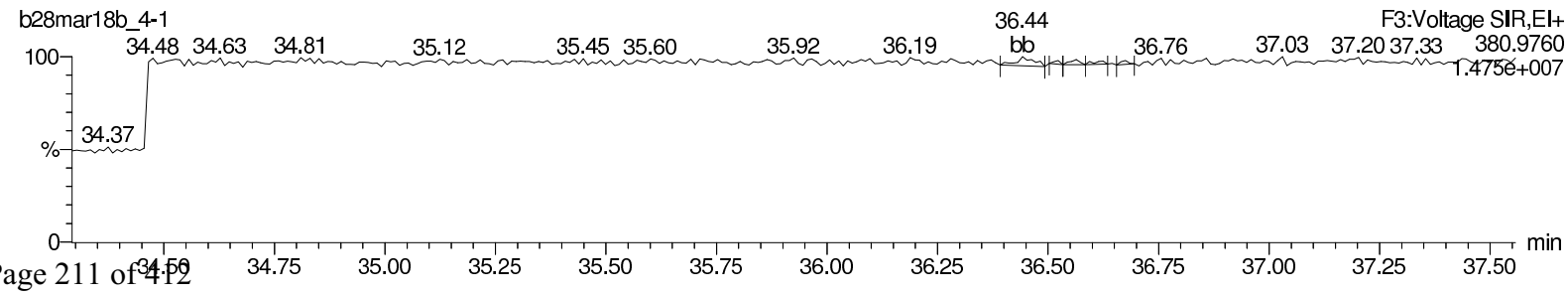
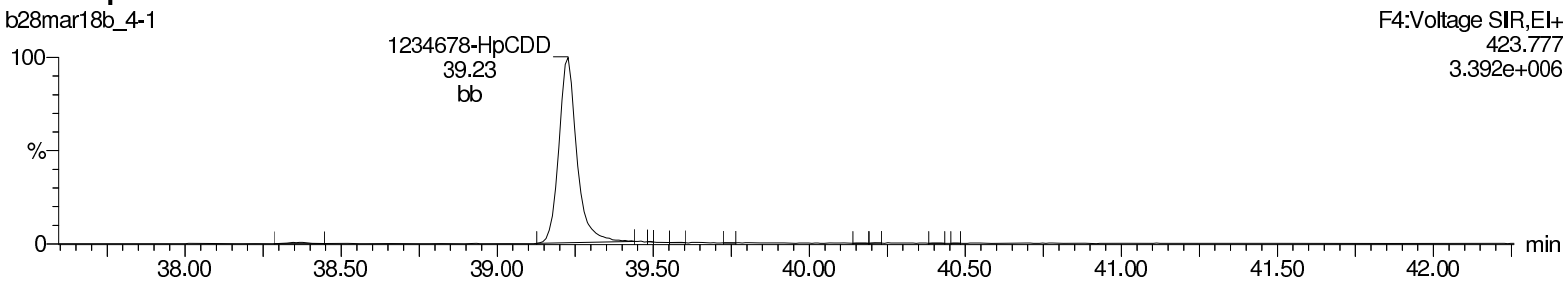


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-heptadioxins



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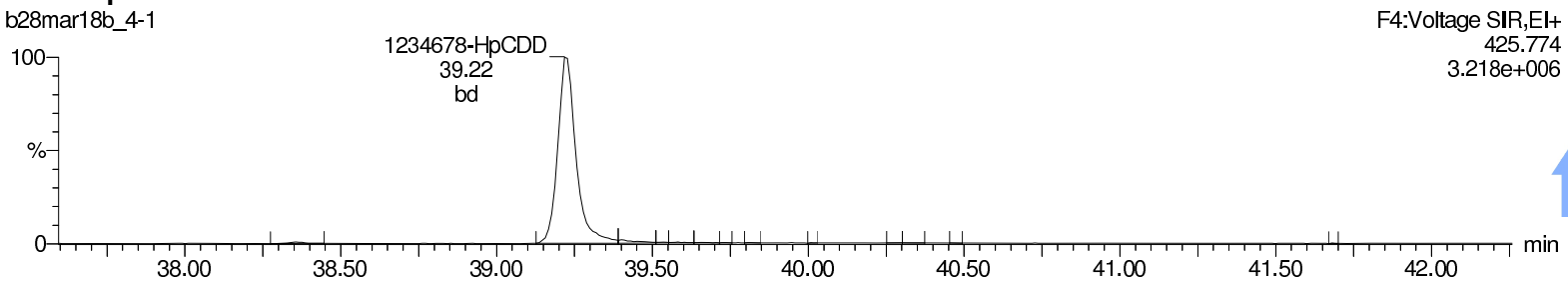

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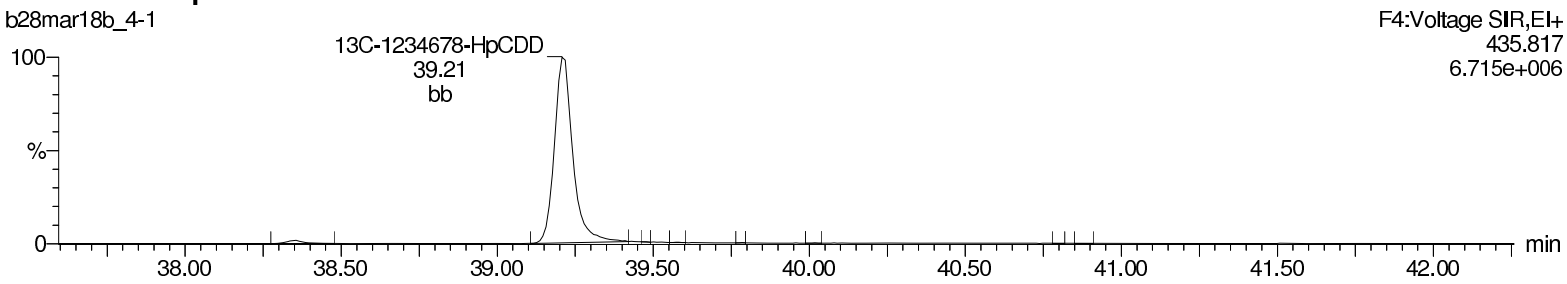

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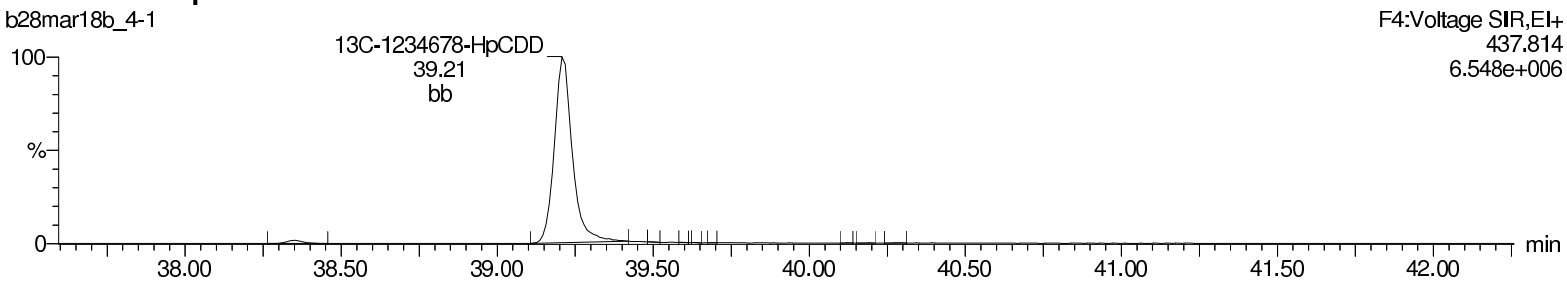

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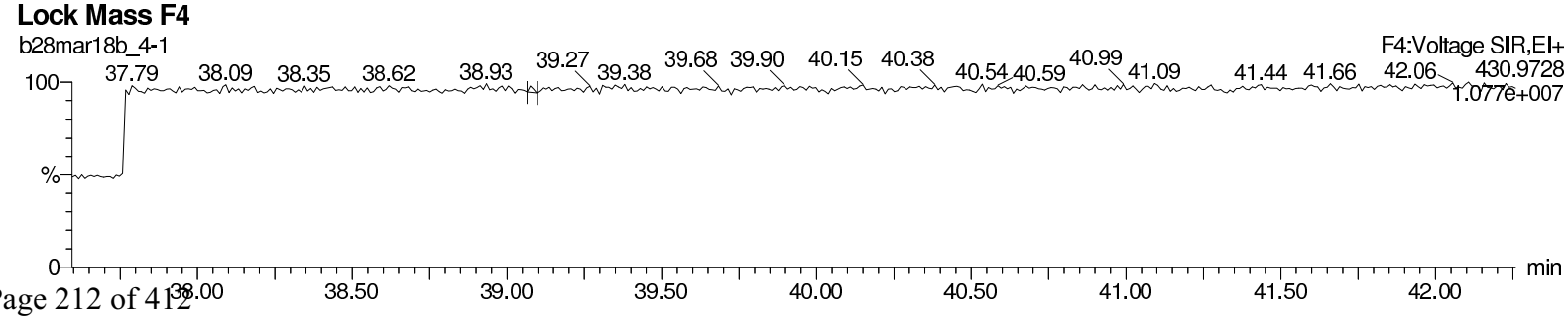
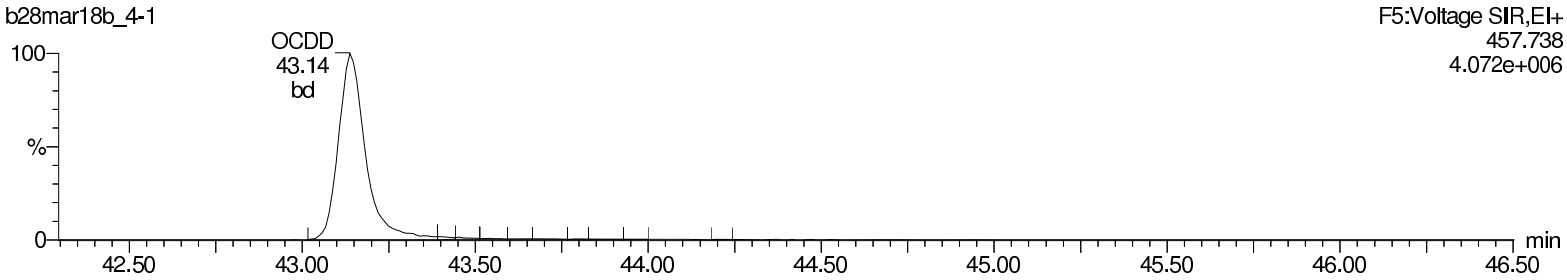


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

OCDD



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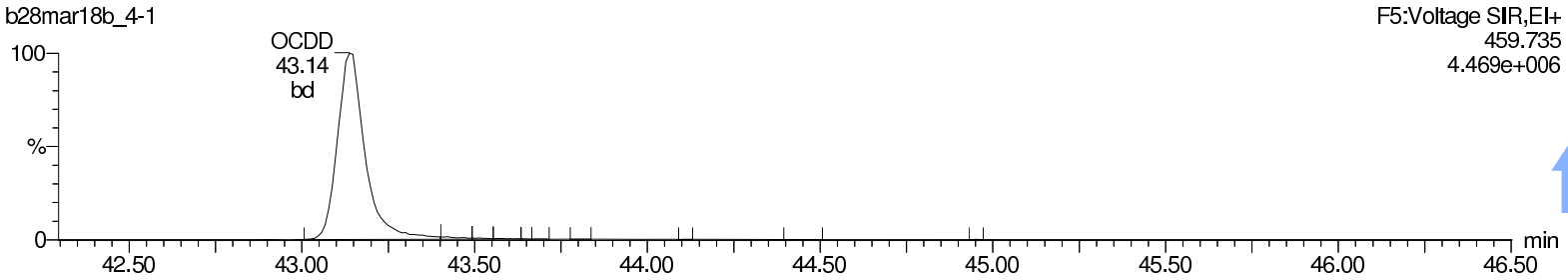

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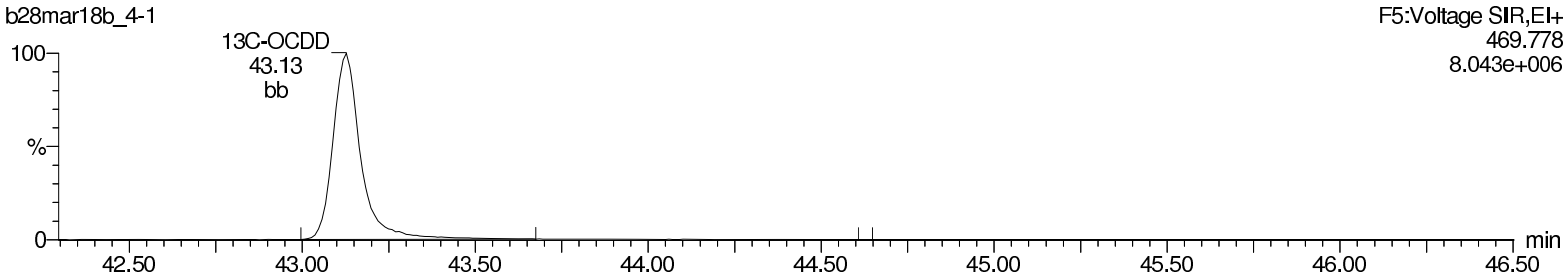

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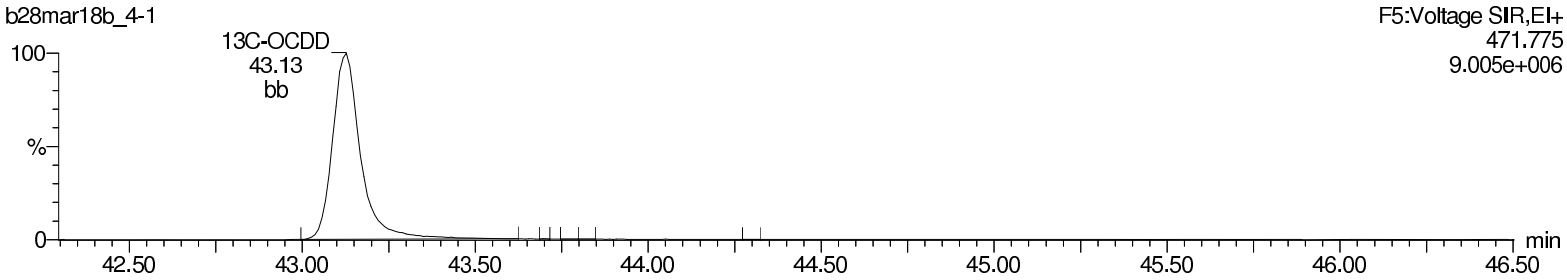

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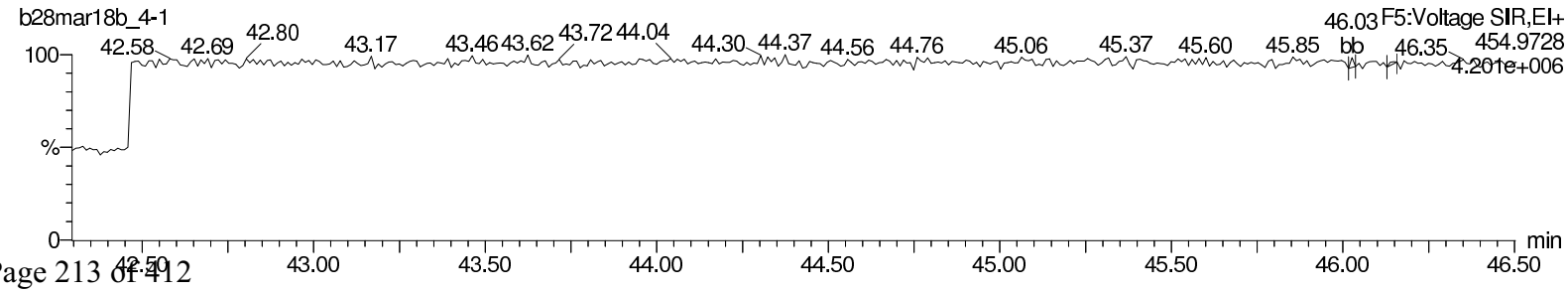
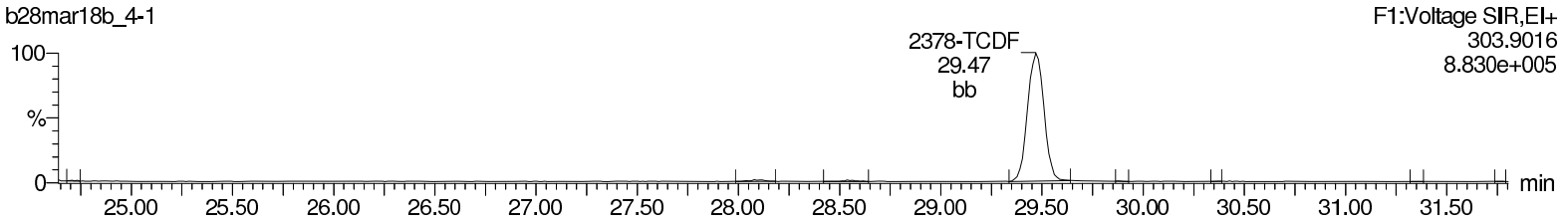


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

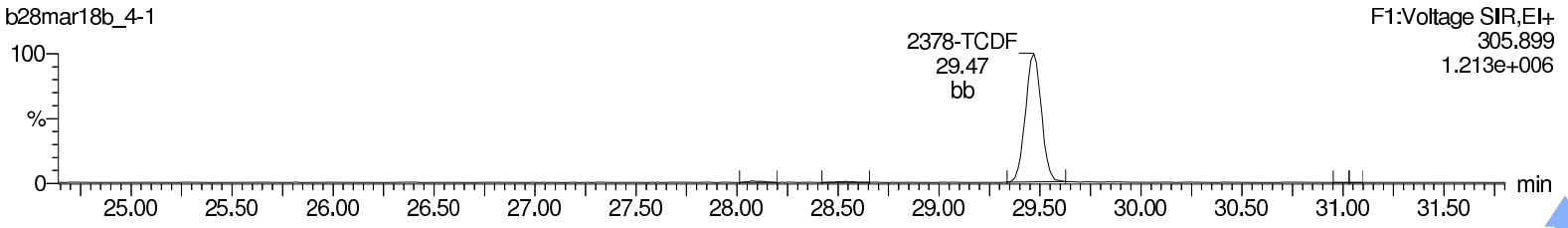
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

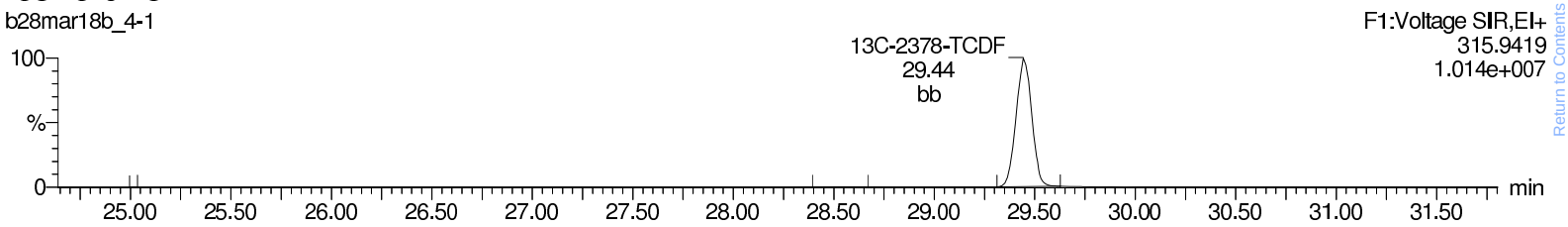
Total-tetrafurans



Total-tetrafurans



13C-2378-TCDF



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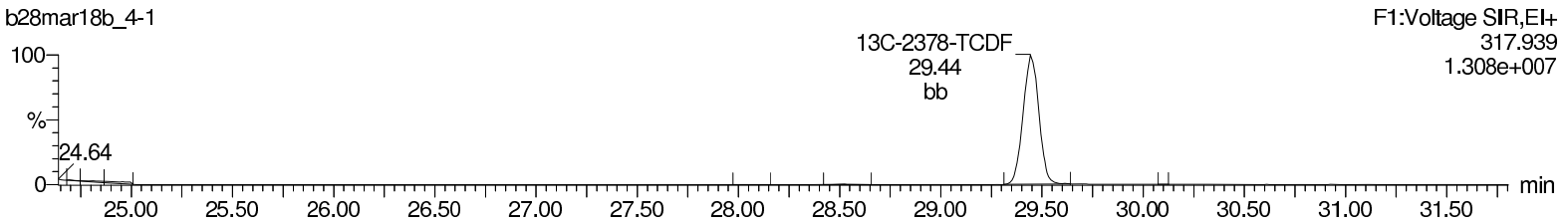

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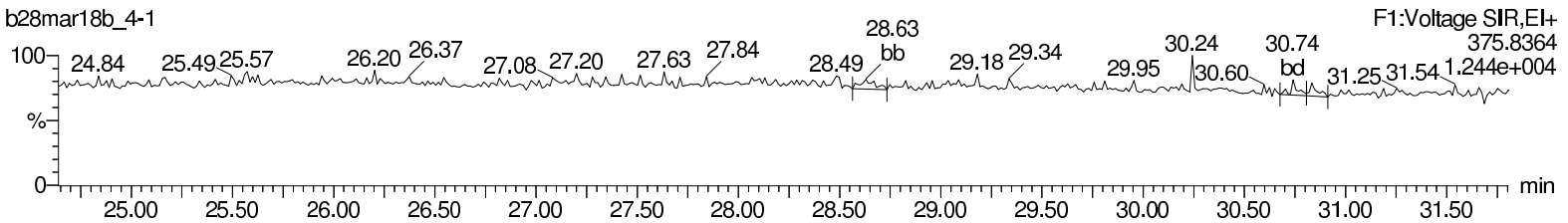
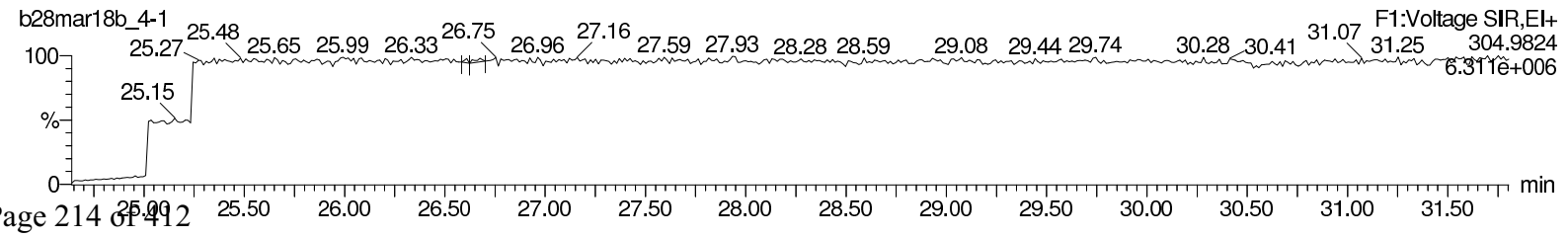


Lock Mass F1

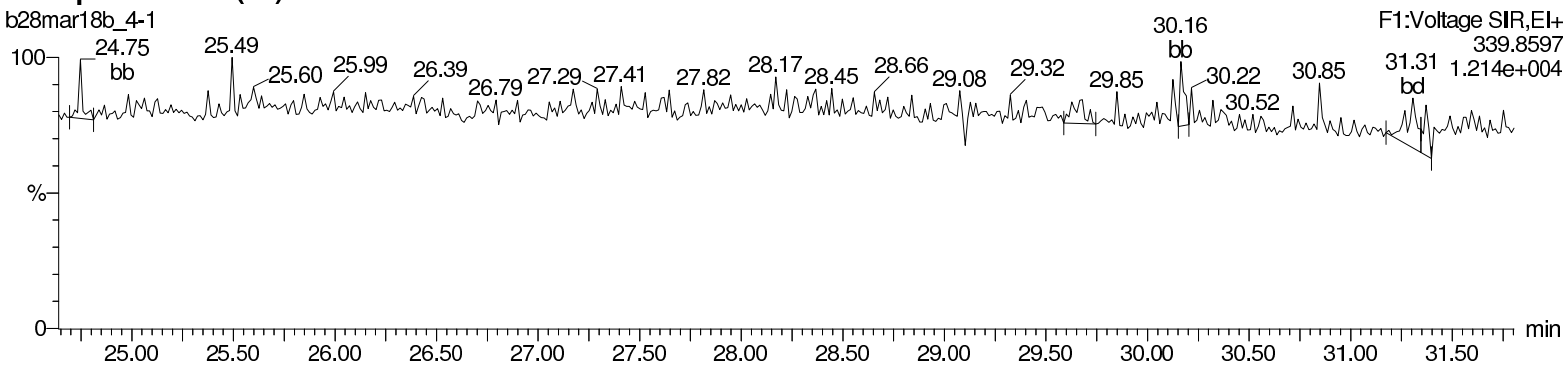


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

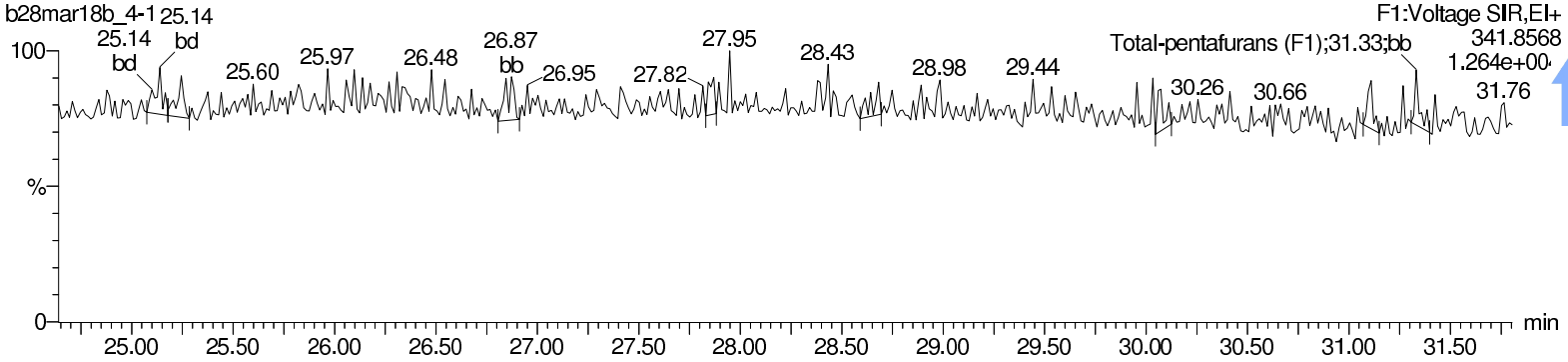
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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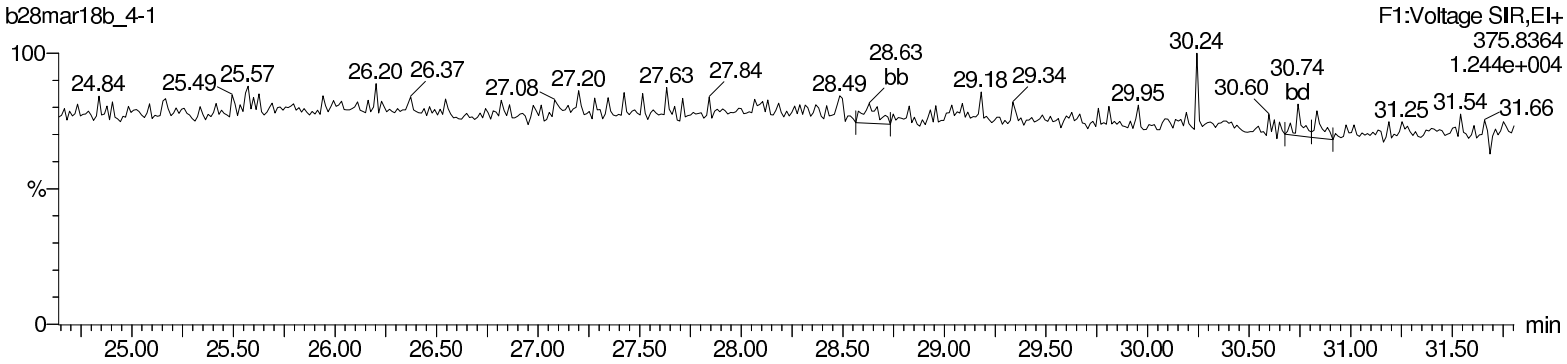
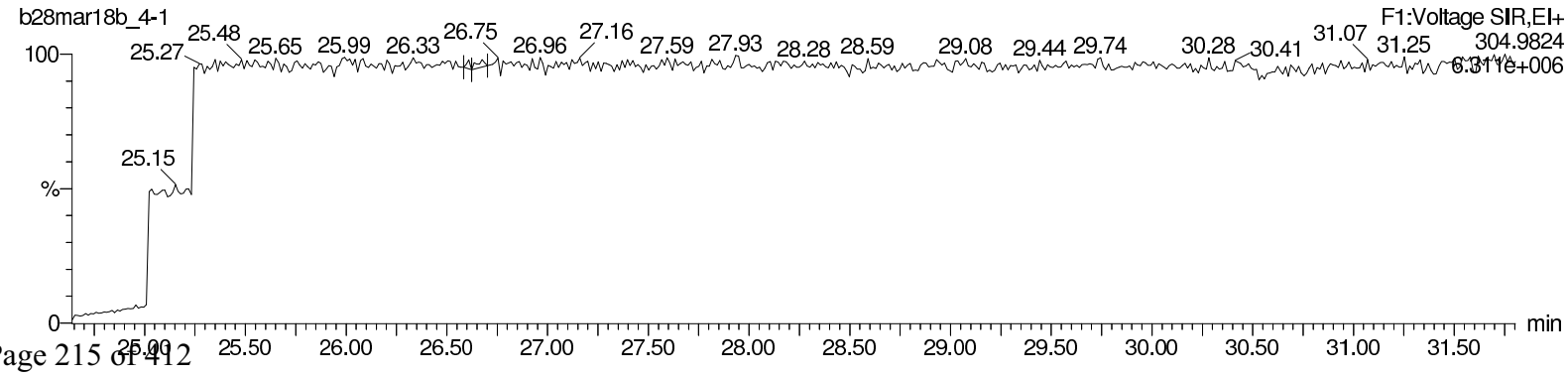


Lock Mass F1

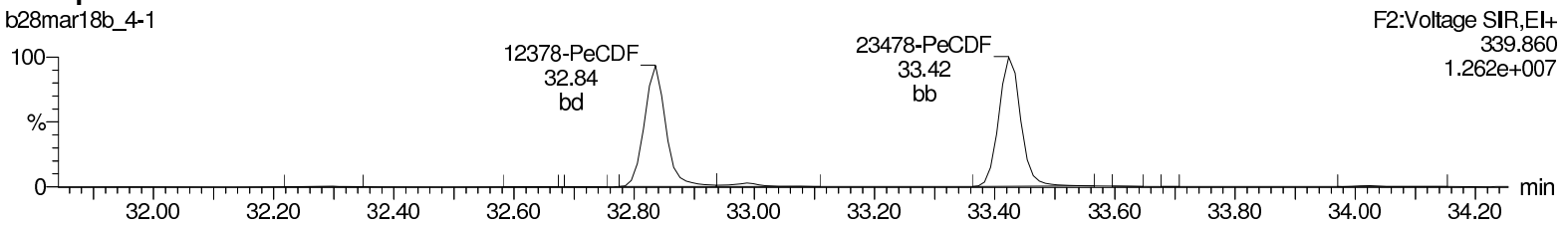


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

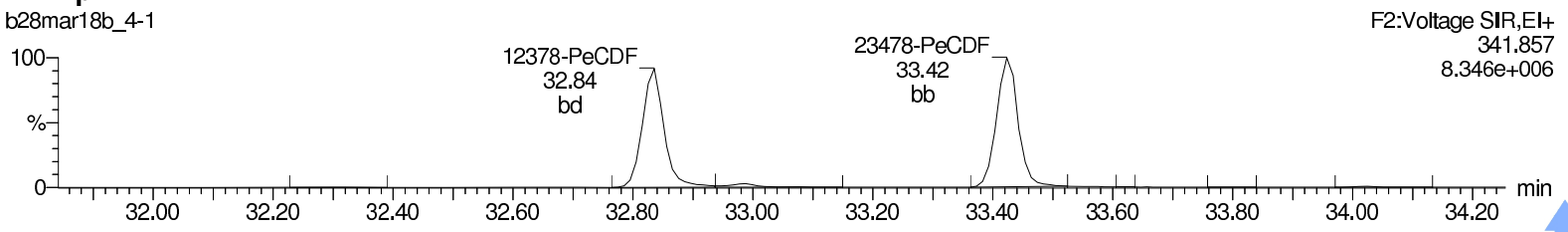
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

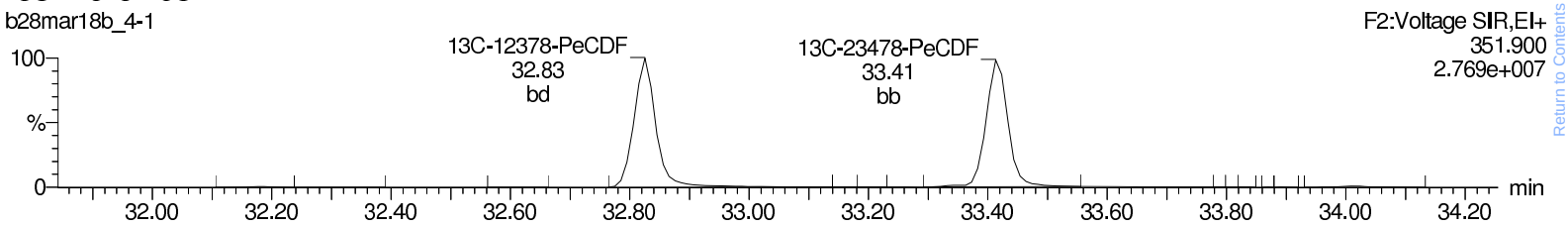
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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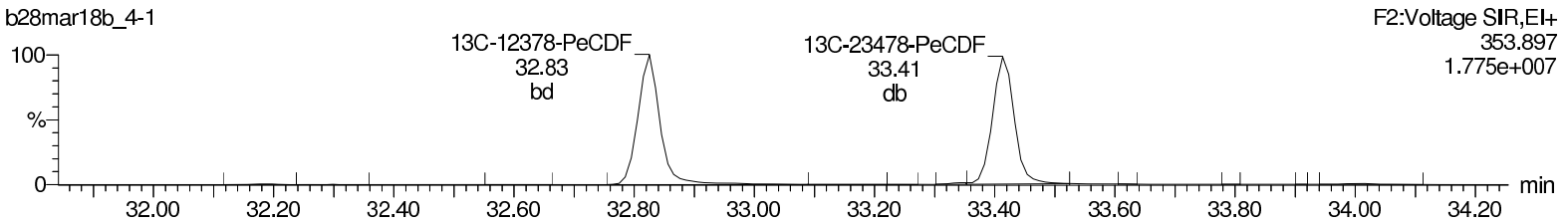
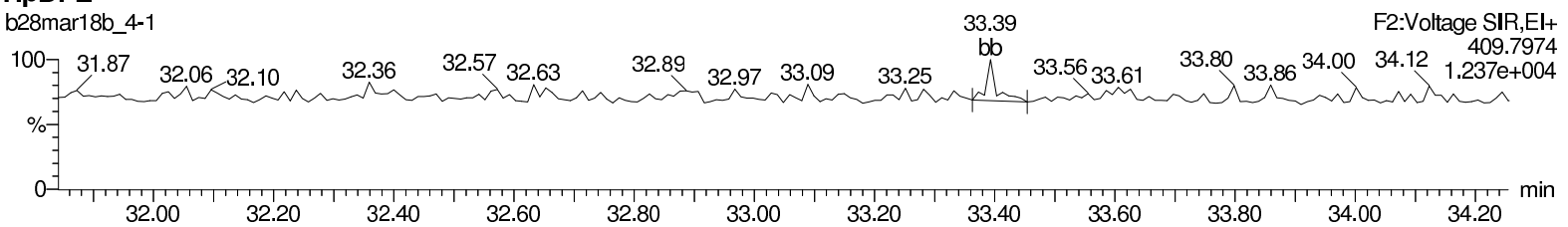
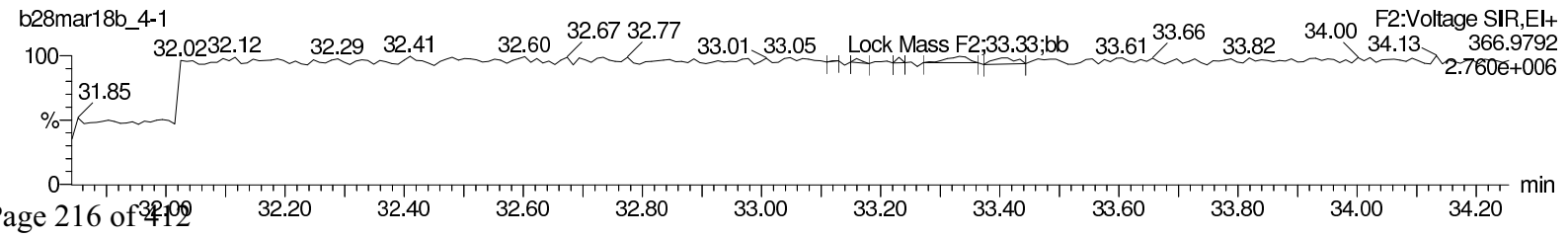


HpDPE



Lock Mass F2

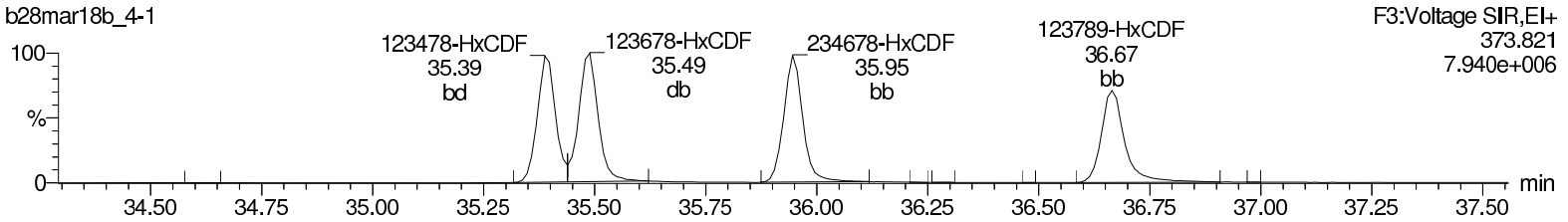


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

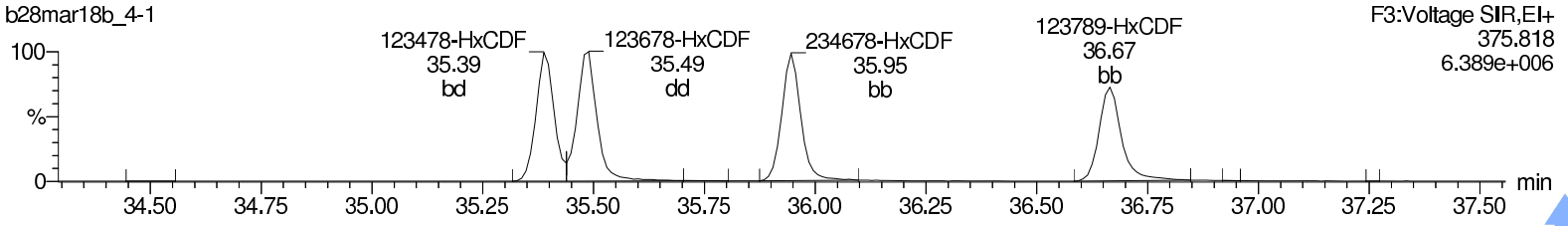
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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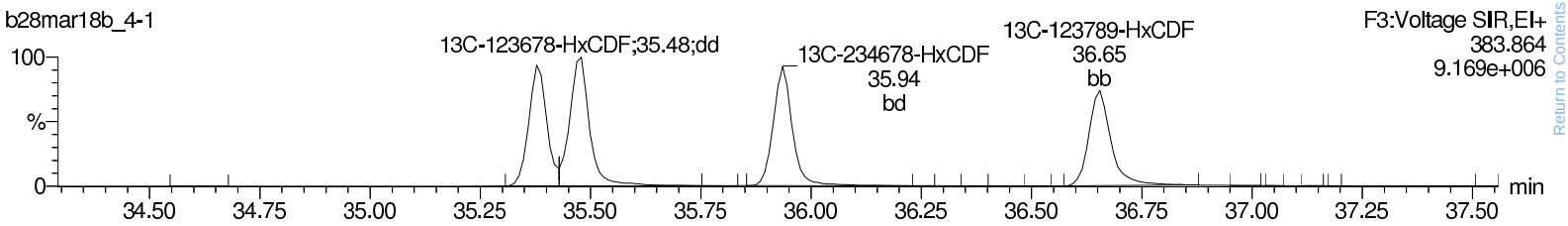

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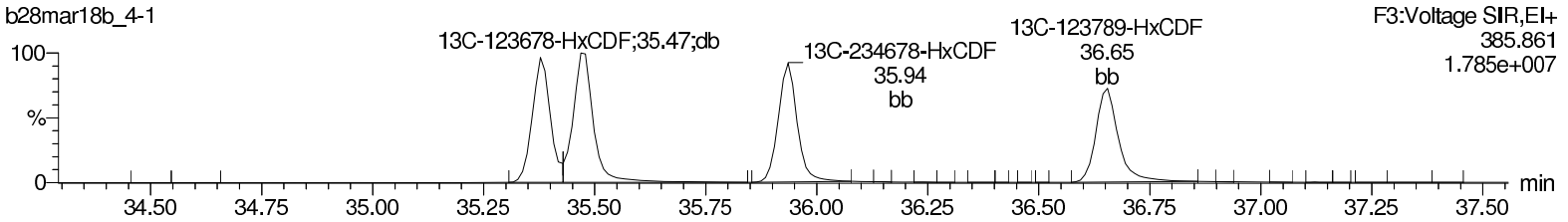
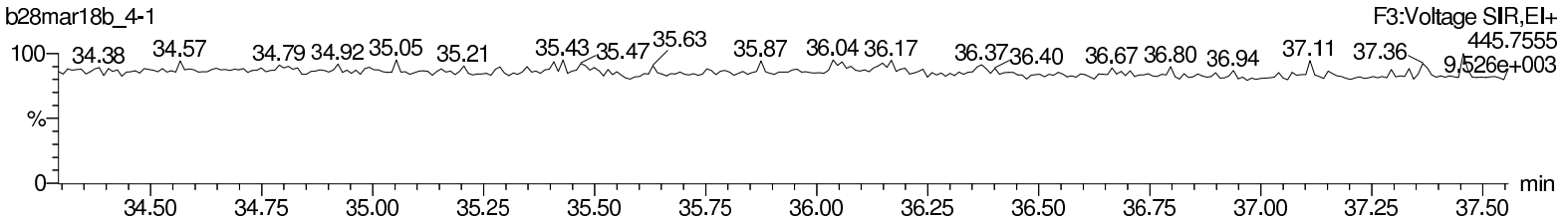
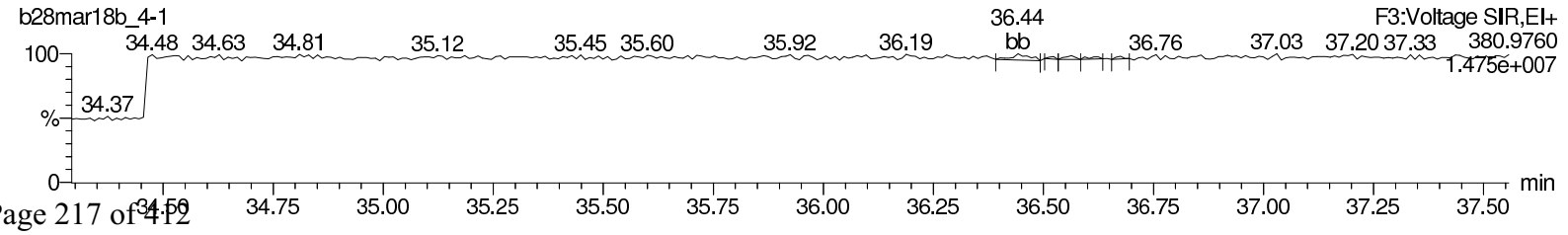


OcDPE



Lock Mass F3

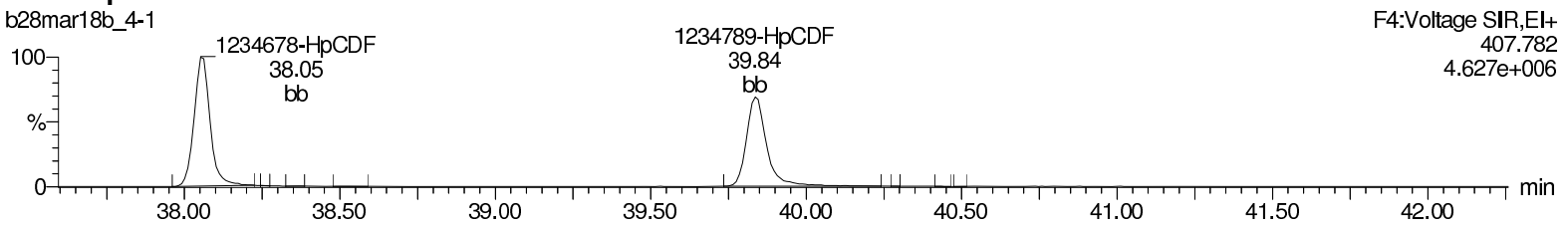


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

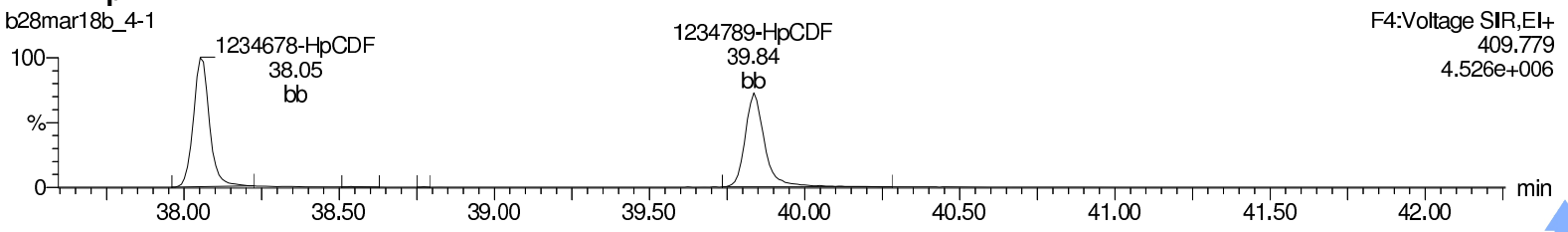
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-heptafurans



Total-heptafurans



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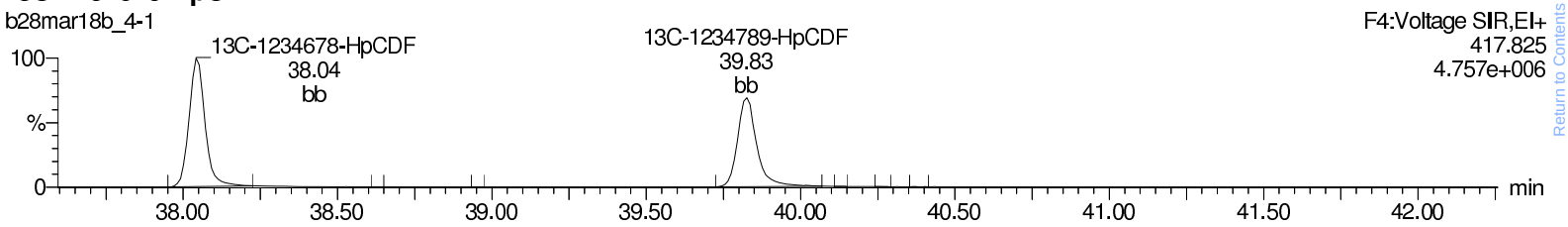

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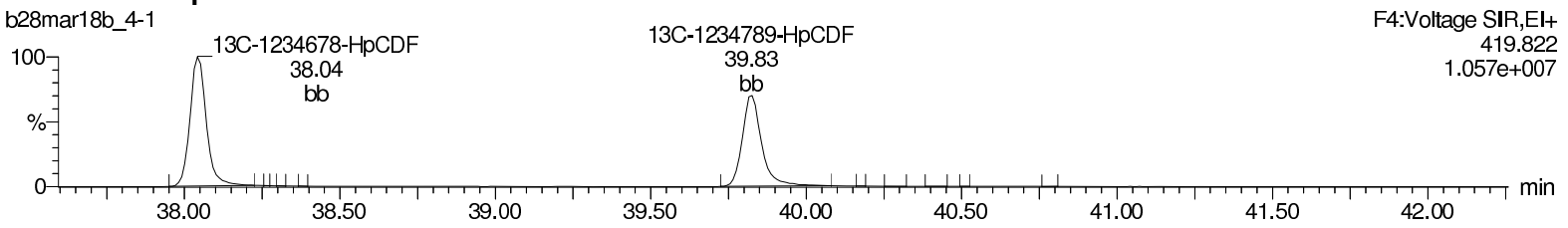

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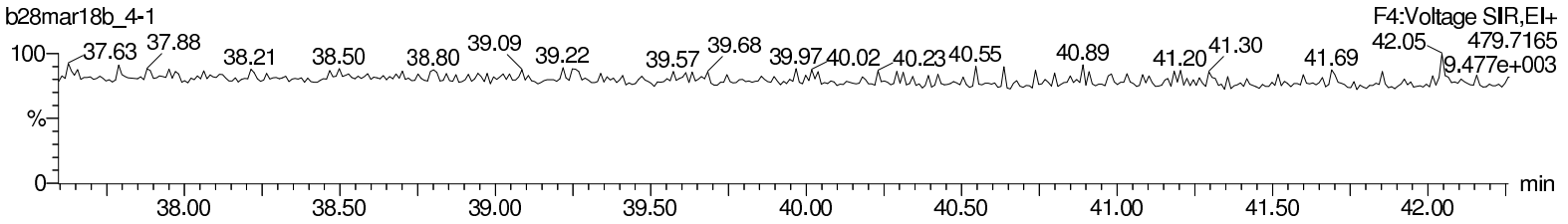
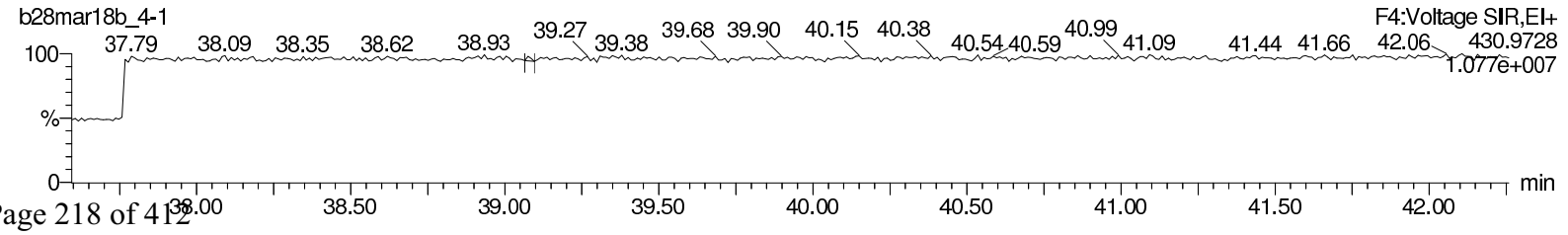


Lock Mass F4

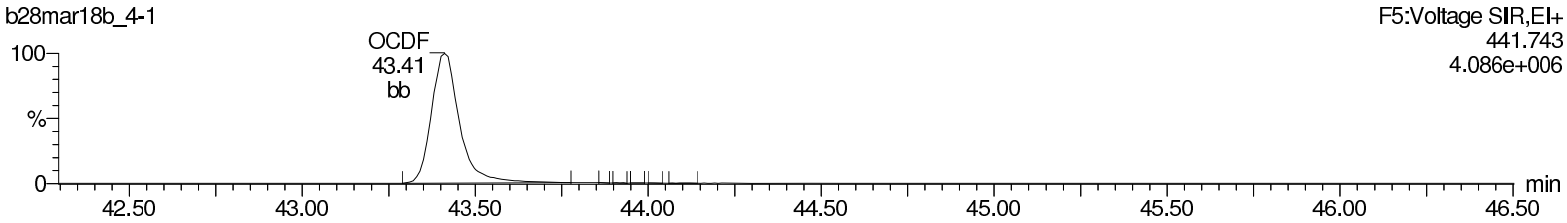


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

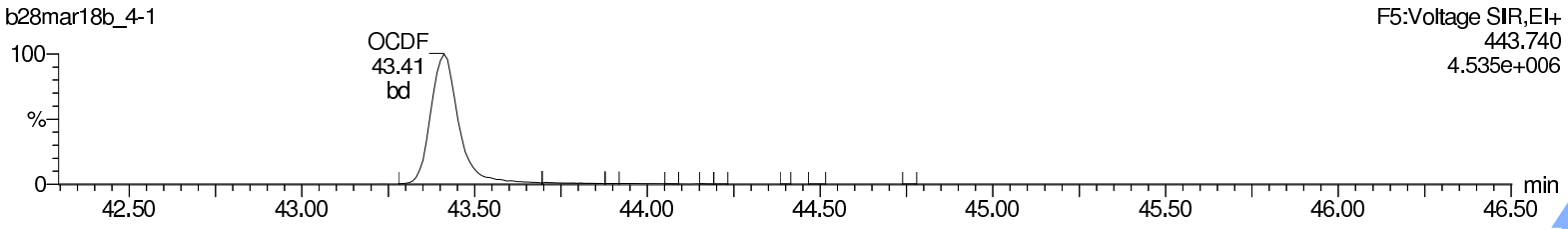
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

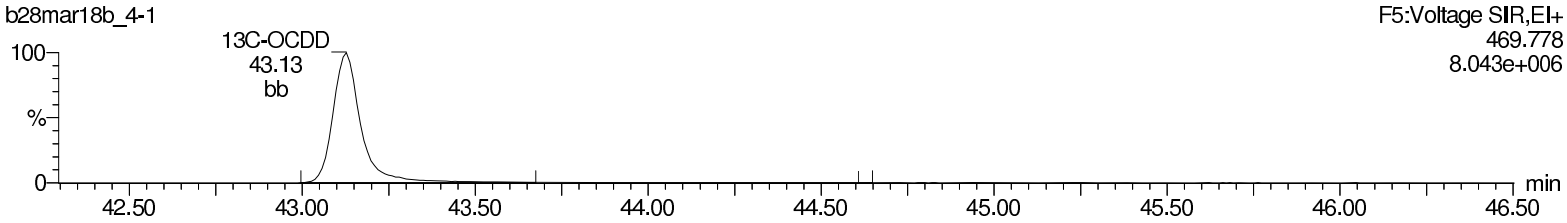
OCDF



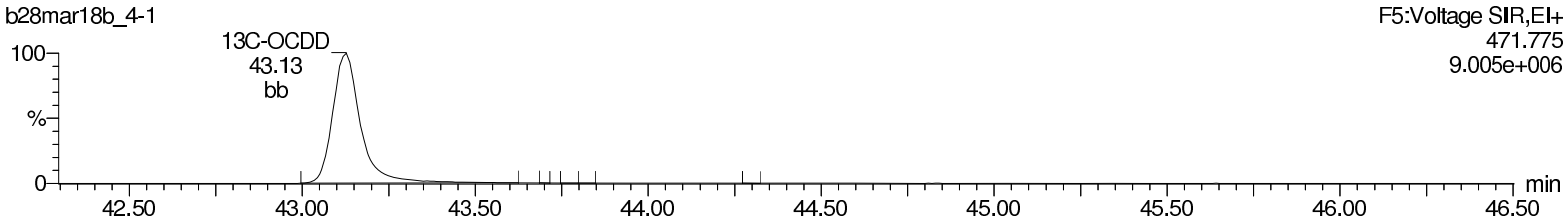
OCDF



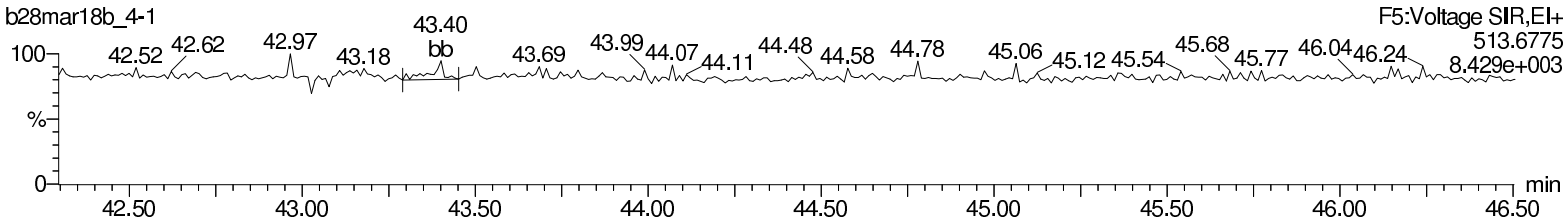
13C-OCDD



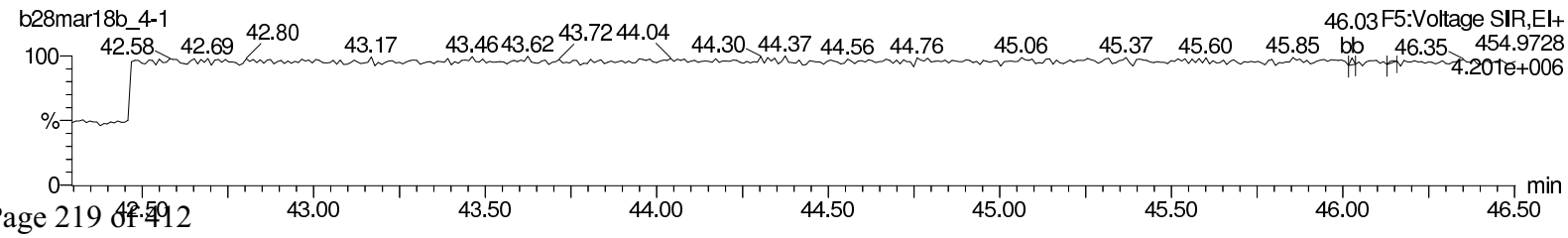
13C-OCDD



DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**12020983**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 37284**				
Client ID:	**LCSD for batch 37284**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/29/2018 22:03**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b28mar18b_4-2**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		0.210	ng/L	0.00101	0.010
40321-76-4	1,2,3,7,8-PeCDD		1.19	ng/L	0.00135	0.050
39227-28-6	1,2,3,4,7,8-HxCDD		1.14	ng/L	0.00312	0.050
57653-85-7	1,2,3,6,7,8-HxCDD		1.12	ng/L	0.00306	0.050
19408-74-3	1,2,3,7,8,9-HxCDD		1.15	ng/L	0.00318	0.050
35822-46-9	1,2,3,4,6,7,8-HpCDD		0.985	ng/L	0.00292	0.050
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2.16	ng/L	0.0052	0.100
51207-31-9	2,3,7,8-TCDF		0.195	ng/L	0.00095	0.010
57117-41-6	1,2,3,7,8-PeCDF		1.04	ng/L	0.00156	0.050
57117-31-4	2,3,4,7,8-PeCDF		1.01	ng/L	0.00139	0.050
70648-26-9	1,2,3,4,7,8-HxCDF		1.10	ng/L	0.00226	0.050
57117-44-9	1,2,3,6,7,8-HxCDF		1.10	ng/L	0.00216	0.050
60851-34-5	2,3,4,6,7,8-HxCDF		1.10	ng/L	0.00228	0.050
72918-21-9	1,2,3,7,8,9-HxCDF		1.11	ng/L	0.00316	0.050
67562-39-4	1,2,3,4,6,7,8-HpCDF		1.08	ng/L	0.0029	0.050
55673-89-7	1,2,3,4,7,8,9-HpCDF		1.08	ng/L	0.00414	0.050
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2.20	ng/L	0.00482	0.100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.65	2.00	ng/L	82.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		1.50	2.00	ng/L	75.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		1.53	2.00	ng/L	76.3	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		1.61	2.00	ng/L	80.5	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		1.71	2.00	ng/L	85.5	(22%-166%)
13C-OCDD		3.10	4.00	ng/L	77.4	(13%-199%)
13C-2,3,7,8-TCDF		1.74	2.00	ng/L	87.1	(22%-152%)
13C-1,2,3,7,8-PeCDF		1.69	2.00	ng/L	84.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		1.70	2.00	ng/L	84.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		1.55	2.00	ng/L	77.3	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		1.61	2.00	ng/L	80.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		1.60	2.00	ng/L	80.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		1.65	2.00	ng/L	82.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		1.54	2.00	ng/L	77.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		1.63	2.00	ng/L	81.4	(20%-186%)
37Cl-2,3,7,8-TCDD		0.170	0.200	ng/L	84.9	(31%-191%)

Comments:

U **Analyte was analyzed for, but not detected above the specified detection limit.**

Return to Contents

Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, April 06, 2018 14:46:48 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	5.92e4	7.72e4	1.36e5	30.41	1.001	0.77	NO	10.480	0.0507	5.84e5	1671	349.4	7.68e5	1061	724.3	bb	bd
2	12378-PeCDD	3.19e5	2.06e5	5.24e5	33.62	1.000	1.55	NO	59.495	0.0674	7.23e6	3412	2118.5	4.63e6	2008	2306.4	bb	bb
3	123478-HxCDD	2.57e5	2.07e5	4.63e5	36.07	1.000	1.24	NO	56.961	0.156	5.05e6	4491	1124.5	4.08e6	5773	706.5	bd	bd
4	123678-HxCDD	2.93e5	2.35e5	5.28e5	36.16	1.001	1.25	NO	56.108	0.153	5.16e6	4491	1150.0	4.15e6	5773	718.3	db	db
5	123789-HxCDD	2.73e5	2.16e5	4.89e5	36.38	1.007	1.26	NO	57.404	0.159	4.75e6	4491	1058.6	3.71e6	5773	642.0	bd	bd
6	1234678-HpCDD	1.99e5	1.95e5	3.94e5	39.23	1.000	1.02	NO	49.239	0.146	2.83e6	3227	877.8	2.77e6	3170	872.3	bb	bd
7	OCDD	3.18e5	3.67e5	6.85e5	43.15	1.000	0.87	NO	108.093	0.260	3.29e6	3475	948.0	3.85e6	3328	1157.2	bd	bd
8	2378-TCDF	6.92e4	9.23e4	1.61e5	29.47	1.000	0.75	NO	9.743	0.0475	7.32e5	1478	495.1	9.61e5	1866	515.0	bb	bb
9	12378-PeCDF	4.22e5	2.71e5	6.93e5	32.84	1.000	1.55	NO	51.929	0.0781	9.68e6	4879	1983.2	6.40e6	4304	1486.6	bd	bd
10	23478-PeCDF	4.59e5	3.02e5	7.61e5	33.43	1.000	1.52	NO	50.728	0.0693	1.10e7	4879	2249.3	7.06e6	4304	1641.4	bb	bb
11	123478-HxCDF	3.17e5	2.60e5	5.77e5	35.40	1.000	1.22	NO	54.886	0.113	6.59e6	4940	1334.4	5.31e6	4777	1112.0	bd	bd
12	123678-HxCDF	3.65e5	2.88e5	6.53e5	35.49	1.000	1.27	NO	55.163	0.108	6.91e6	4940	1398.6	5.54e6	4777	1159.1	dd	db
13	234678-HxCDF	3.35e5	2.75e5	6.10e5	35.96	1.001	1.22	NO	55.244	0.114	6.43e6	4940	1302.4	5.12e6	4777	1071.2	bb	bd
14	123789-HxCDF	2.97e5	2.38e5	5.35e5	36.67	1.000	1.25	NO	55.539	0.158	4.69e6	4940	950.1	3.80e6	4777	794.7	bd	bd
15	1234678-HpCDF	2.43e5	2.40e5	4.83e5	38.06	1.000	1.01	NO	54.208	0.145	3.97e6	4007	991.1	3.77e6	4114	916.9	bb	bd
16	1234789-HpCDF	2.05e5	2.02e5	4.07e5	39.85	1.000	1.02	NO	53.891	0.207	2.79e6	4007	697.3	2.75e6	4114	668.6	bd	bb
17	OCDF	3.34e5	3.71e5	7.05e5	43.42	1.007	0.90	NO	109.923	0.241	3.54e6	3168	1118.3	3.95e6	3204	1233.3	bd	bd
18	13C-2378-TCDD	6.33e5	8.27e5	1.46e6	30.39	1.024	0.76	NO	82.686	0.0798	6.55e6	3647	1795.6	8.44e6	2323	3631.7	bb	bb
19	13C-12378-PeCDD	6.86e5	4.31e5	1.12e6	33.61	1.133	1.59	NO	75.076	0.0709	1.57e7	2978	5257.1	9.67e6	1484	6517.3	bb	bb
20	13C-123478-HxCDD	5.35e5	4.36e5	9.71e5	36.06	0.991	1.23	NO	76.263	0.101	1.08e7	3739	2886.1	8.62e6	4957	1738.5	bd	bd
21	13C-123678-HxCDD	6.08e5	5.12e5	1.12e6	36.14	0.994	1.19	NO	80.479	0.0922	1.09e7	3739	2905.6	9.01e6	4957	1817.6	db	dd
22	13C-1234678-HpCDD	4.14e5	3.84e5	7.98e5	39.22	1.078	1.08	NO	85.478	0.151	5.67e6	4870	1164.4	5.44e6	4676	1163.1	bd	bb
23	13C-OCDD	6.55e5	7.37e5	1.39e6	43.13	1.186	0.89	NO	154.804	0.142	6.75e6	4471	1510.5	7.62e6	4183	1821.2	bd	bd
24	13C-2378-TCDF	7.83e5	1.02e6	1.80e6	29.46	0.993	0.77	NO	87.080	0.102	8.31e6	5377	1545.4	1.09e7	3528	3080.9	bb	bb
25	13C-12378-PeCDF	9.94e5	6.30e5	1.62e6	32.83	1.107	1.58	NO	84.546	0.168	2.19e7	7025	3114.5	1.41e7	6639	2126.1	bb	bb
26	13C-23478-PeCDF	9.88e5	6.31e5	1.62e6	33.42	1.127	1.57	NO	84.855	0.169	2.18e7	7025	3109.2	1.40e7	6639	2114.1	bb	bb
27	13C-123478-HxCDF	3.53e5	7.00e5	1.05e6	35.39	0.973	0.50	NO	77.297	0.132	7.24e6	5001	1447.2	1.42e7	7143	1992.8	bd	bd
28	13C-123678-HxCDF	4.24e5	8.43e5	1.27e6	35.48	0.975	0.50	NO	80.366	0.114	8.02e6	5001	1604.0	1.58e7	7143	2218.0	db	db
29	13C-234678-HxCDF	3.63e5	7.07e5	1.07e6	35.94	0.988	0.51	NO	79.957	0.134	6.99e6	5001	1397.7	1.36e7	7143	1900.1	bb	bb
30	13C-123789-HxCDF	3.46e5	6.64e5	1.01e6	36.65	1.008	0.52	NO	82.551	0.147	5.54e6	5001	1107.9	1.10e7	7143	1536.8	bd	bb
31	13C-1234678-HpCDF	2.48e5	5.64e5	8.13e5	38.05	1.046	0.44	NO	77.203	0.108	3.90e6	3359	1161.1	8.80e6	4358	2020.4	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, April 06, 2018 14:46:48 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.07e5	4.74e5	6.81e5	39.83	1.095	0.44	NO	81.373	0.136	2.70e6	3359	802.5	6.27e6	4358	1438.2	bd	bd
33	13C-1234-TCDD	6.79e5	8.68e5	1.55e6	29.67	0.000	0.78	NO	100.000	0.0912	7.19e6	3647	1970.7	9.16e6	2323	3942.9	bb	bb
34	13C-123789-HxCDD	6.56e5	5.83e5	1.24e6	36.37	0.000	1.13	NO	100.000	0.104	1.11e7	3739	2972.3	9.15e6	4957	1845.1	bd	dd
35	37Cl-2378-TCDD	1.52e5		1.52e5	30.41	1.025			8.493	0.0157	1.53e6	1191	1287.6				bb	

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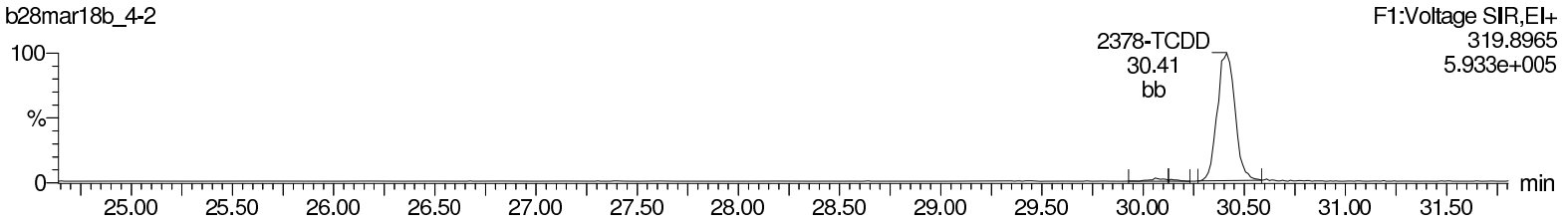
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

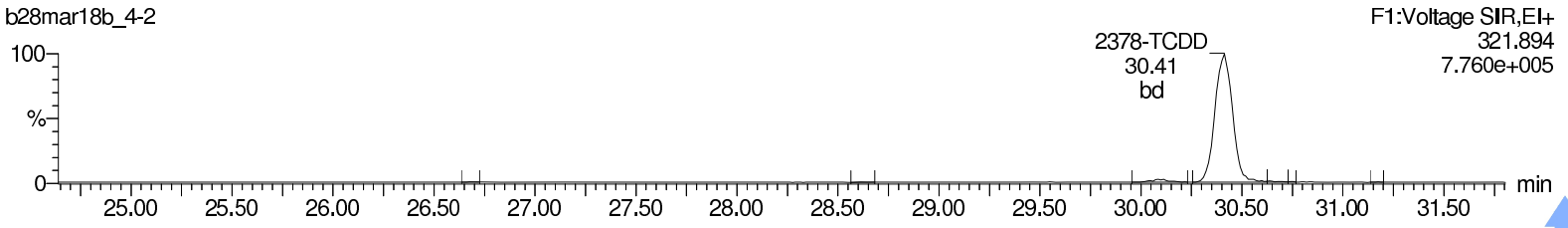
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-tetradioxins



Total-tetradioxins



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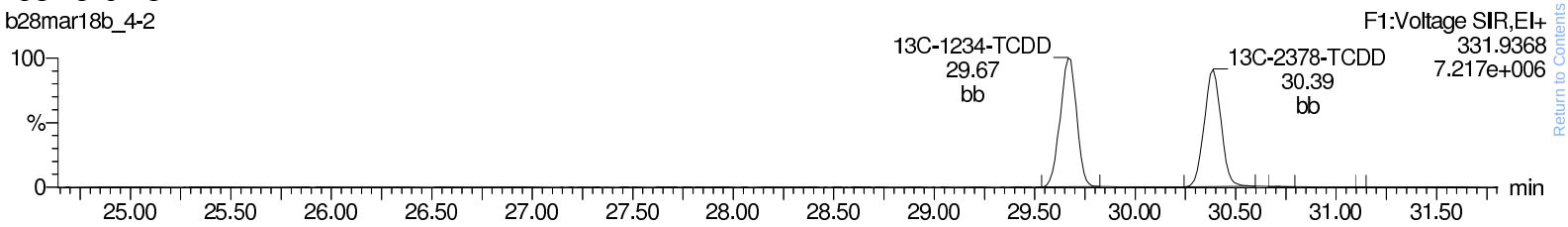

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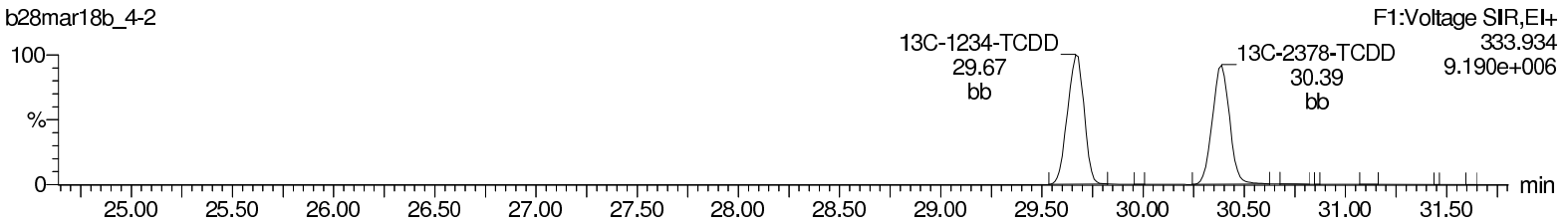
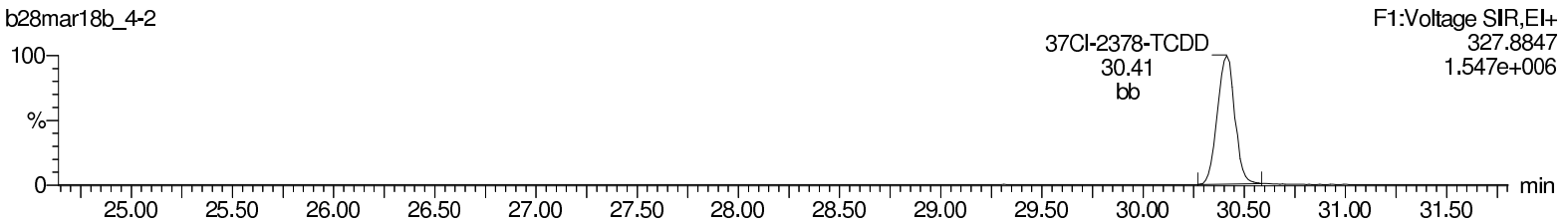


37Cl-2378-TCDD



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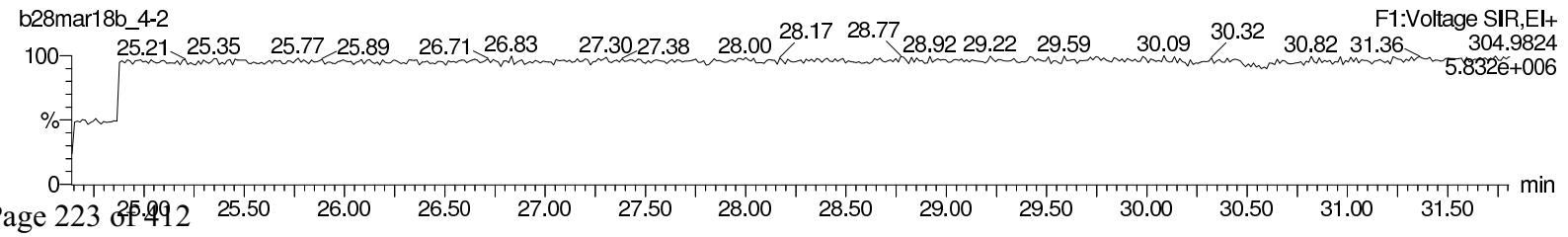
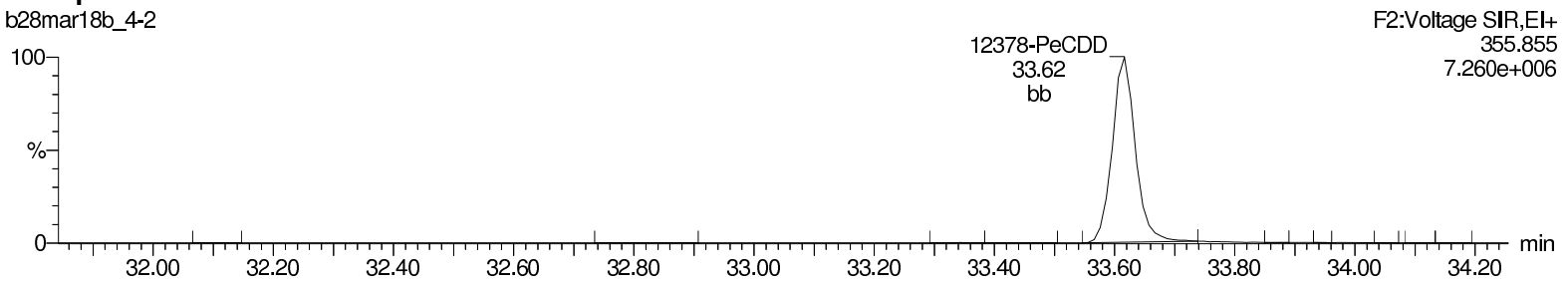


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

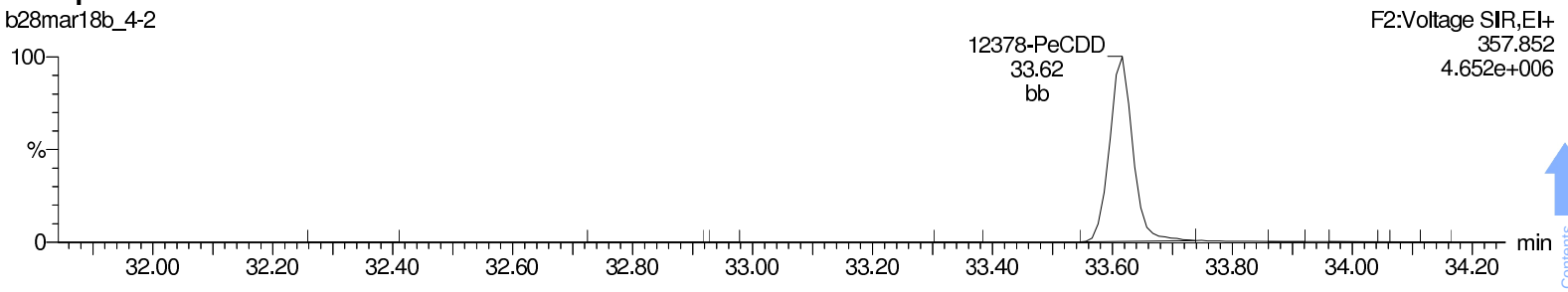
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-pentadioxins



Total-pentadioxins



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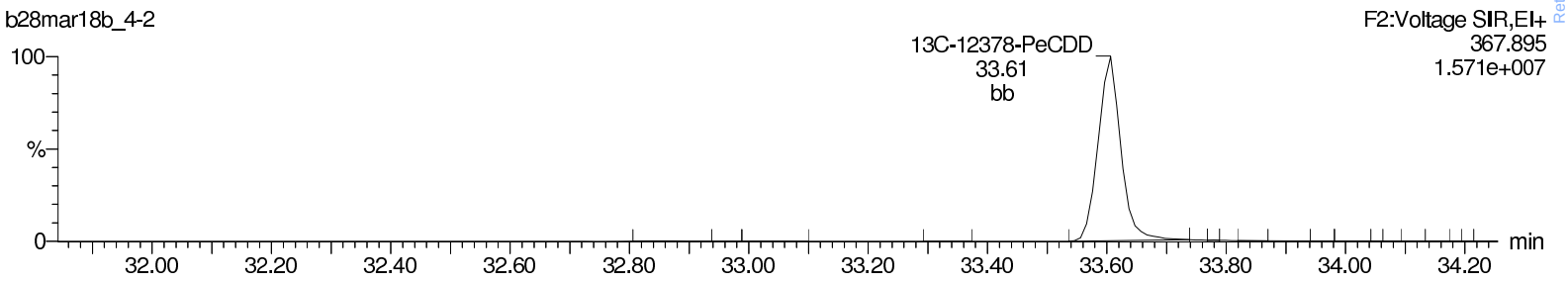

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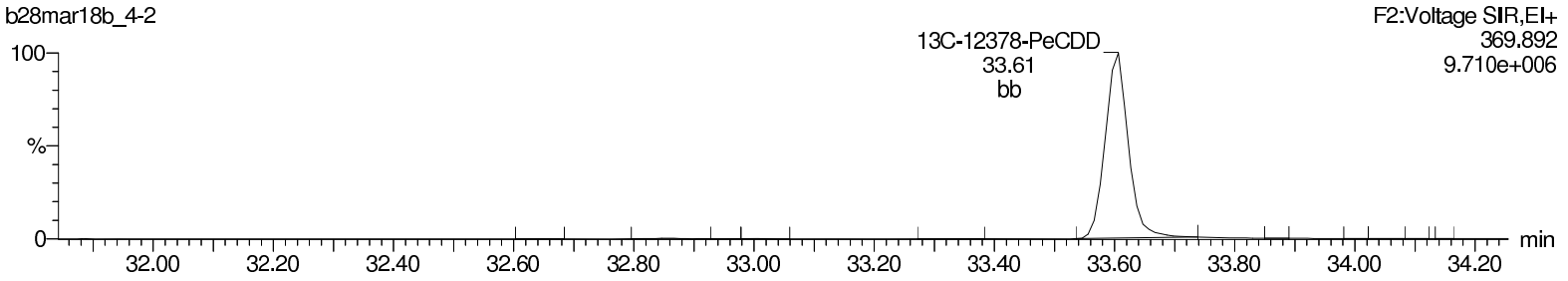

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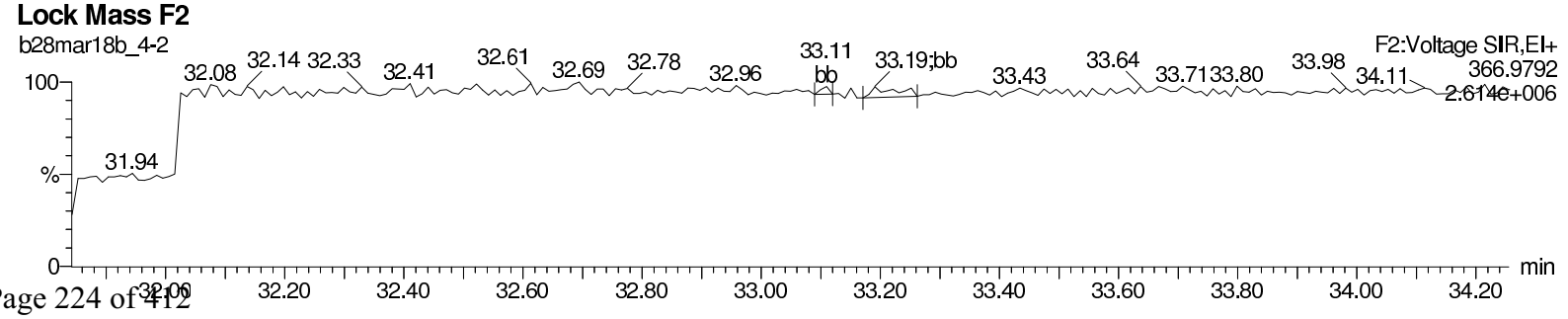

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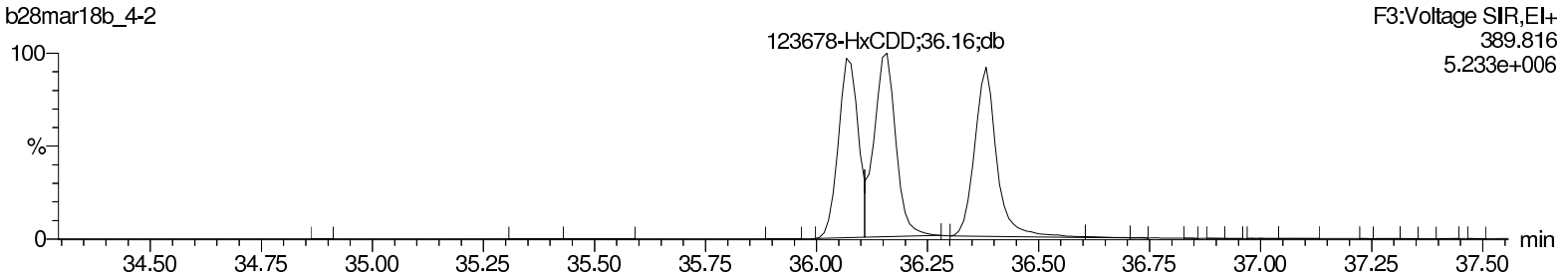
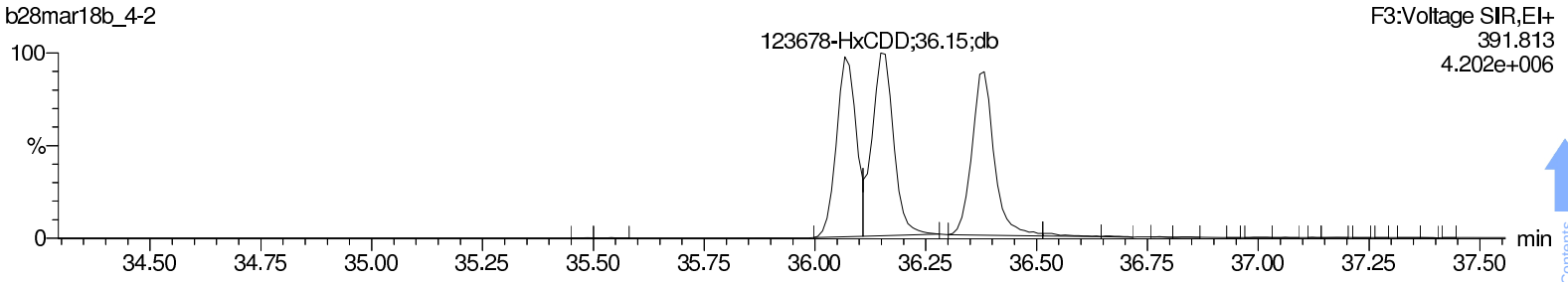
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-hexadioxins



Total-hexadioxins



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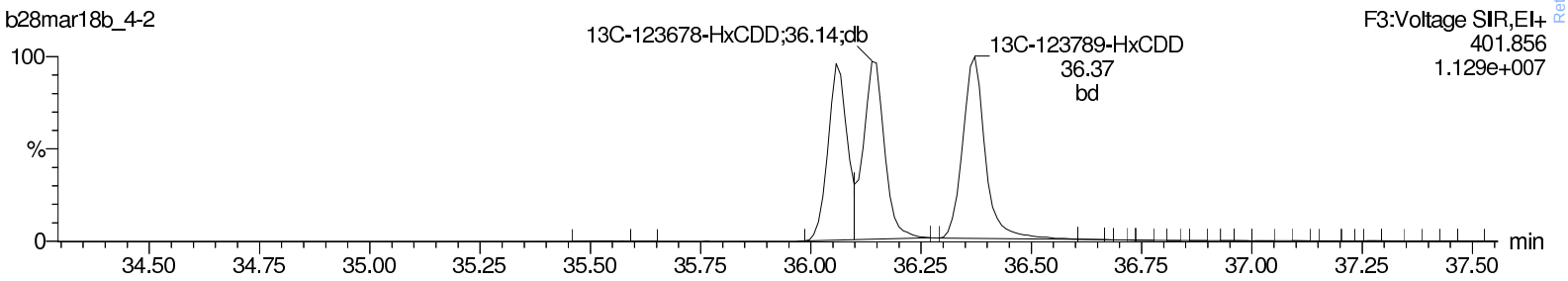

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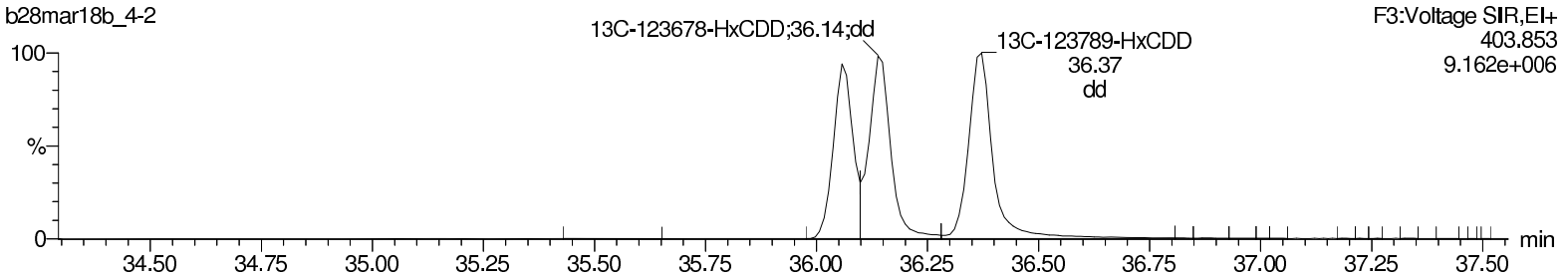

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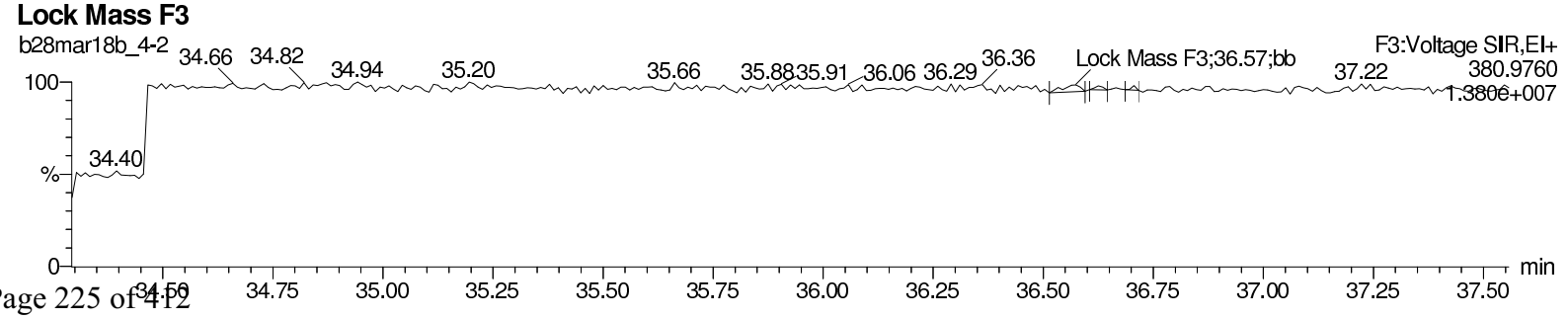

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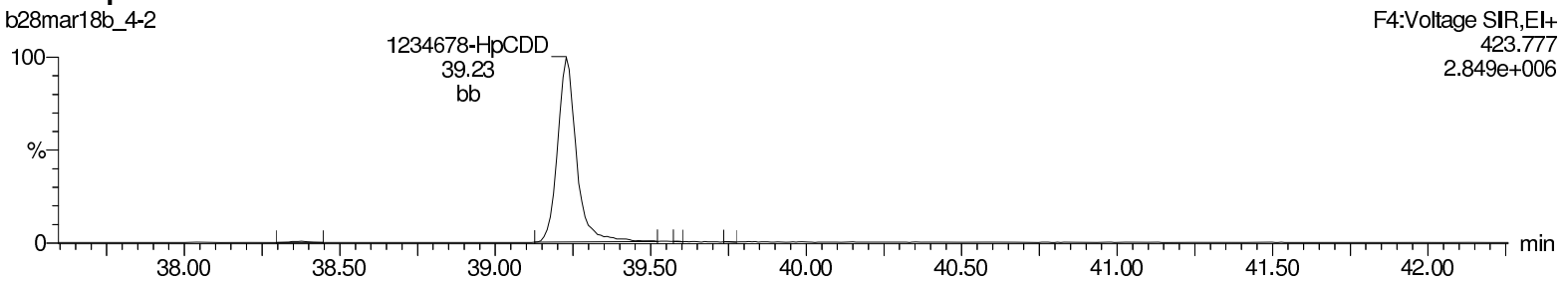
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-heptadioxins



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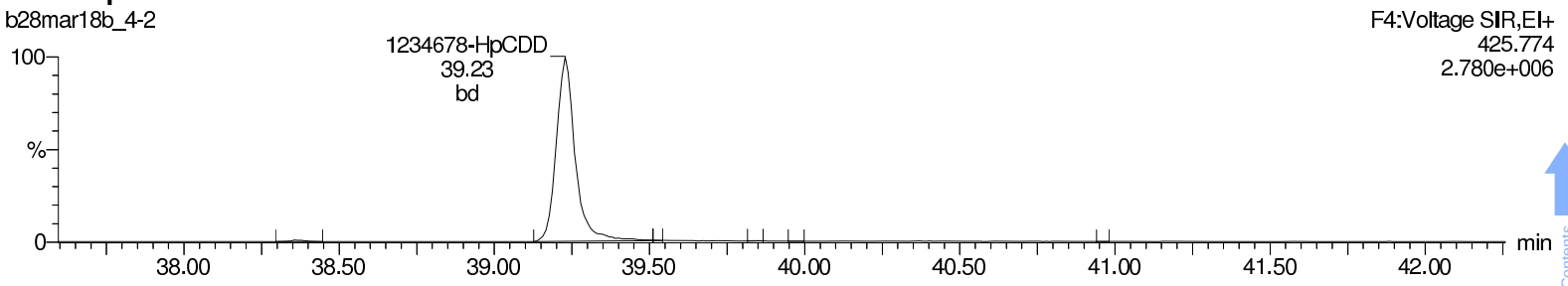

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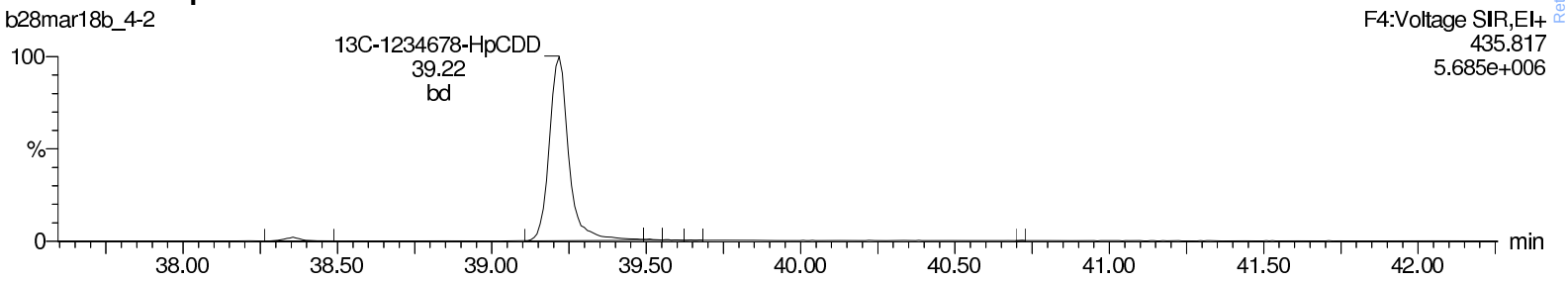

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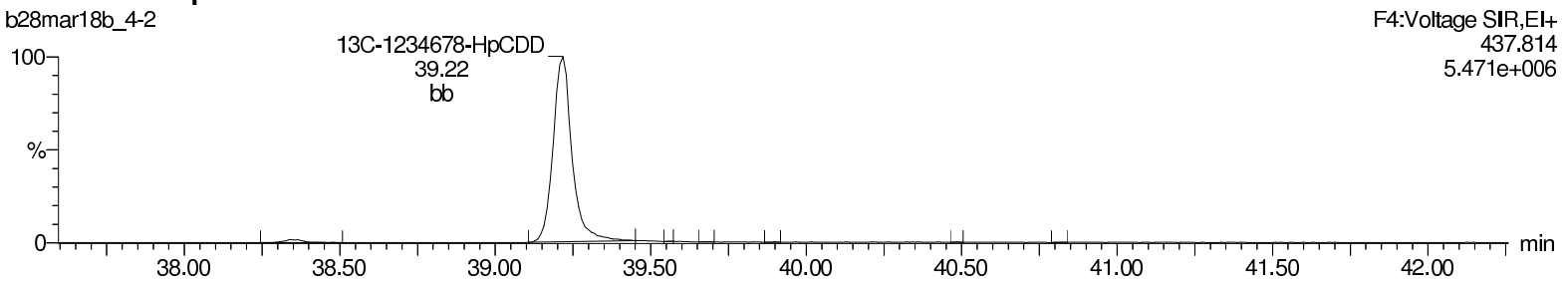

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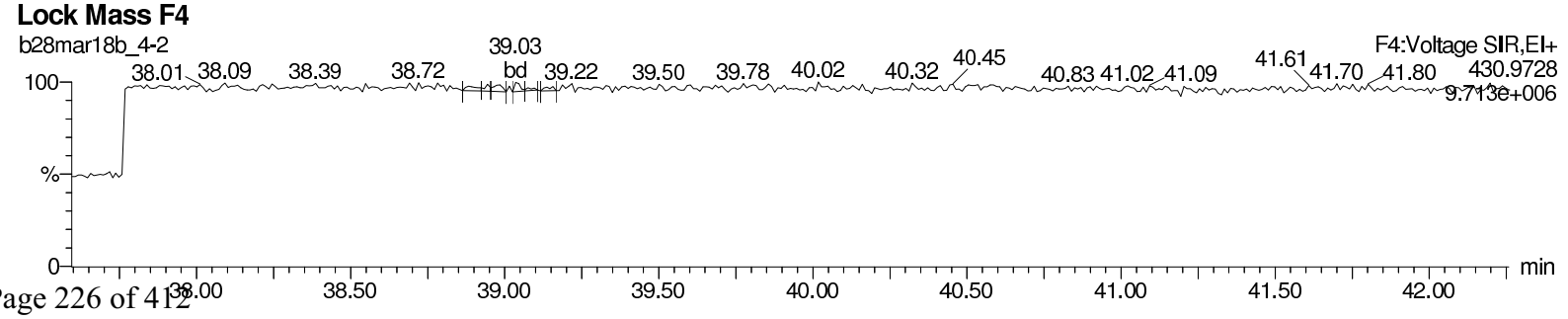

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Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

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User: CLP

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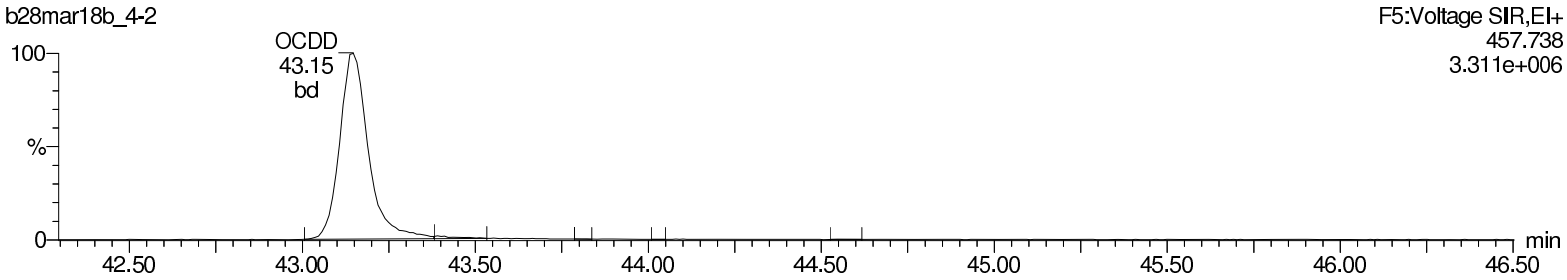

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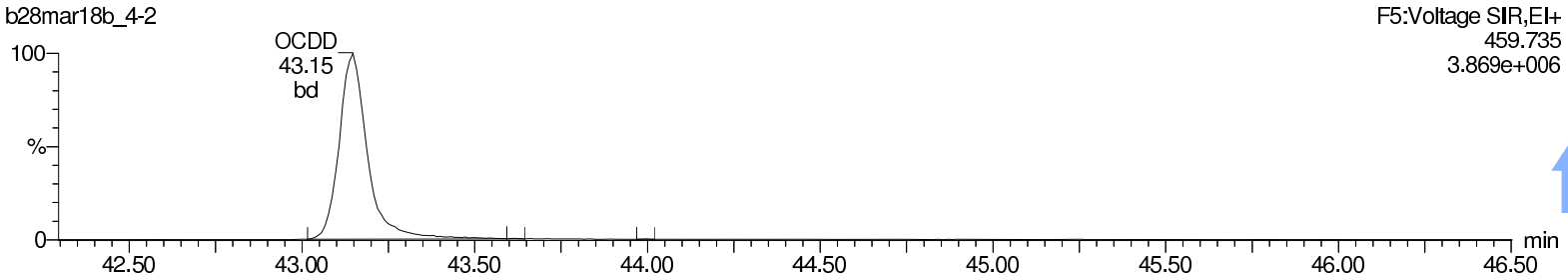

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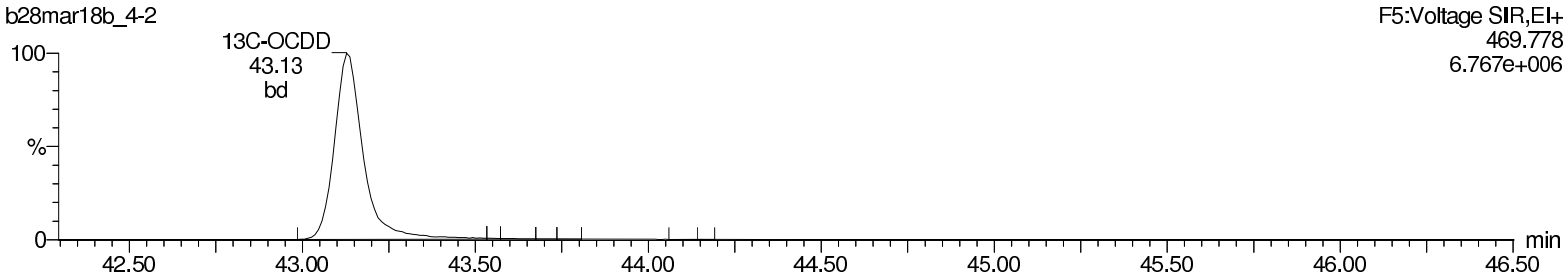

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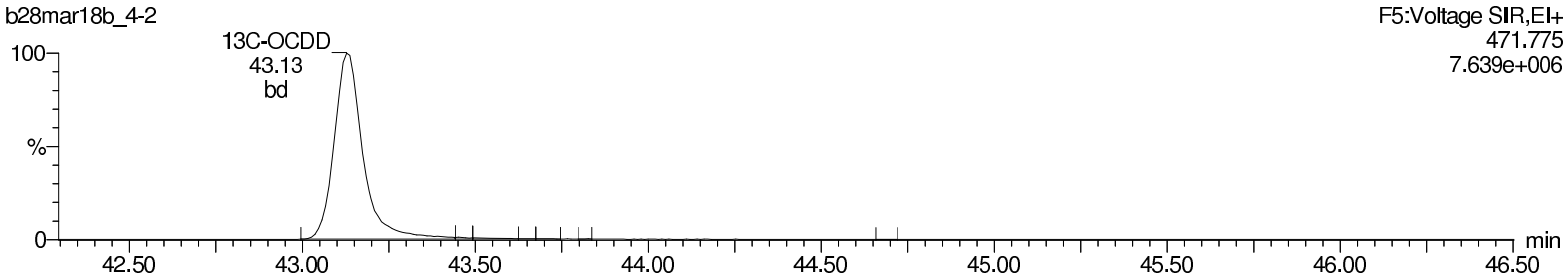

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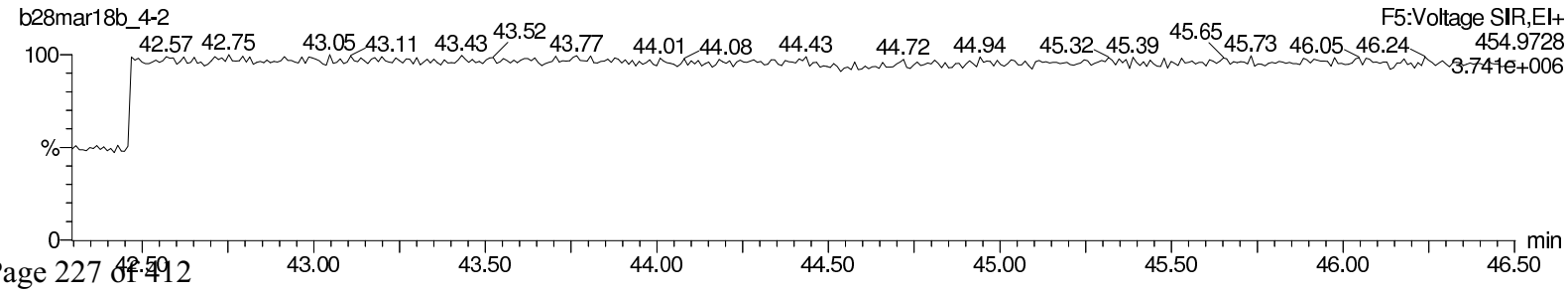

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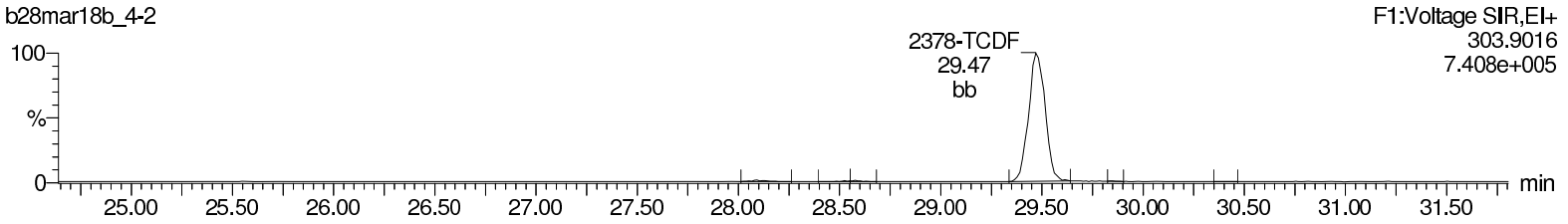
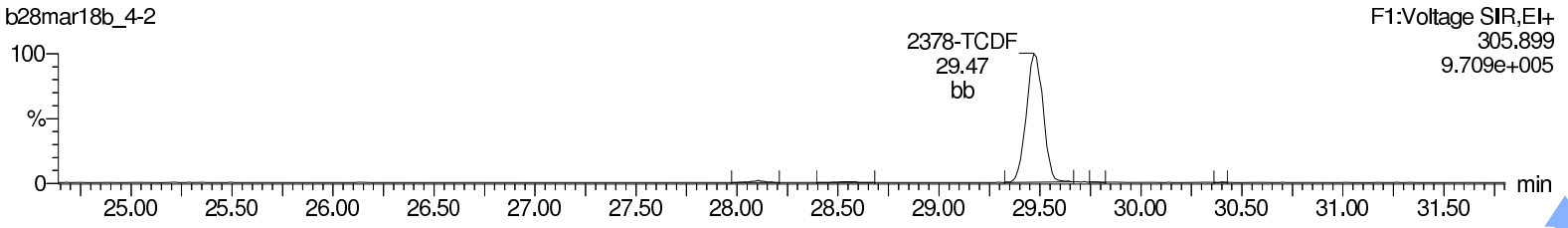
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-tetrafurans



Total-tetrafurans



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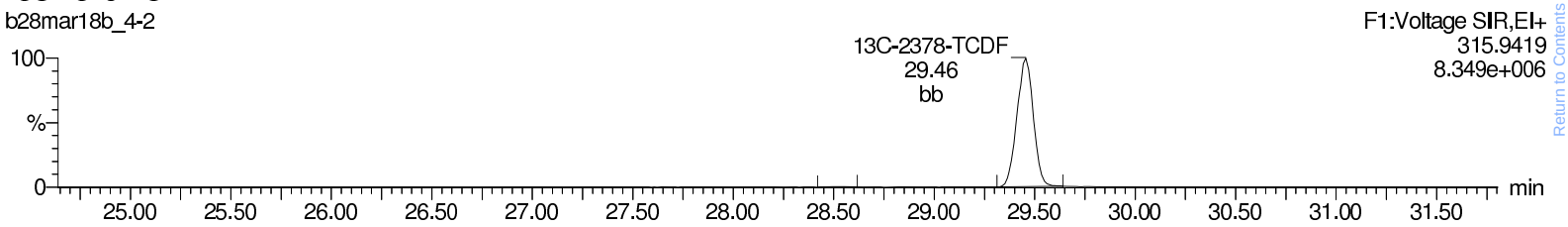

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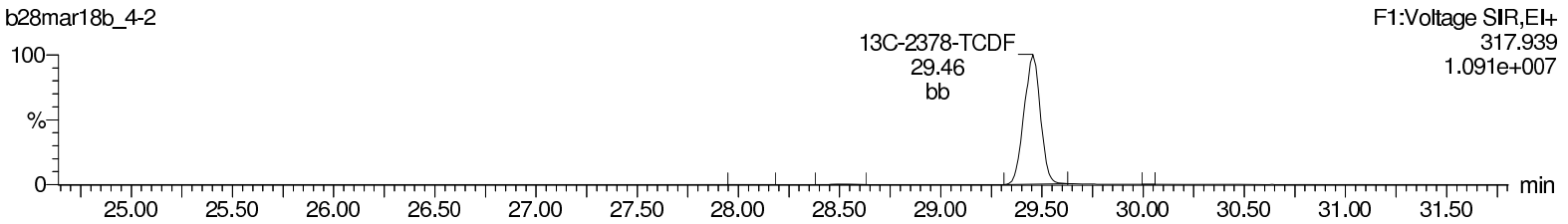

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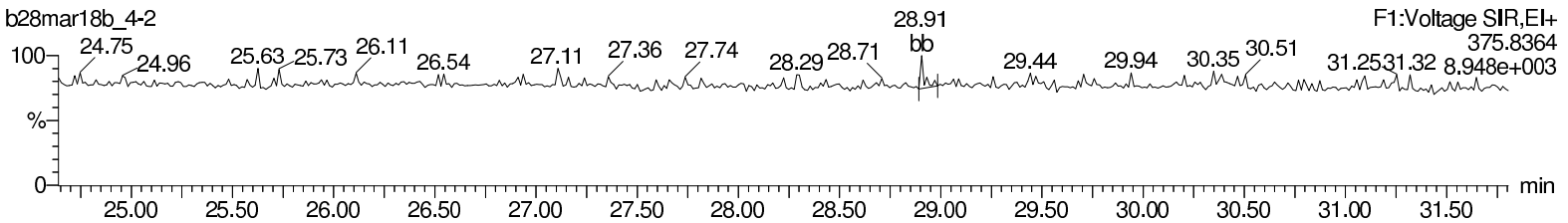

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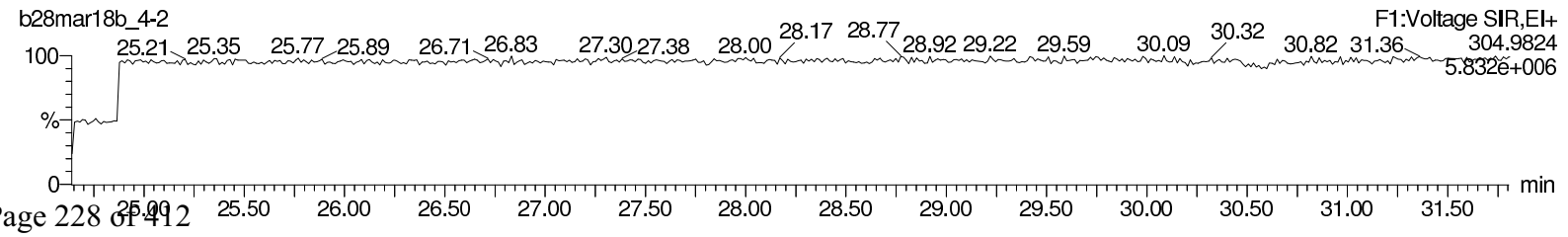
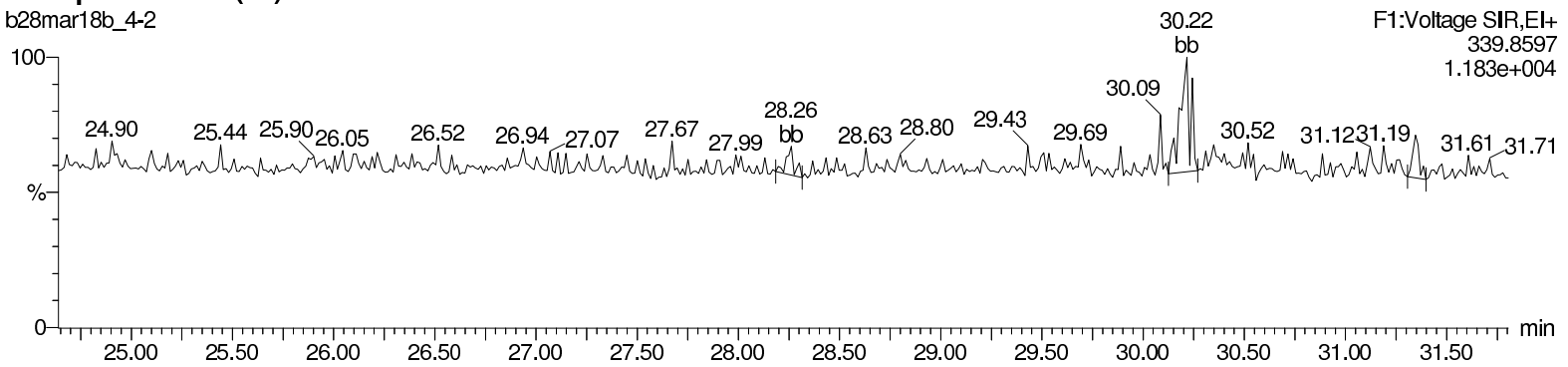


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

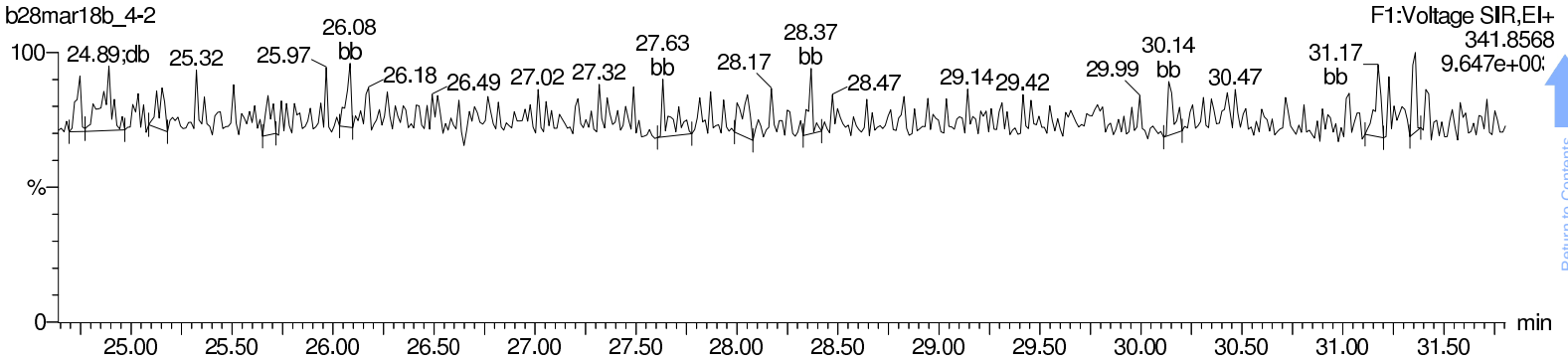
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

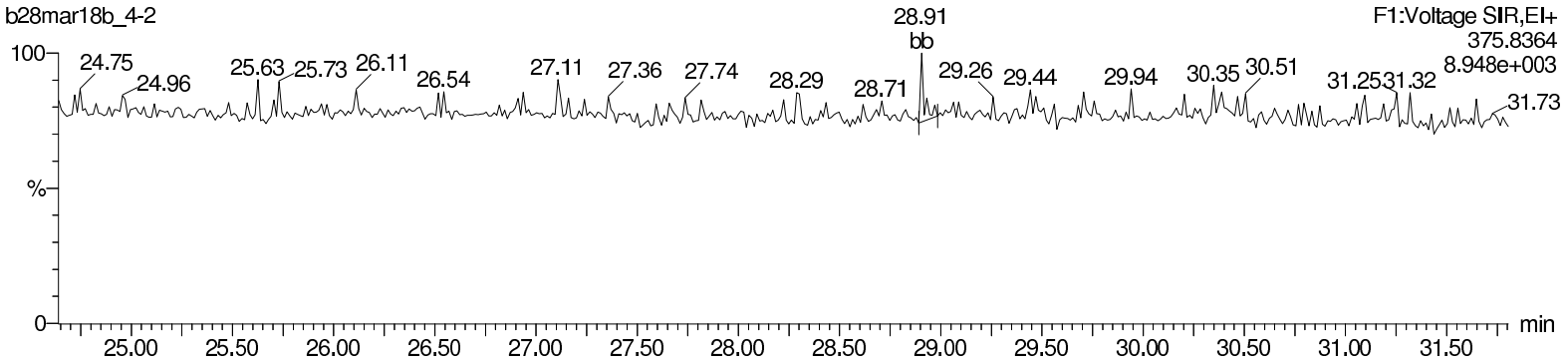
Total-pentafurans (F1)



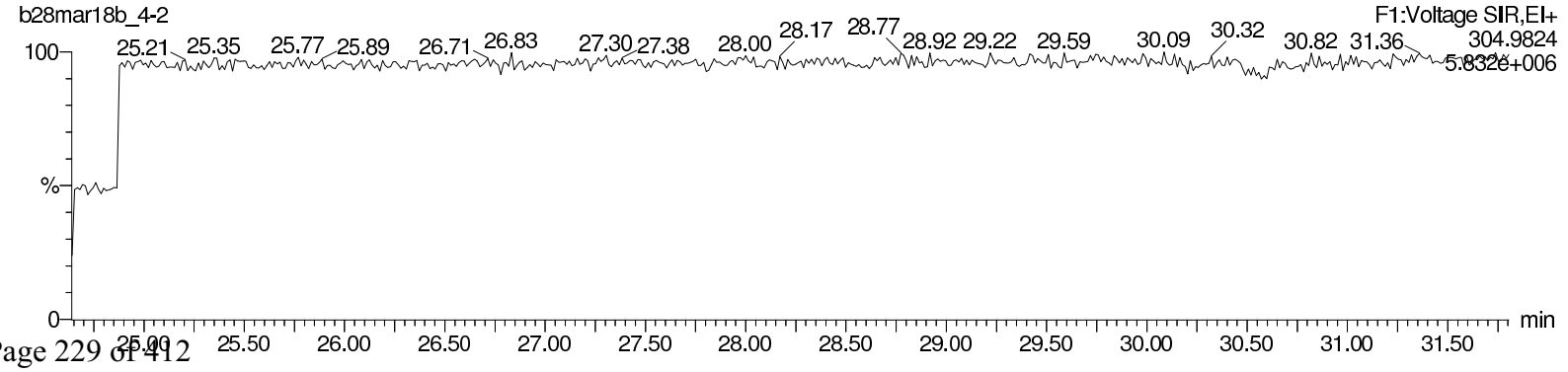
Total-pentafurans (F1)



HxDPE



Lock Mass F1

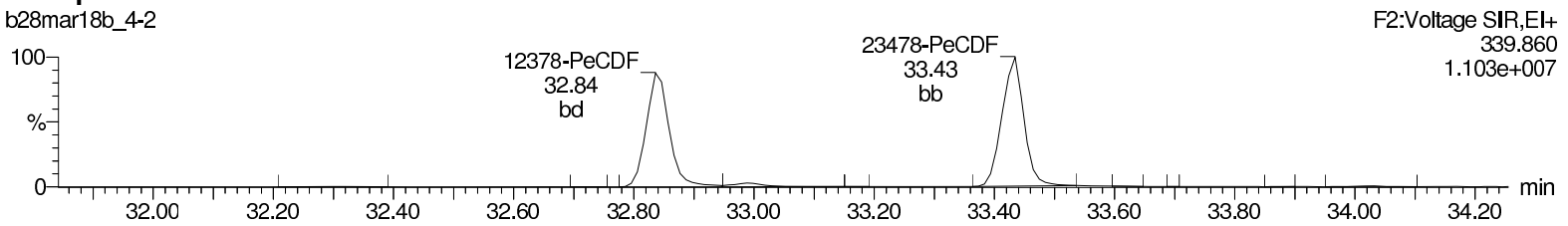


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

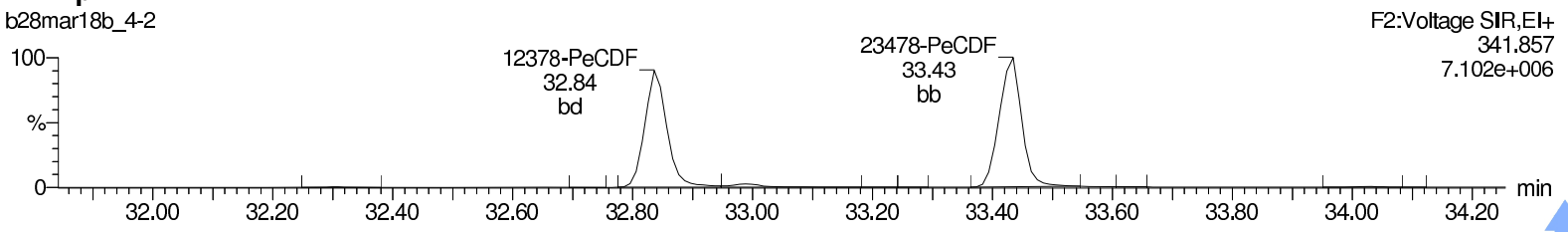
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

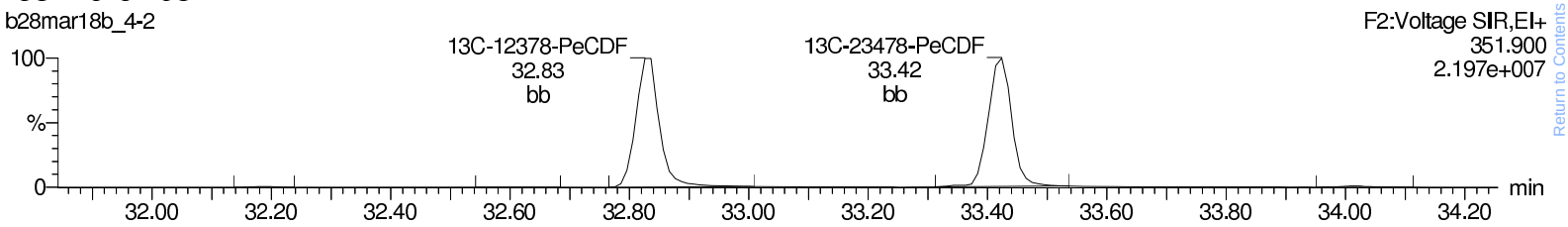
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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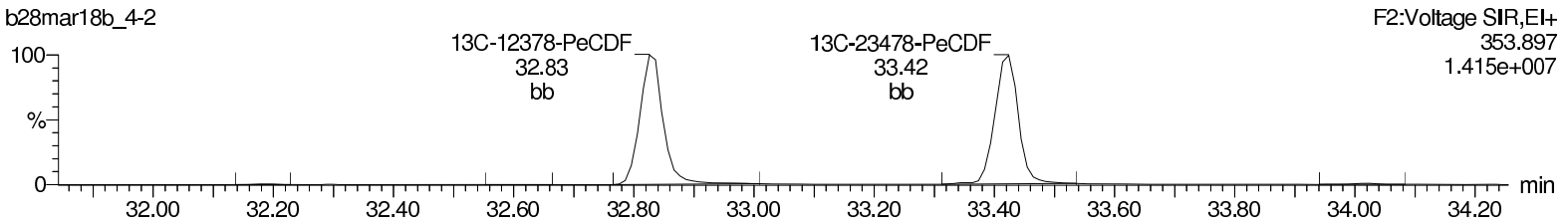
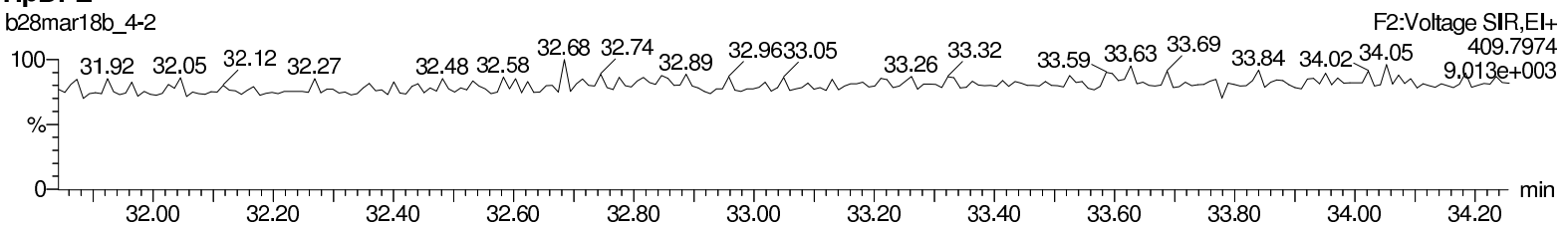
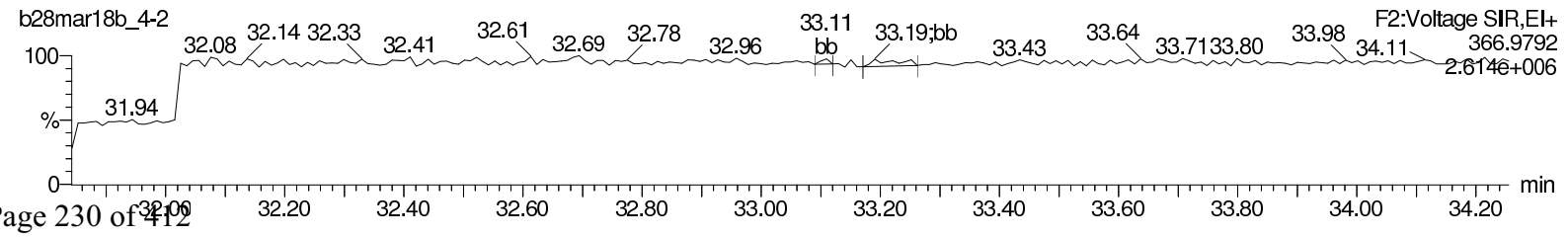


HpDPE



Lock Mass F2



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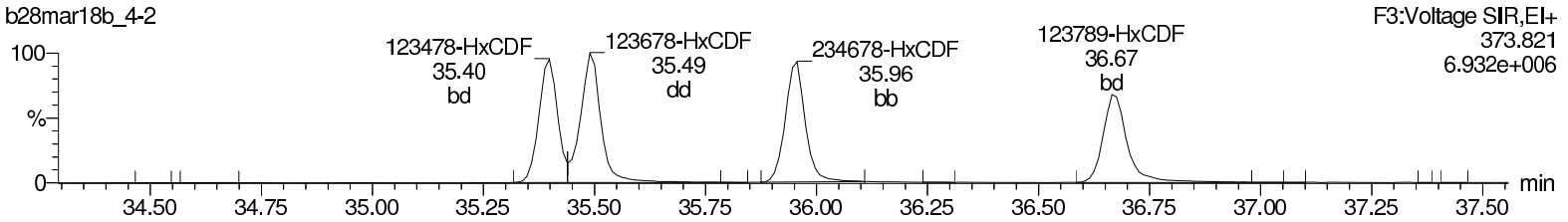
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-hexafurans



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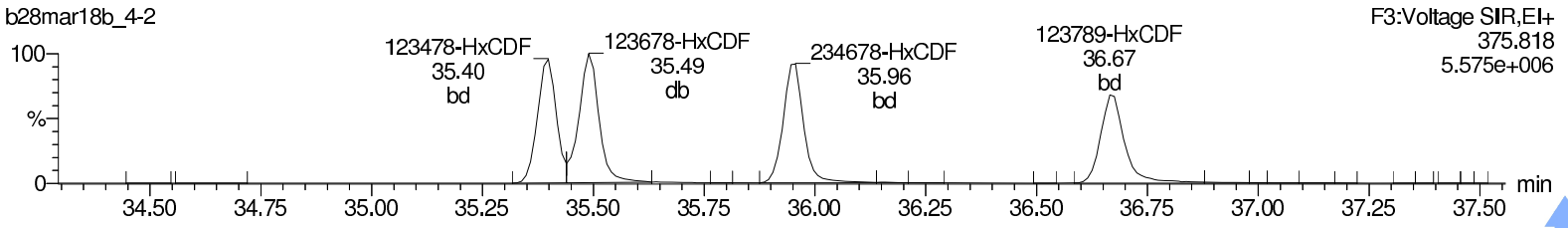

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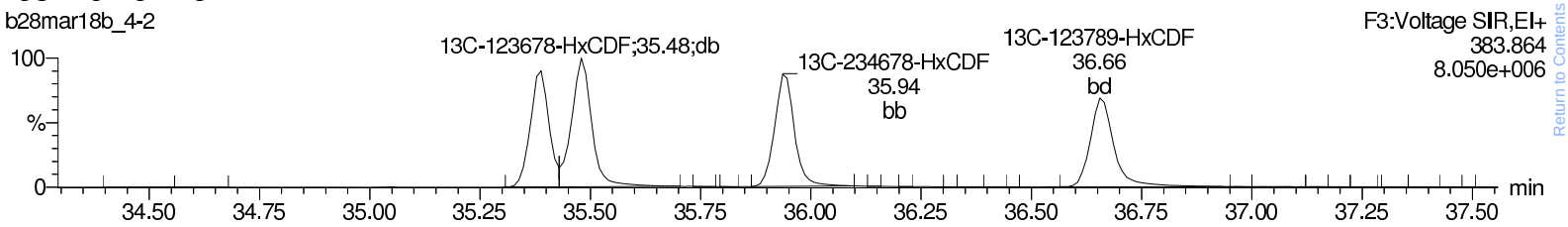

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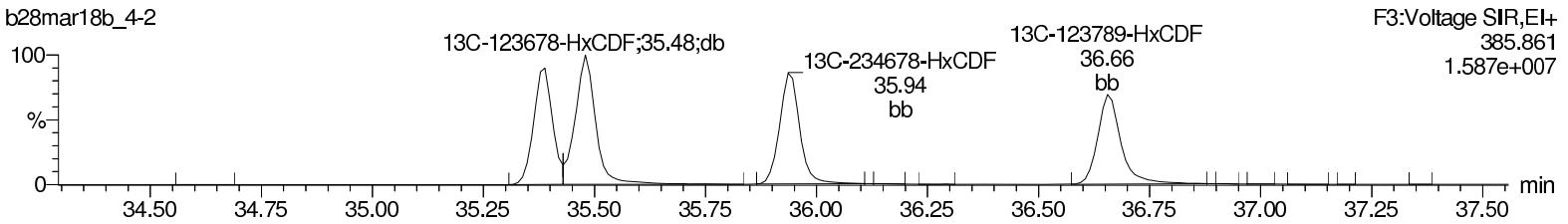
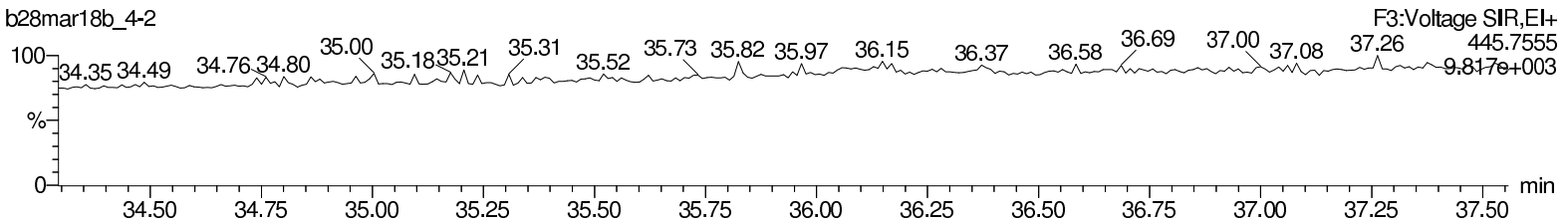
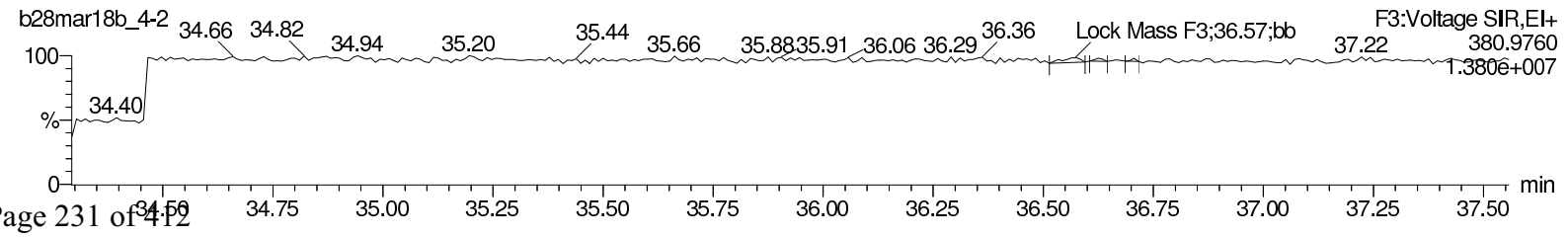


OcDPE



Lock Mass F3



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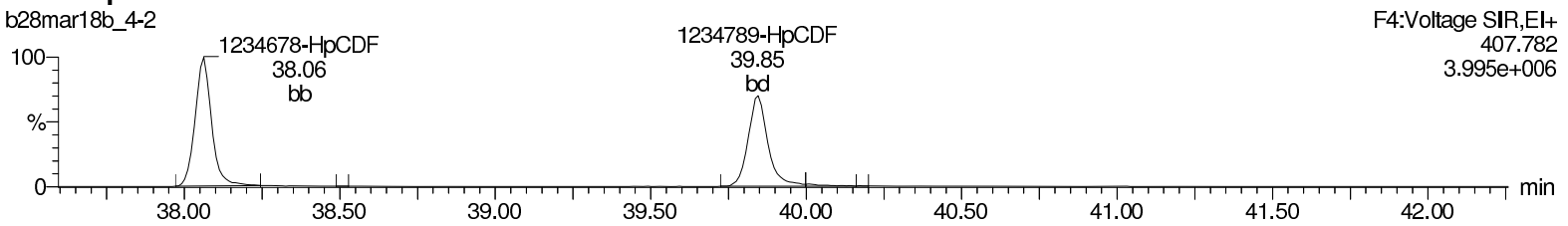
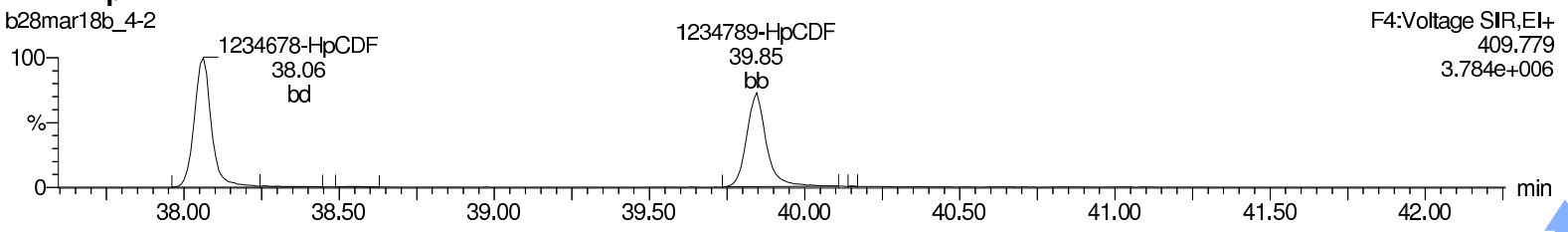
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-heptafurans



Total-heptafurans



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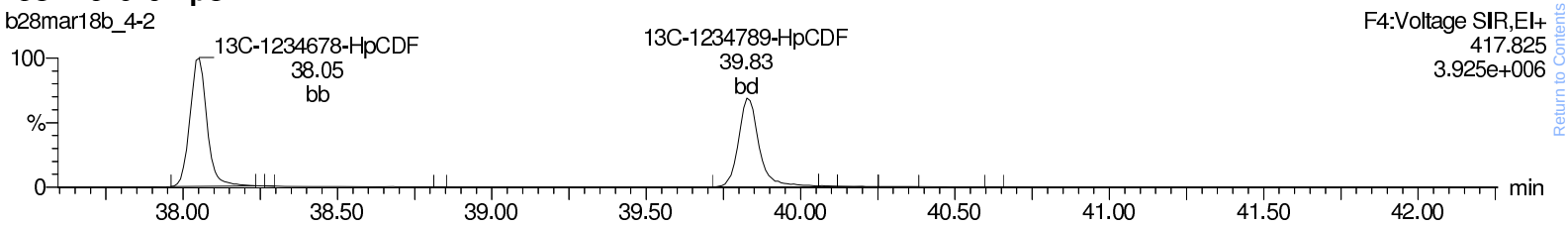

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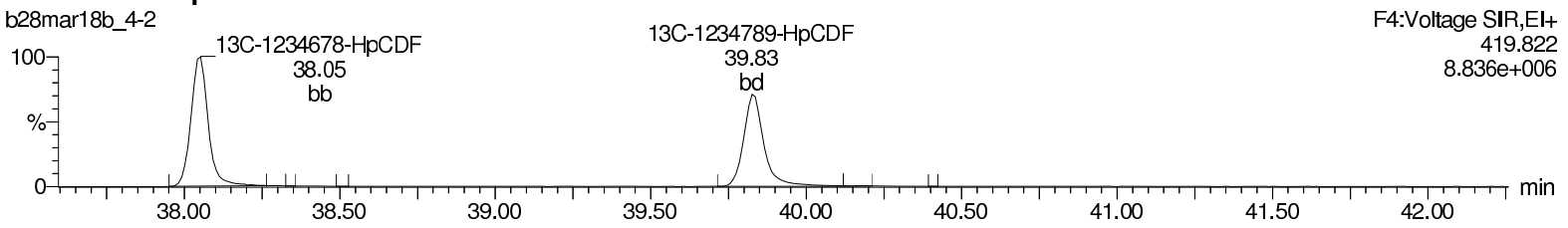

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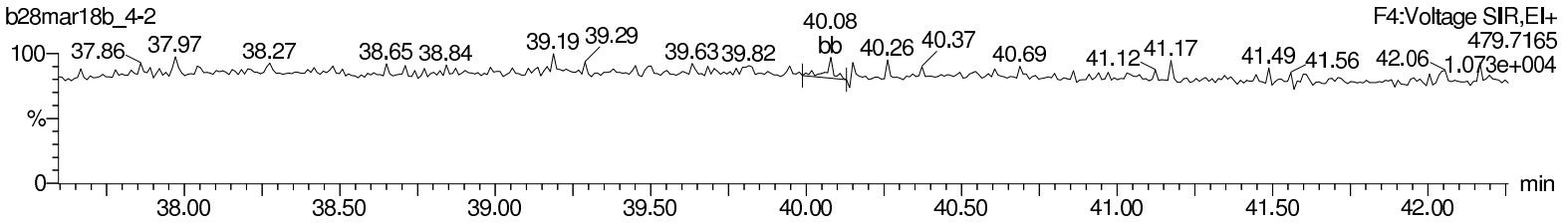
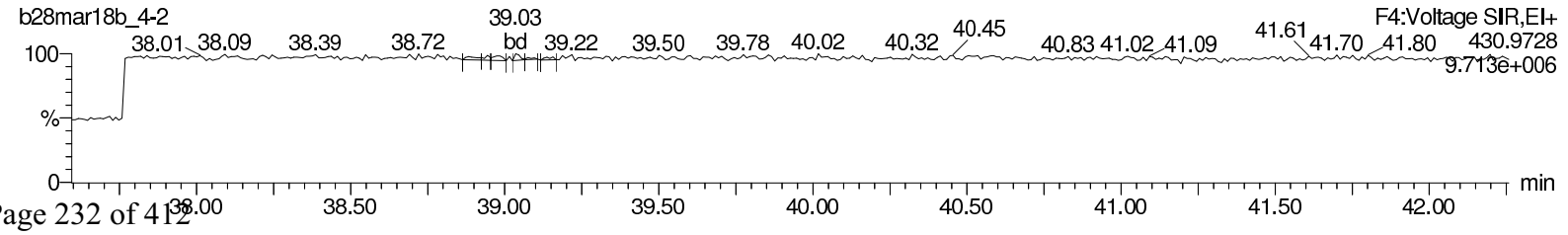


Lock Mass F4

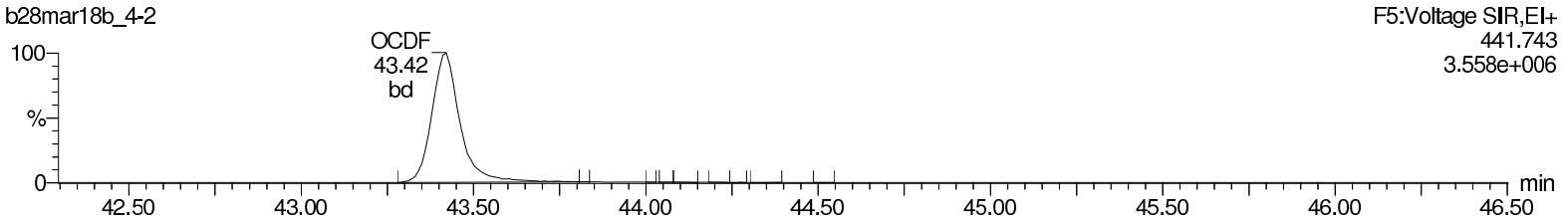


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

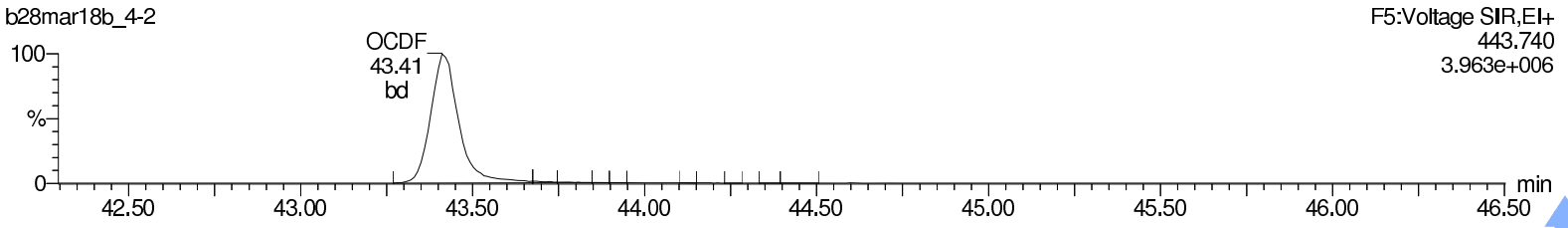
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

OCDF



OCDF



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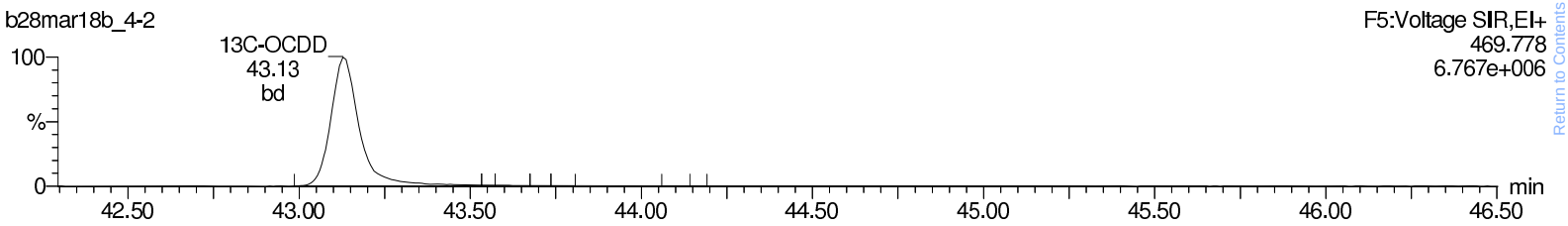

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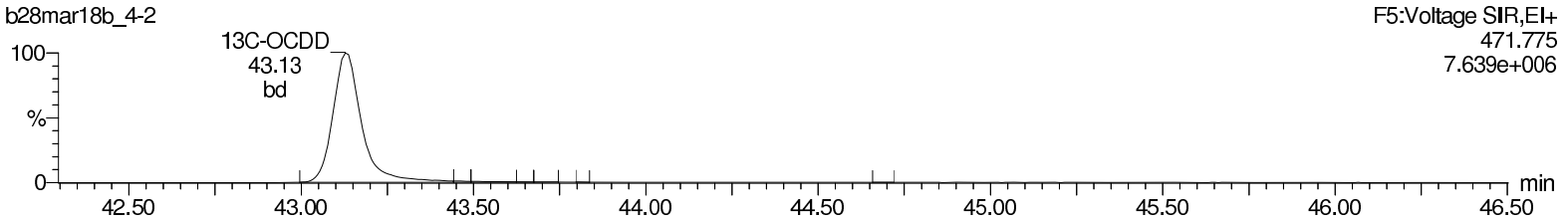

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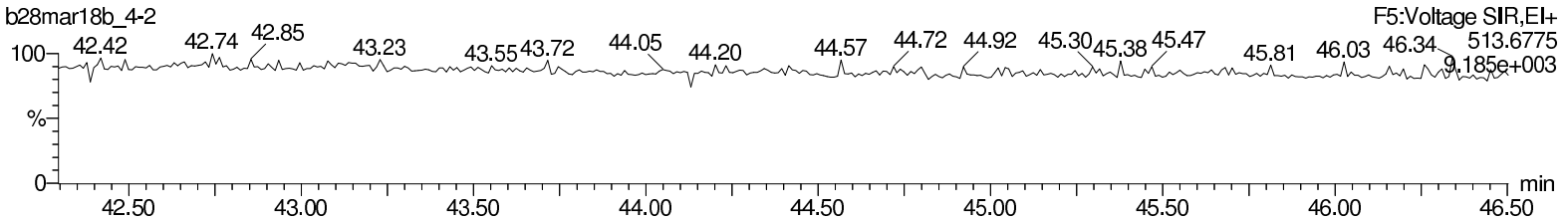
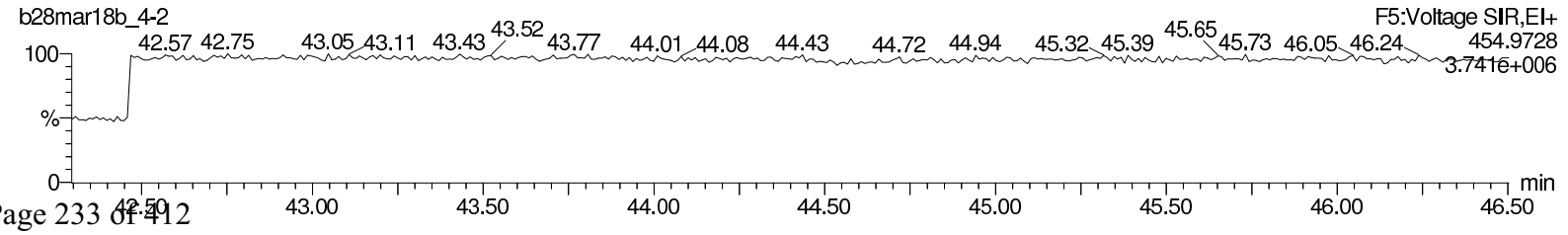


Lock Mass F5



Logbooks

Return to Contents

Prep Logbook

3520C Aqueous Extraction for Method 1613B

Batch ID: 37284 **Verified by:** _____
Analyst: Amalie Walker
Method: SW846 3520C

Lab SOP: CF-OA-E-002 REV# 15
Instrument: Ohaus Scout Pro 4000

Sample ID	Start Run Date	Aliquot (mL)	pH (su)	ES Amount (uL)	MX Amount (uL)	MX Serial#	ES Serial#	Decanted? (Y/N)
12020981 MB	28-MAR-2018 13:00	1000	5	40			WD180328-03 .05 ng/uL	N
12020981 MB	28-MAR-2018 13:00	1000	5	40			WD180328-03 .05 ng/uL	N
12020982 LCS	28-MAR-2018 13:00	1000	5	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
12020982 LCS	28-MAR-2018 13:00	1000	5	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
12020983 LCSD	28-MAR-2018 13:00	1000	5	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
12020983 LCSD	28-MAR-2018 13:00	1000	5	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
13112001	28-MAR-2018 13:00	1016.4	8	40			WD180328-03 .05 ng/uL	N
13112002	28-MAR-2018 13:00	963.4	8	40			WD180328-03 .05 ng/uL	N
13112003 MS (13112002)	28-MAR-2018 13:00	1026.2	8	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
13112004 MSD (13112002)	28-MAR-2018 13:00	970.1	8	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
13112005	28-MAR-2018 13:00	1020.4	8	40			WD180328-03 .05 ng/uL	N
13112006	28-MAR-2018 13:00	1016	8	40			WD180328-03 .05 ng/uL	N
13113001	28-MAR-2018 13:00	1052.1	8	40			WD180328-03 .05 ng/uL	N
13113002	28-MAR-2018 13:00	1058.8	8	40			WD180328-03 .05 ng/uL	N
13113003	28-MAR-2018 13:00	940.9	8	40			WD180328-03 .05 ng/uL	N
13113004	28-MAR-2018 13:00	1014.5	8	40			WD180328-03 .05 ng/uL	N
13114001	28-MAR-2018 13:00	912.4	7	40			WD180328-03 .05 ng/uL	N
13121001	28-MAR-2018 13:00	942.8	8	40			WD180328-03 .05 ng/uL	N
13123001	28-MAR-2018 13:00	1033.1	7	40			WD180328-03 .05 ng/uL	N
13123002	28-MAR-2018 13:00	970.6	7	40			WD180328-03 .05 ng/uL	N
13123003	28-MAR-2018 13:00	1016	7	40			WD180328-03 .05 ng/uL	N
13123004	28-MAR-2018 13:00	1029.2	7	40			WD180328-03 .05 ng/uL	N
13123005	28-MAR-2018 13:00	1053.6	7	40			WD180328-03 .05 ng/uL	N
13123006	28-MAR-2018 13:00	1024.9	7	40			WD180328-03 .05 ng/uL	N

Prep Logbook

Batch ID: 37284 **Verified by:** _____
Analyst: Amalie Walker
Method: SW846 3520C

Lab SOP: CF-OA-E-002 REV# 15
Instrument: Ohaus Scout Pro 4000

Sample ID	Start Run Date	Aliquot (mL)	pH (su)	ES Amount (uL)	MX Amount (uL)	MX Serial#	ES Serial#	Decanted? (Y/N)
13123007	28-MAR-2018 13:00	1060.8	7	40			WD180328-03 .05 ng/uL	N
13127001	28-MAR-2018 13:00	947.3	7	40			WD180328-03 .05 ng/uL	N
13127002	28-MAR-2018 13:00	933.5	10	40			WD180323-07 .05 ng/uL	N

Type	Sample Id	Description	Serial Number	Spike Amt	Units
REAGENT		Concentrated Sulfuric Acid	1136019-A.2	1	mL
REAGENT		Sodium Sulfate	1136857-A	10	g
REAGENT		Methylene Chloride	1137514-A	250	mL

Comments:

H2SO4 added to sample 13127002 to obtain pH<7.
Finish Time: 29-MAR-2018 07:23

Prep Logbook

Cleanup Procedure for Liquids

Batch ID: 37285 **Verified by:** _____

Analyst: Mike Medwedeff

Lab SOP:

Instrument: No analytical instrument

Sample ID	Start Run Date	Cleanup Type	Train	Aliqout Analyzed (percent)	CS Amount (uL)	CS Serial#
12020981 MB	29-MAR-2018 09:00	AB Silica Florisil	190	100	20	WD180328-05 .01 ng/uL
12020981 MB	29-MAR-2018 09:00	AB Silica Florisil	190	100	20	WD180328-05 .01 ng/uL
12020982 LCS	29-MAR-2018 09:00	AB Silica Florisil	26	100	20	WD180328-05 .01 ng/uL
12020982 LCS	29-MAR-2018 09:00	AB Silica Florisil	26	100	20	WD180328-05 .01 ng/uL
12020983 LCSD	29-MAR-2018 09:00	AB Silica Florisil	189	100	20	WD180328-05 .01 ng/uL
12020983 LCSD	29-MAR-2018 09:00	AB Silica Florisil	189	100	20	WD180328-05 .01 ng/uL
13112001	29-MAR-2018 09:00	AB Silica Florisil	175	100	20	WD180328-05 .01 ng/uL
13112002	29-MAR-2018 09:00	AB Silica Florisil	203	100	20	WD180328-05 .01 ng/uL
13112003 MS (13112002)	29-MAR-2018 09:00	AB Silica Florisil	80	100	20	WD180328-05 .01 ng/uL
13112004 MSD (13112002)	29-MAR-2018 09:00	AB Silica Florisil	20	100	20	WD180328-05 .01 ng/uL
13112005	29-MAR-2018 09:00	AB Silica Florisil	164	100	20	WD180328-05 .01 ng/uL
13112006	29-MAR-2018 09:00	AB Silica Florisil	39	100	20	WD180328-05 .01 ng/uL
13113001	29-MAR-2018 09:00	AB Silica Florisil	182	100	20	WD180328-05 .01 ng/uL
13113002	29-MAR-2018 09:00	AB Silica Florisil	115	100	20	WD180328-05 .01 ng/uL
13113003	29-MAR-2018 09:00	AB Silica Florisil	63	100	20	WD180328-05 .01 ng/uL
13113004	29-MAR-2018 09:00	AB Silica Florisil	45	100	20	WD180328-05 .01 ng/uL
13114001	29-MAR-2018 09:00	AB Silica Florisil	173	100	20	WD180328-05 .01 ng/uL
13121001	29-MAR-2018 09:00	AB Silica Florisil	31	100	20	WD180328-05 .01 ng/uL
13123001	29-MAR-2018 09:00	AB Silica Florisil	86	100	20	WD180328-05 .01 ng/uL
13123002	29-MAR-2018 09:00	AB Silica Florisil	127	100	20	WD180328-05 .01 ng/uL
13123003	29-MAR-2018 09:00	AB Silica Florisil	100	100	20	WD180328-05 .01 ng/uL
13123004	29-MAR-2018 09:00	AB Silica Florisil	89	100	20	WD180328-05 .01 ng/uL
13123005	29-MAR-2018 09:00	AB Silica Florisil	76	100	20	WD180328-05 .01 ng/uL
13123006	29-MAR-2018 09:00	AB Silica Florisil	154	100	20	WD180328-05 .01 ng/uL

Prep Logbook

Batch ID: 37285 **Verified by:** _____
Analyst: Mike Medwedeff

Lab SOP:
Instrument: No analytical instrument

Sample ID	Start Run Date	Cleanup Type	Train	Aliqout Analyzed (percent)	CS Amount (uL)	CS Serial#
13123007	29-MAR-2018 09:00	AB Silica Florisil	29	100	20	WD180328-05 .01 ng/uL
13127001	29-MAR-2018 09:00	AB Silica Florisil	81	100	20	WD180328-05 .01 ng/uL
13127002	29-MAR-2018 09:00	AB Silica Florisil	13	100	20	WD180328-05 .01 ng/uL

Type	Sample Id	Description	Serial Number	Spike Amt	Units
REAGENT		Glass Wool	1135226-A.3	1	each
REAGENT		Silica Gel	1136056-A	2	g
REAGENT		Base silica	1136853-C	3	g
REAGENT		Acid silica	1136855	7	g
REAGENT		Sodium Sulfate	1136857-A	3	g
REAGENT		Florisil	1137088-A	1.5	g
REAGENT		Methylene Chloride	1137514-A	100	mL
REAGENT		Hexane	1137933-A.2	130	mL
REAGENT		Hexane	1137935-A.3	130	mL
REAGENT		Hexane	1137937-A.4	130	mL

Comments:

Prep Logbook

Method 1613B HRMS Aqueous Analysis

Batch ID: 37301 **Verified by:** _____

Analyst: Chris Presnell

Method: EPA Method 1613B

Lab SOP: CF-OA-E-002 REV# 15

Instrument: Waters Autospec Premier High-Resolution GC/MS

Sample ID	Start Run Date	Final Volume (uL)	Prep Factor (Final Volume /Aliquot) (uL/uL)	Dilution	Dilution Type	Injection Volume (uL)	Vial Prep Date
12020982 LCS	29-MAR-2018 21:15	20	2.00E-05	1	Internal	1	29-MAR-2018
12020983 LCSD	29-MAR-2018 22:03	20	2.00E-05	1	Internal	1	29-MAR-2018
12020981 MB	29-MAR-2018 22:52	20	2.00E-05	1	Internal	1	29-MAR-2018
13123001	30-MAR-2018 21:01	20	1.94E-05	1	Internal	1	29-MAR-2018
13123002	30-MAR-2018 21:49	20	2.06E-05	1	Internal	1	29-MAR-2018
13123003	30-MAR-2018 22:38	20	1.97E-05	1	Internal	1	29-MAR-2018
13123004	30-MAR-2018 23:26	20	1.94E-05	1	Internal	1	29-MAR-2018
13123005	31-MAR-2018 00:15	20	1.90E-05	1	Internal	1	29-MAR-2018
13123006	31-MAR-2018 01:03	20	1.95E-05	1	Internal	1	29-MAR-2018
13123007	31-MAR-2018 01:52	20	1.89E-05	1	Internal	1	29-MAR-2018

Type	Sample Id	Description	Serial Number	Spike Amt	Units
REAGENT		8290 Injection Standard	WD180326-03	20	uL
STANDARI		8290 Injection Standard	WD180326-03	20	uL

Comments:

Initial Calibration Data

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Runlog Information

1613 ICAL

1613
14aug17

	Name	Instrument	Run Date	Procedure	Analyst	Batch ID	Sample Info	Injection Volume
•	b15aug17a-1	HRP763_1	15-AUG-2017 10:33	b15aug17a	Chris Presnell		CS3WT UD170522-01.1 CPS6B	1 uL
•	b15aug17a-2	HRP763_1	15-AUG-2017 11:22	b15aug17a	Chris Presnell		SB	1 uL
•	b15aug17a-3	HRP763_1	15-AUG-2017 12:10	b15aug17a	Chris Presnell		CS0.5 UD170815-01.1	1 uL
•	b15aug17a-4	HRP763_1	15-AUG-2017 12:58	b15aug17a	Chris Presnell		CS1 UD170815-02 CS13F	1 uL
•	b15aug17a-5	HRP763_1	15-AUG-2017 13:47	b15aug17a	Chris Presnell		CS2 UD170815-03 CS23E	1 uL
•	b15aug17a-6	HRP763_1	15-AUG-2017 14:35	b15aug17a	Chris Presnell		CS3 UD170815-04 CS3A1	1 uL
•	b15aug17a-7	HRP763_1	15-AUG-2017 15:24	b15aug17a	Chris Presnell		CS4 UD170815-05 CS43D	1 uL
•	b15aug17a-8	HRP763_1	15-AUG-2017 16:12	b15aug17a	Chris Presnell		CS5 UD170815-06 CS53F	1 uL
•	b15aug17a-9	HRP763_1	15-AUG-2017 17:01	b15aug17a	Chris Presnell		SB	1 uL
•	b15aug17a-10	HRP763_1	15-AUG-2017 17:49	b15aug17a	Chris Presnell		CS3WT UD170522-01.1 CPS6C	1 uL

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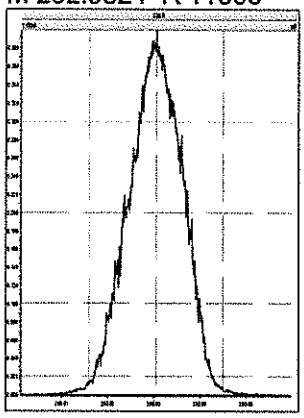
PFK66 Inst: HRP765-1 CY

Experiment Calibration Report **MassLynx 4.1**

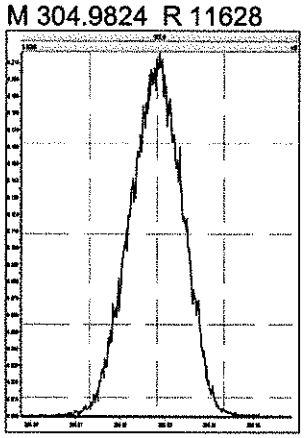
File: Experiment: dioxin_db5ms.exp Reference: pfk.ref Function: 1 @ 200 (ppm)

Printed: Tuesday, August 15, 2017 10:30:27 Eastern Standard Time

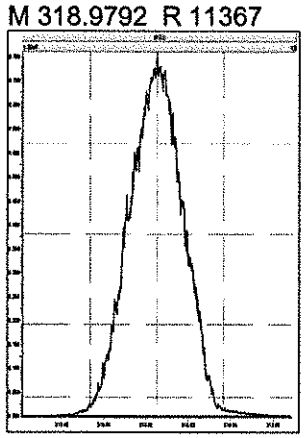
M 292.9824 R 11366



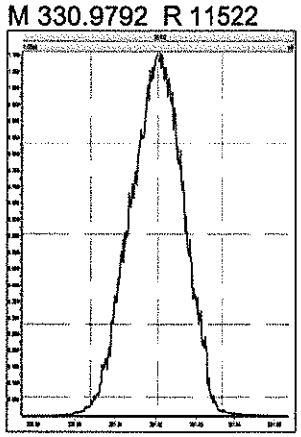
M 304.9824 R 11628



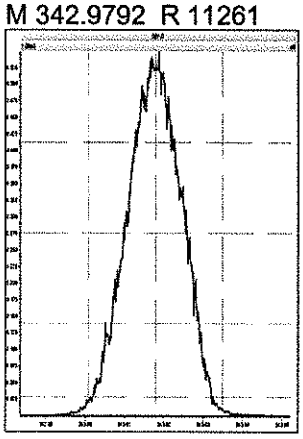
M 318.9792 R 11367



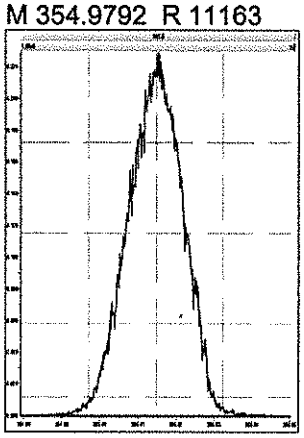
M 330.9792 R 11522



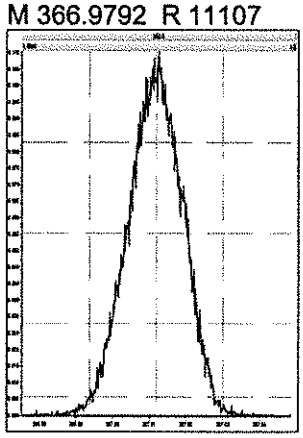
M 342.9792 R 11261



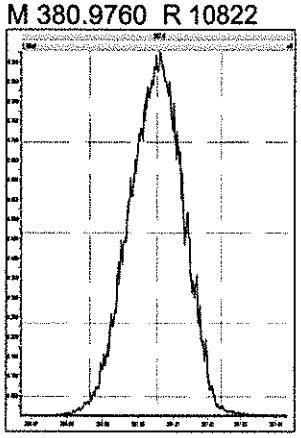
M 354.9792 R 11163



M 366.9792 R 11107



M 380.9760 R 10822



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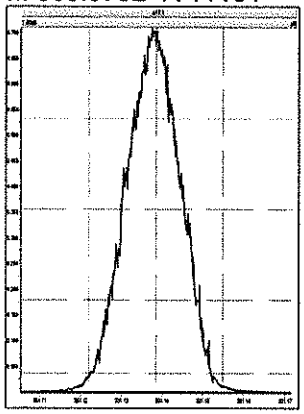
Experiment Calibration Report **MassLynx 4.1** Page 1 of 1

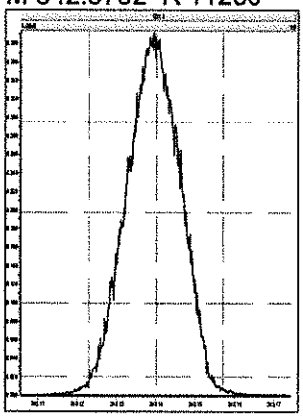
File: Experiment: dioxin_db5ms.exp Reference: pfk.ref Function: 2 @ 200 (ppm)

Printed: Tuesday, August 15, 2017 10:30:58 Eastern Standard Time

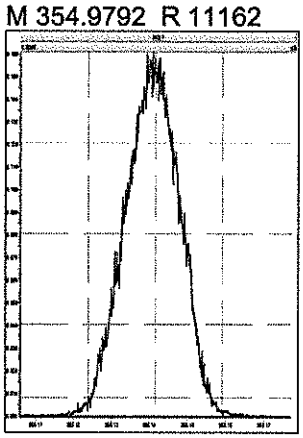
M 330.9792 R 11161



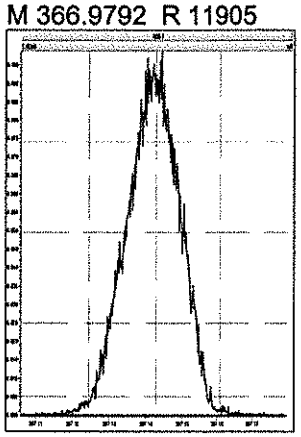
M 342.9792 R 11260



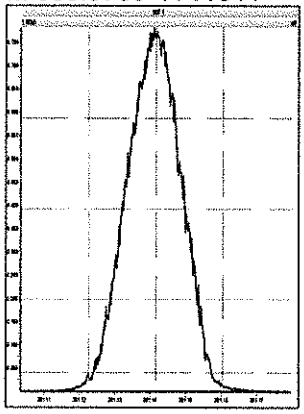
M 354.9792 R 11162



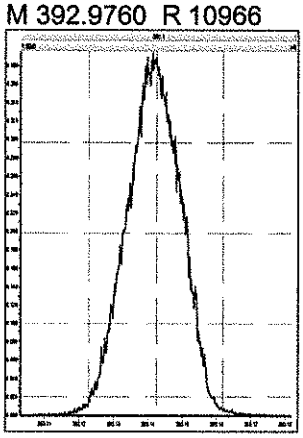
M 366.9792 R 11905



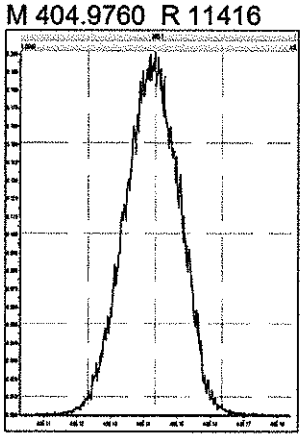
M 380.9760 R 11311



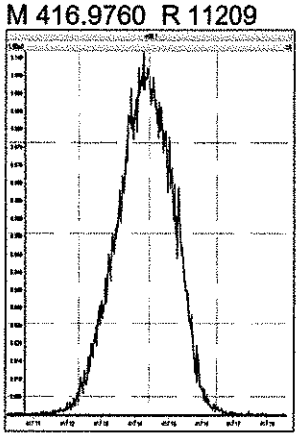
M 392.9760 R 10966



M 404.9760 R 11416



M 416.9760 R 11209



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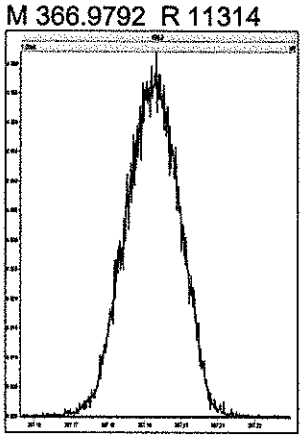
Experiment Calibration Report **MassLynx 4.1**

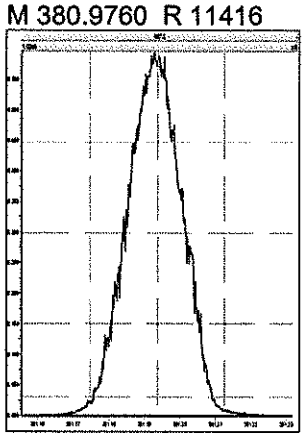
File: Experiment: dioxin_db5ms.exp Reference: pfk.ref Function: 3 @ 200 (ppm)

Printed: Tuesday, August 15, 2017 10:31:29 Eastern Standard Time

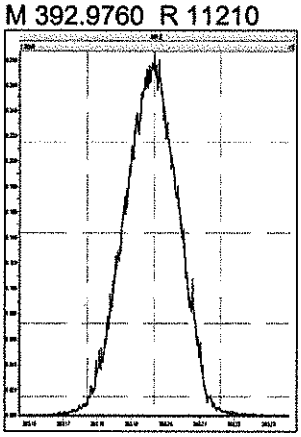
M 366.9792 R 11314



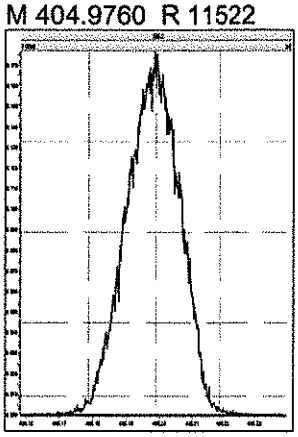
M 380.9760 R 11416



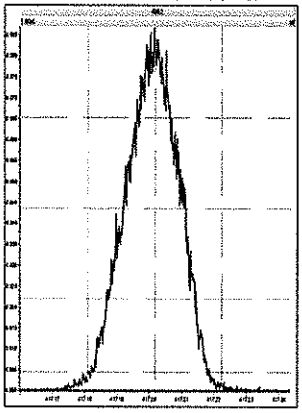
M 392.9760 R 11210



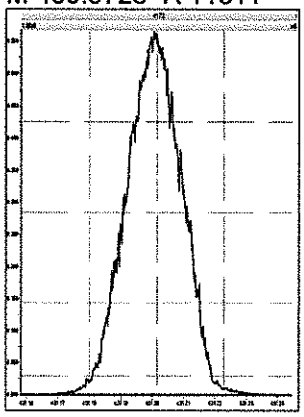
M 404.9760 R 11522



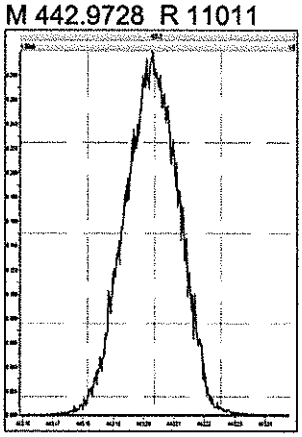
M 416.9760 R 11312



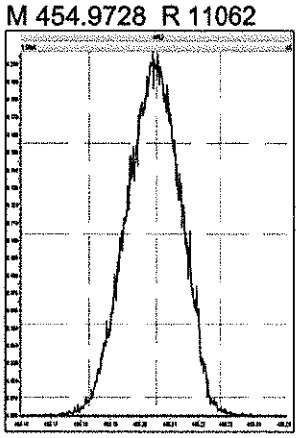
M 430.9728 R 11311



M 442.9728 R 11011



M 454.9728 R 11062



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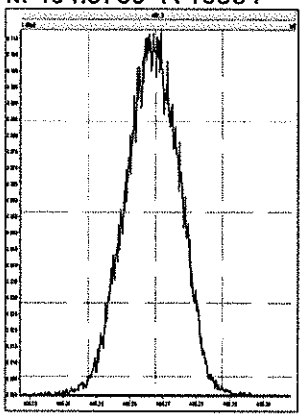
Experiment Calibration Report **MassLynx 4.1**

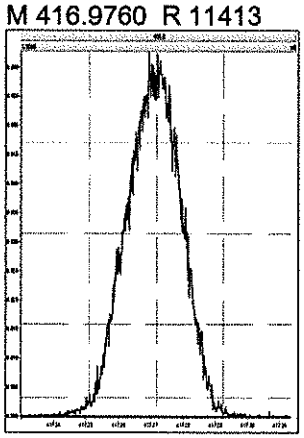
File: Experiment: dioxin_db5ms.exp Reference: pfk.ref Function: 4 @ 200 (ppm)

Printed: Tuesday, August 15, 2017 10:32:04 Eastern Standard Time

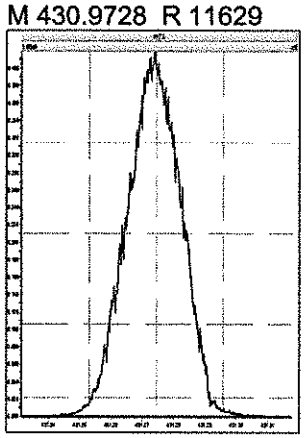
M 404.9760 R 10964



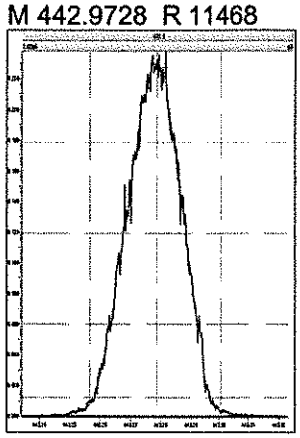
M 416.9760 R 11413



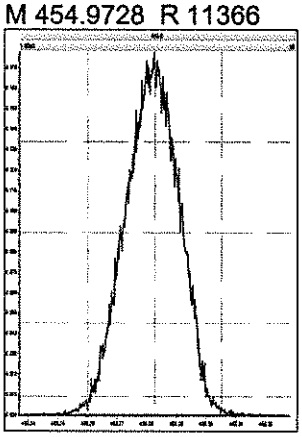
M 430.9728 R 11629



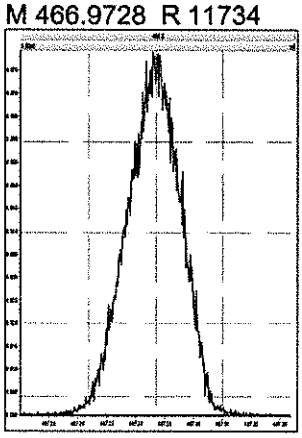
M 442.9728 R 11468



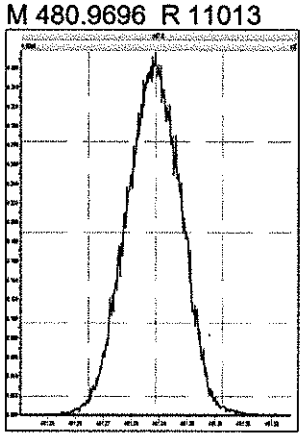
M 454.9728 R 11366



M 466.9728 R 11734



M 480.9696 R 11013



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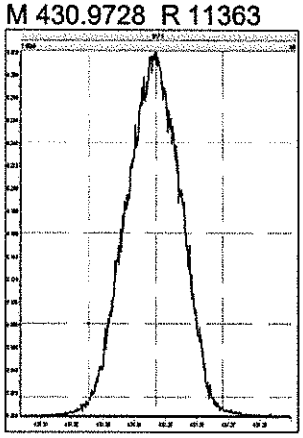
Experiment Calibration Report **MassLynx 4.1** Page 1 of 1

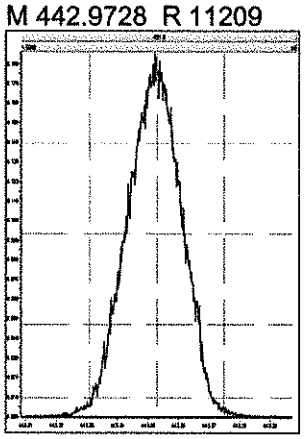
File: Experiment: dioxin_db5ms.exp Reference: pfk.ref Function: 5 @ 200 (ppm)

Printed: Tuesday, August 15, 2017 10:32:39 Eastern Standard Time

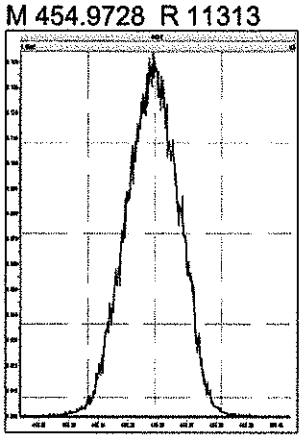
M 430.9728 R 11363



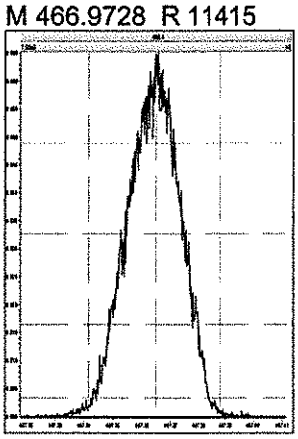
M 442.9728 R 11209



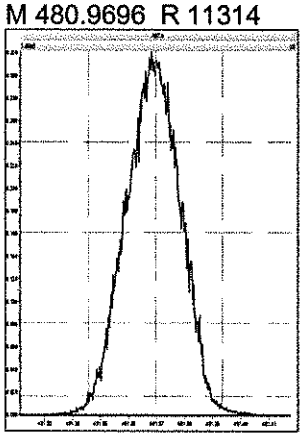
M 454.9728 R 11313



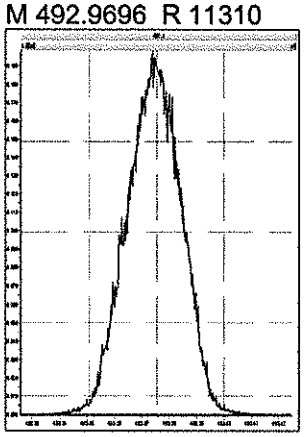
M 466.9728 R 11415



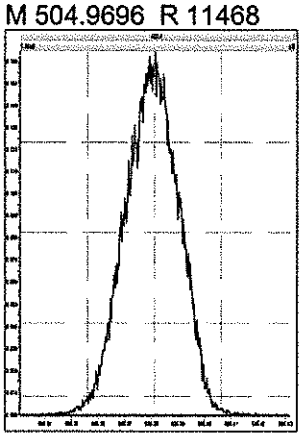
M 480.9696 R 11314



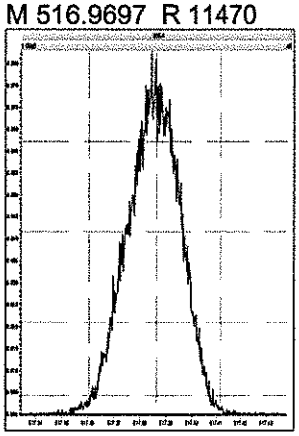
M 492.9696 R 11310



M 504.9696 R 11468



M 516.9697 R 11470



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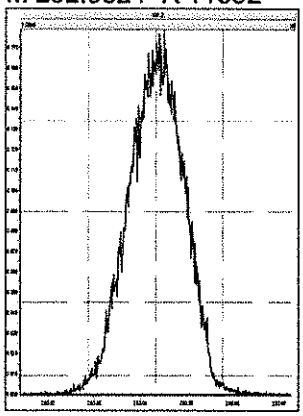
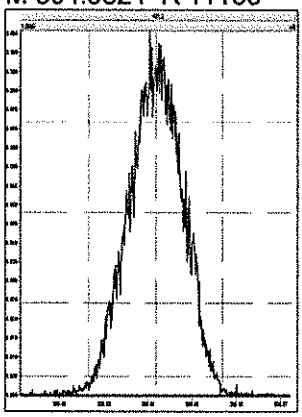
Resolution Check Report MassLynx 4.1

Printed: Tuesday, August 15, 2017 18:46:11 Eastern Standard Time

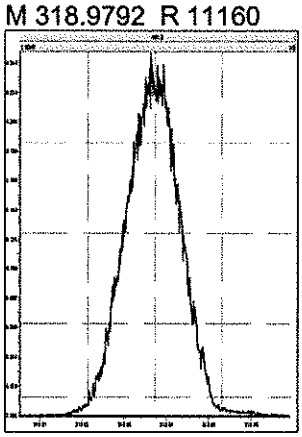
M 292.9824 R 11392



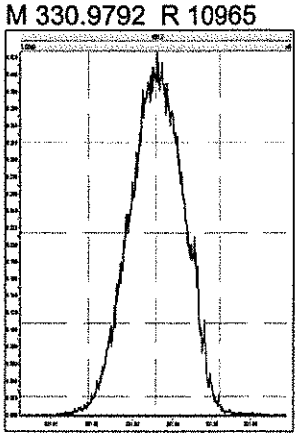
M 304.9824 R 11135



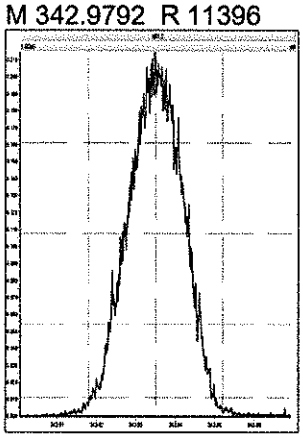
M 318.9792 R 11160



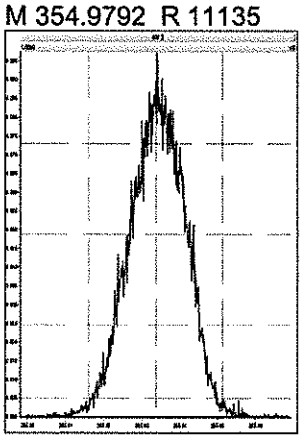
M 330.9792 R 10965



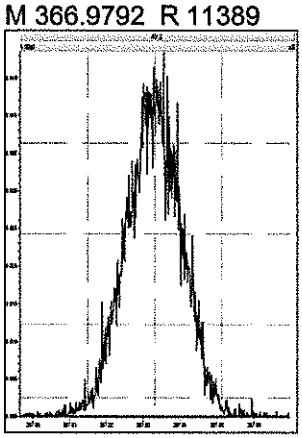
M 342.9792 R 11396



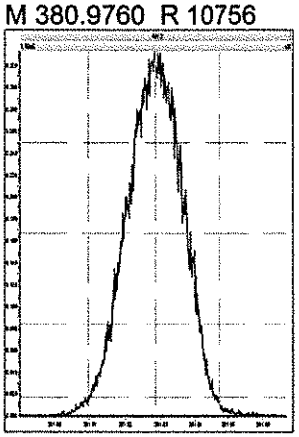
M 354.9792 R 11135



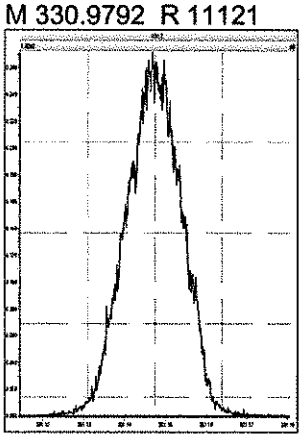
M 366.9792 R 11389



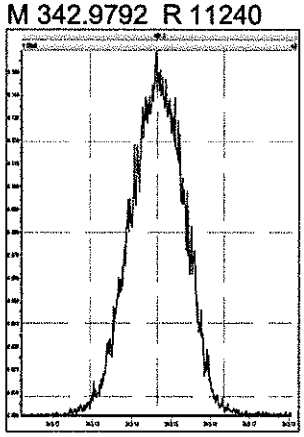
M 380.9760 R 10756



M 330.9792 R 11121



M 342.9792 R 11240



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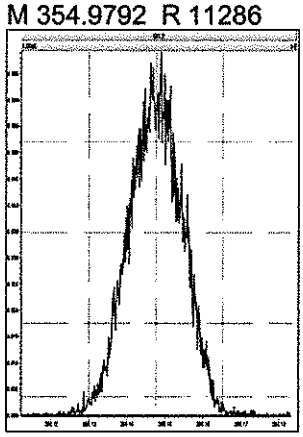
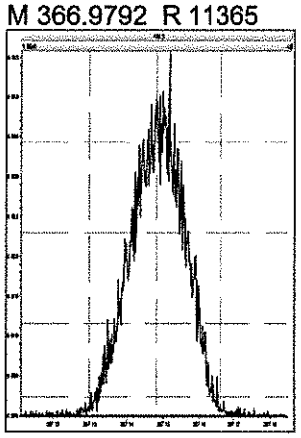
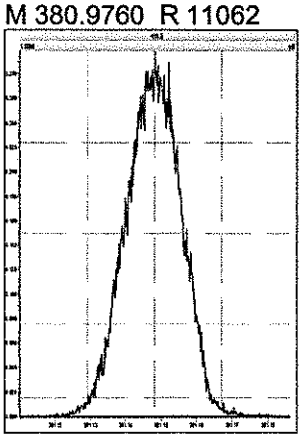


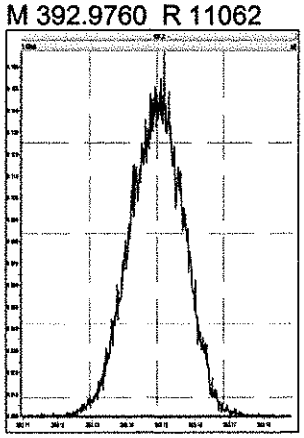
M 366.9792 R 11365



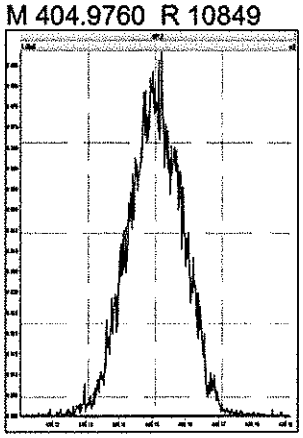
M 380.9760 R 11062



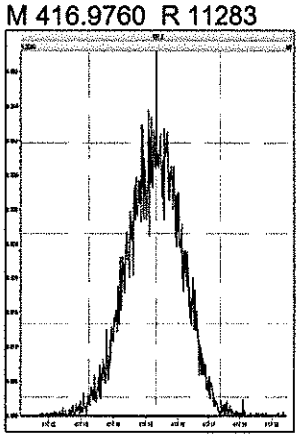
M 392.9760 R 11062



M 404.9760 R 10849



M 416.9760 R 11283



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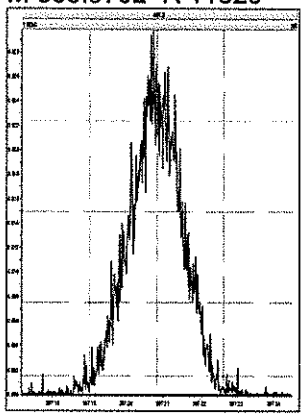
PFK6H Inst: HRP763_1 Cl

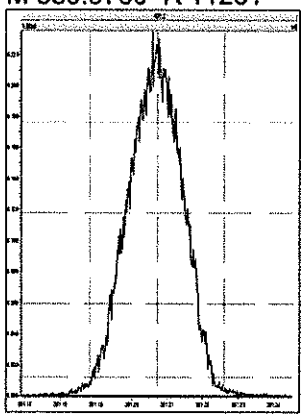
Resolution Check Report **MassLynx 4.1**

Printed: Tuesday, August 15, 2017 18:46:11 Eastern Standard Time

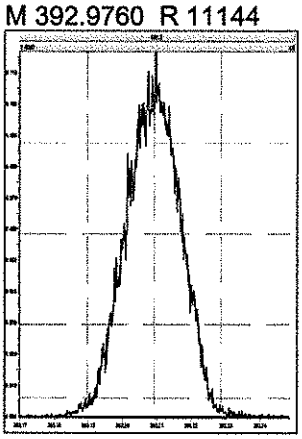
M 366.9792 R 11520



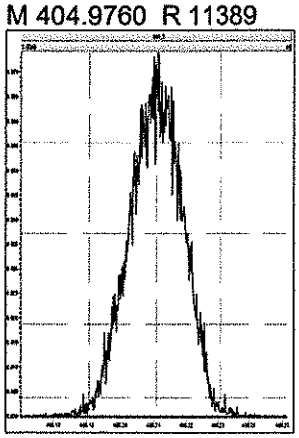
M 380.9760 R 11261



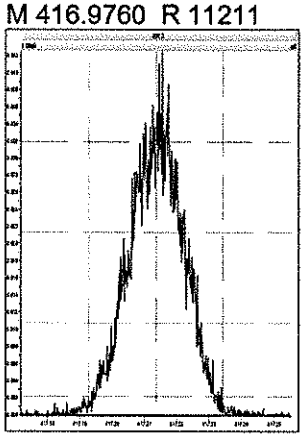
M 392.9760 R 11144



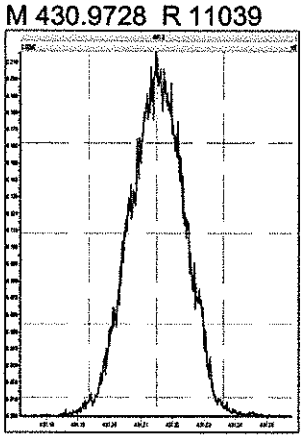
M 404.9760 R 11389



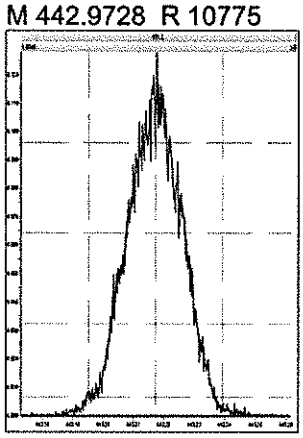
M 416.9760 R 11211



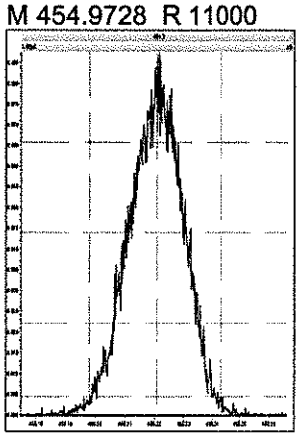
M 430.9728 R 11039



M 442.9728 R 10775



M 454.9728 R 11000



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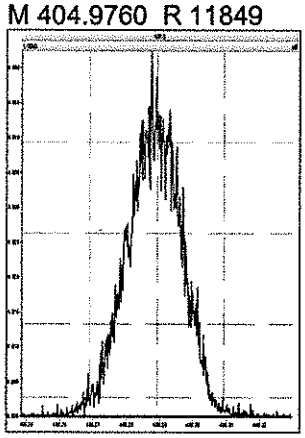
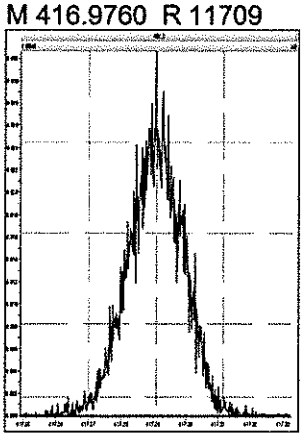
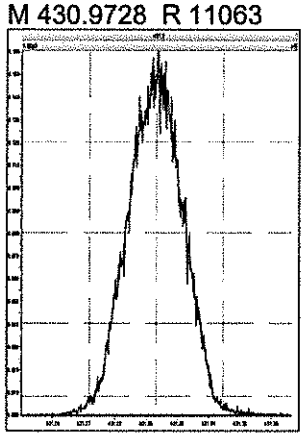


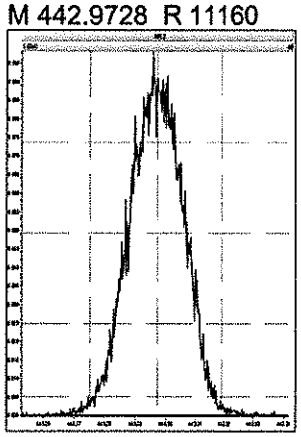
M 416.9760 R 11709



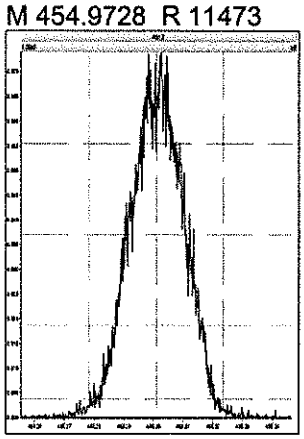
M 430.9728 R 11063



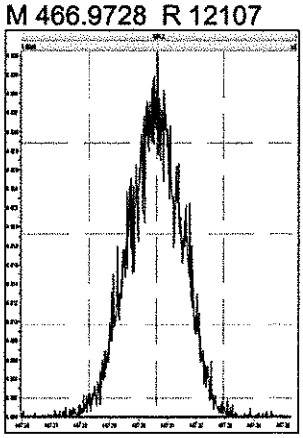
M 442.9728 R 11160



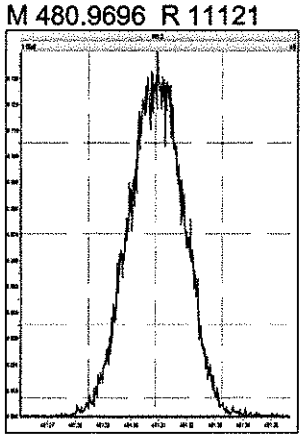
M 454.9728 R 11473



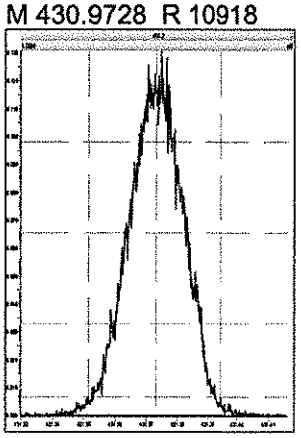
M 466.9728 R 12107



M 480.9696 R 11121



M 430.9728 R 10918



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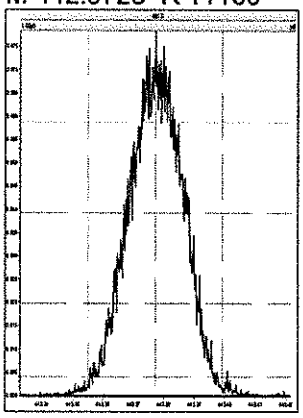
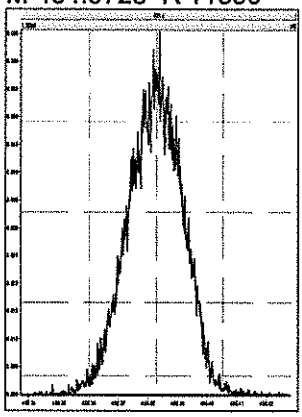
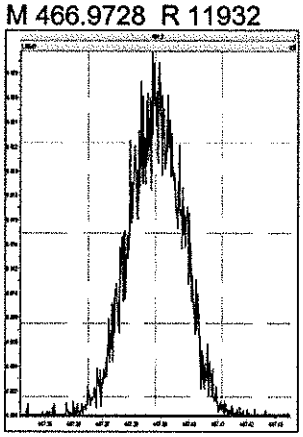
M 442.9728 R 11160



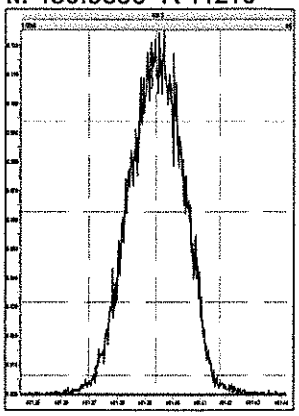
M 454.9728 R 11390



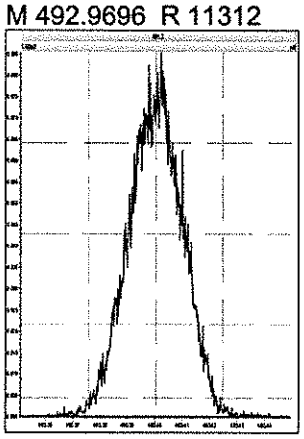
M 466.9728 R 11932



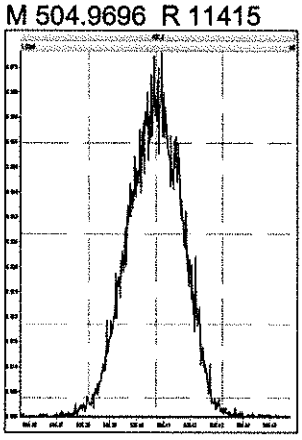
M 480.9696 R 11210



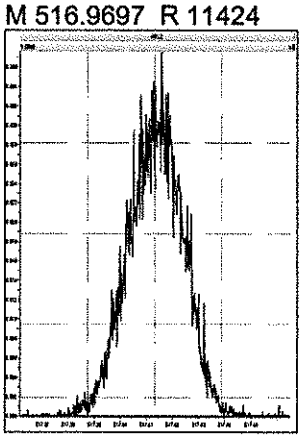
M 492.9696 R 11312



M 504.9696 R 11415



M 516.9697 R 11424



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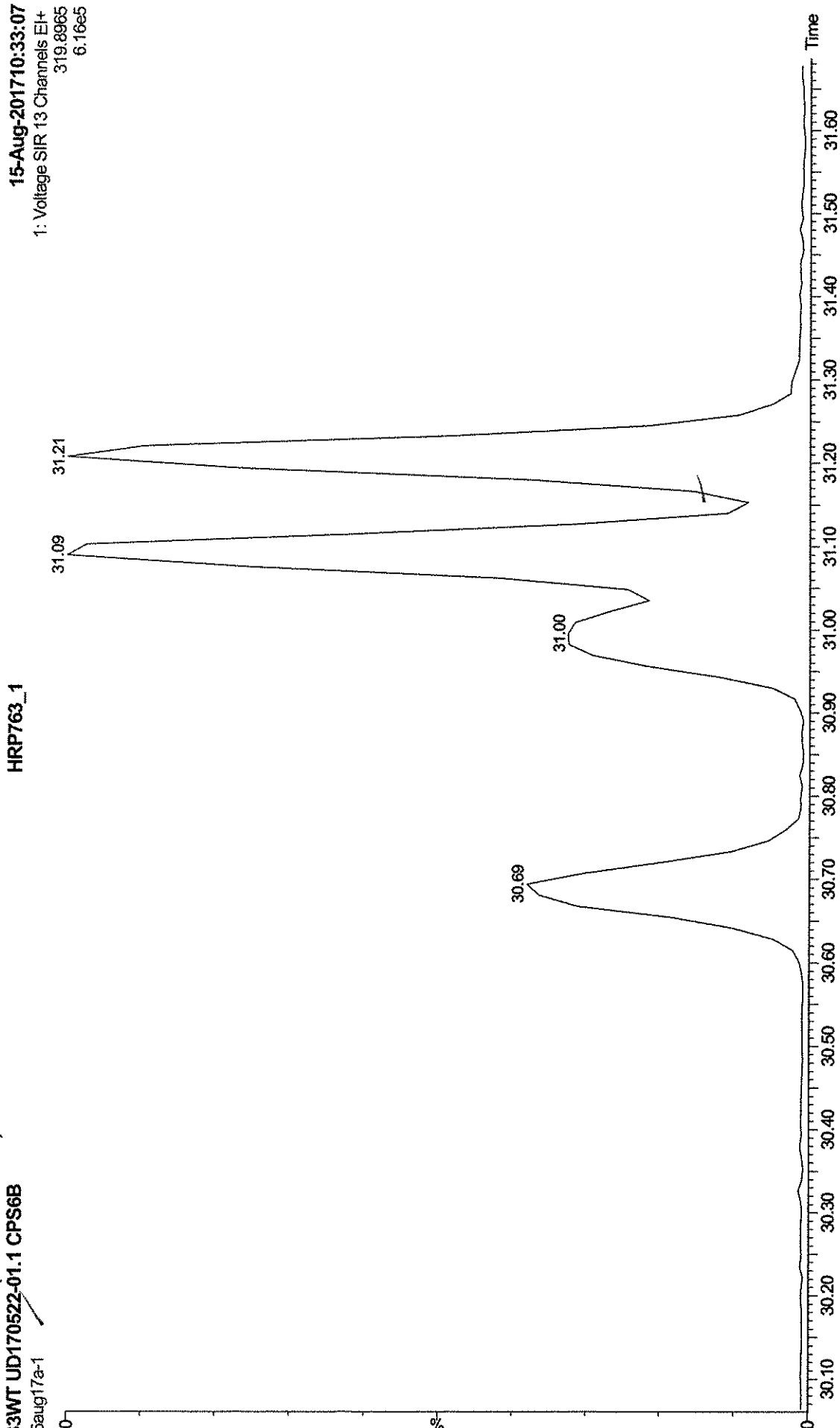

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Quantify Sample Summary Report **MassLynx 4.1**
Method DLM Window Defining Report

Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b15aug17a-1.qld

Last Altered: Wednesday, August 16, 2017 09:29:13 Eastern Standard Time
Printed: Wednesday, August 16, 2017 09:33:04 Eastern Standard Time

Method: C:\MassLynx\Default.pro\Methdb\WDM_b09aug17.mdb 11 Aug 2017 08:52:22
Calibration: C:\MassLynx\DEFAULT.PRO\CurveDB\8290-b15aug17.cdb 16 Aug 2017 08:20:31

Name: b15aug17a-1, Date: 15-Aug-2017, Time: 10:33:07, ID: CS3WT UD170522-01.1 CPS6B, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

	Name	RT
1	First TCDF	26.17
2	Last TCDF	31.87
3	First PeCDF	31.87
4	Last PeCDF	34.51
5	First HxCDF	35.03
6	Last HxCDF	37.29
7	First HpCDF	38.78
8	Last HpCDF	40.67
9	OCDF	44.50
10	First TCDD	27.89
11	2378-TCDD	31.21
12	Last TCDD	31.81
13	First PeCDD	32.76
14	Last PeCDD	34.34
15	First HxCDD	35.44
16	Last HxCDD	36.98
17	First HpCDD	39.11
18	Last HpCDD	40.02
19	OCDD	44.21

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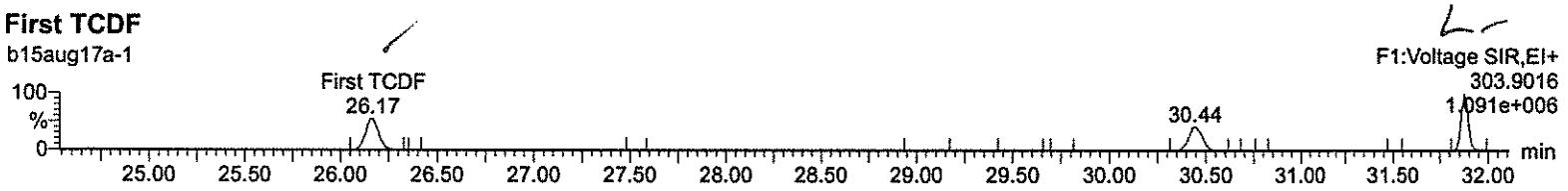
Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b15aug17a-1.qld

Last Altered: Wednesday, August 16, 2017 09:29:13 Eastern Standard Time
Printed: Wednesday, August 16, 2017 09:33:04 Eastern Standard Time

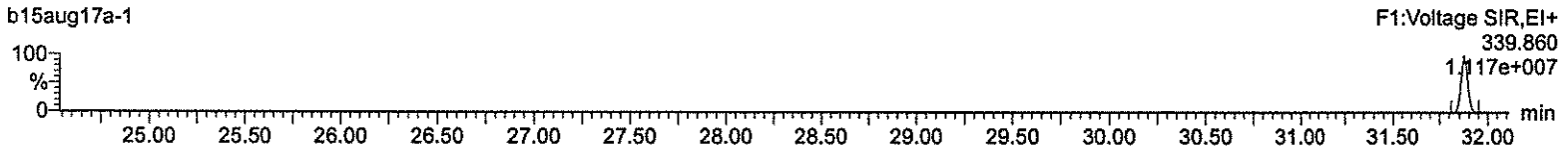
Method: C:\MassLynx\Default.pro\Methdb\WDM_b09aug17.mdb 11 Aug 2017 08:52:22
Calibration: C:\MassLynx\DEFAULT.PRO\CurveDB\8290-b15aug17.cdb 16 Aug 2017 08:20:31

Name: b15aug17a-1, Date: 15-Aug-2017, Time: 10:33:07, ID: CS3WT UD170522-01.1 CPS6B, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

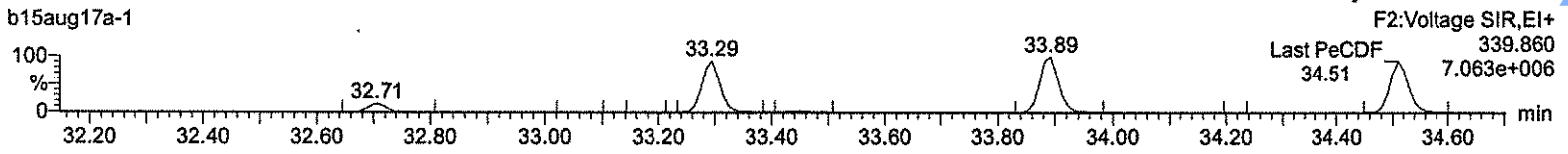
First TCDF



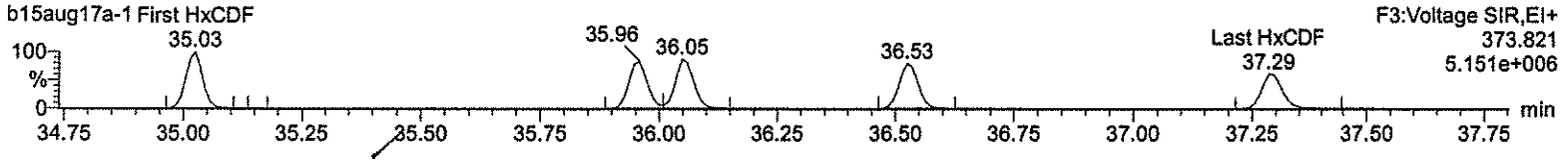
First PeCDF



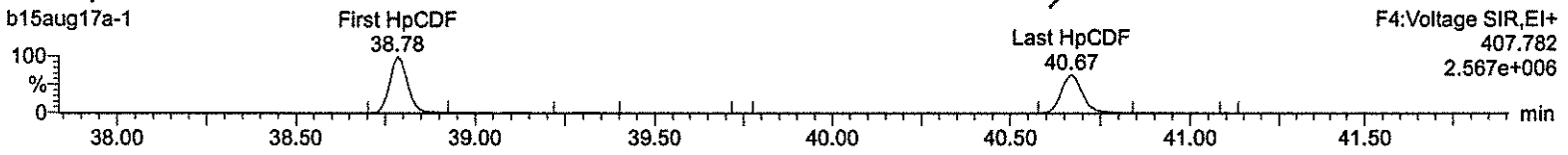
Last PeCDF



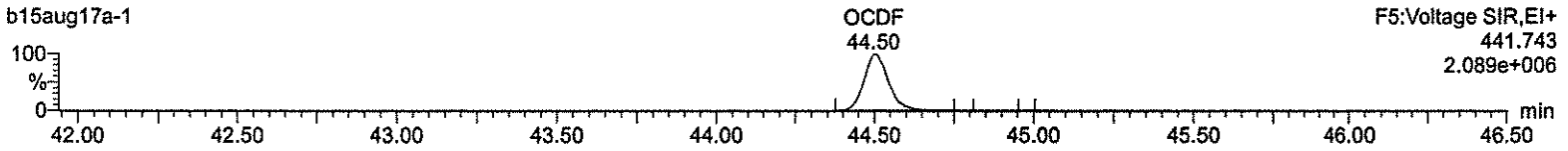
First HxCDF



First HpCDF



OCDF



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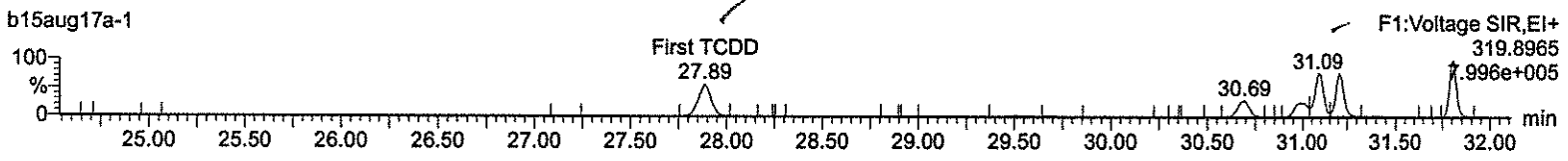
Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b15aug17a-1.qld

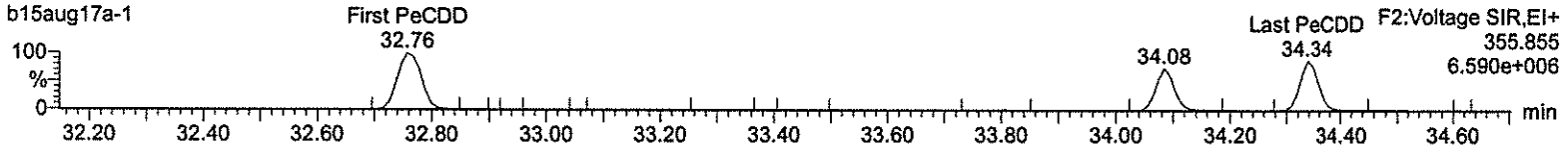
Last Altered: Wednesday, August 16, 2017 09:29:13 Eastern Standard Time
Printed: Wednesday, August 16, 2017 09:33:04 Eastern Standard Time

Name: b15aug17a-1, Date: 15-Aug-2017, Time: 10:33:07, ID: CS3WT UD170522-01.1 CPS6B, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

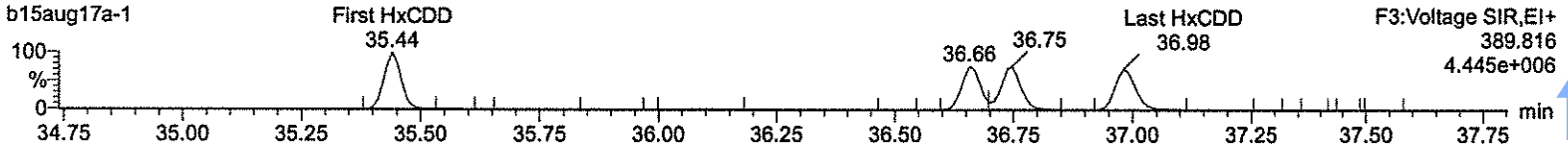
First TCDD



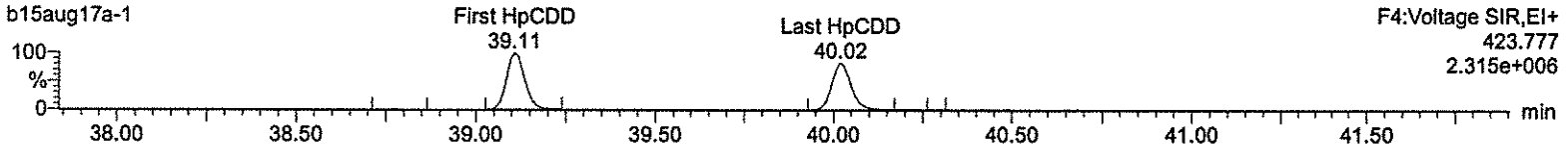
First PeCDD



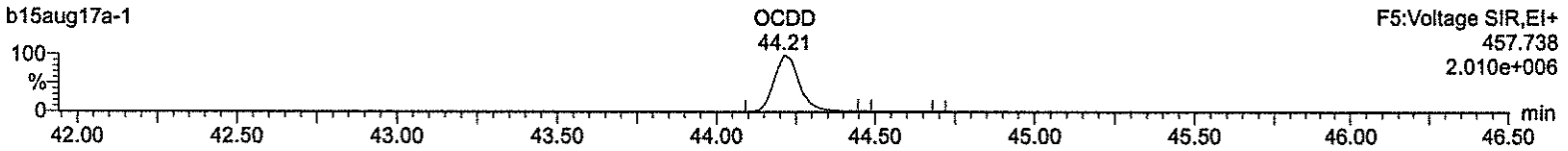
First HxCDD



First HpCDD



OCDD



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Method: C:\MassLynx\Default.pro\Methdb\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: C:\MassLynx\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Date: 15-Aug-2017, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

	Name	ICAL RRF
1	2378-TCDD	0.891
2	12378-PeCDD	0.789
3	123478-HxCDD	0.838
4	123678-HxCDD	0.840
5	123789-HxCDD	0.814
6	1234678-HpCDD	1.003
7	OCDD	0.910
8	2378-TCDF	0.921
9	12378-PeCDF	0.822
10	23478-PeCDF	0.926
11	123478-HxCDF	0.998
12	123678-HxCDF	0.934
13	234678-HxCDF	1.033
14	123789-HxCDF	0.953
15	1234678-HpCDF	1.097
16	1234789-HpCDF	1.109
17	OCDF	0.922
18	13C-2378-TCDD	1.142
19	13C-12378-PeCDD	0.962
20	13C-123478-HxCDD	1.027
21	13C-123678-HxCDD	1.123
22	13C-1234678-HpCDD	0.753
23	13C-OCDD	0.726
24	13C-2378-TCDF	1.337
25	13C-12378-PeCDF	1.242
26	13C-23478-PeCDF	1.234
27	13C-123478-HxCDF	1.099
28	13C-123678-HxCDF	1.272
29	13C-234678-HxCDF	1.079
30	13C-123789-HxCDF	0.987
31	13C-1234678-HpCDF	0.849
32	13C-1234789-HpCDF	0.675
33	13C-1234-TCDD	1.000
34	13C-123789-HxCDD	1.000
35	37Cl-2378-TCDD	1.161

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Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

16Aug17

Method: C:\MassLynx\Default.pro\Methdb\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: 16 Aug 2017 10:15:01

2378 TCDD CS0.5 RRF = $\frac{(1.9193)(100)}{(8.3905)(0.25)} = 0.911$

Compound name: 2378-TCDD
Response Factor: 0.890842
RRF SD: 0.0396812, Relative SD: 4.45434
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

RRFSD = $\sqrt{\frac{0.007905}{5}} = 0.039762$

$\frac{0.039762}{0.891} \times 100 = 4.4624$

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	0.250	31.21	0.26	0.911	0.891	bd
b15aug17a-4	CS1 UD170815-02 CS13F	0.500	31.19	0.47	0.831	0.891	bb
b15aug17a-5	CS2 UD170815-03 CS23E	2.000	31.19	1.92	0.855	0.891	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	10.000	31.19	10.14	0.903	0.891	bb
b15aug17a-7	CS4 UD170815-05 CS43D	40.000	31.21	40.71	0.907	0.891	bb
b15aug17a-8	CS5 UD170815-06 CS53F	200.000	31.19	210.53	0.938	0.891	bb

Compound name: 12378-PeCDD
Response Factor: 0.789284
RRF SD: 0.0267149, Relative SD: 3.3847
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	34.09	1.21	0.767	0.789	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	34.08	2.42	0.763	0.789	bb
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	34.08	9.70	0.766	0.789	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	34.07	51.56	0.814	0.789	bb
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	34.09	204.99	0.809	0.789	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	34.07	1035.89	0.818	0.789	bb

Compound name: 123478-HxCDD
Response Factor: 0.837576
RRF SD: 0.040189, Relative SD: 4.79825
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	36.65	1.20	0.804	0.838	bd
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	36.66	2.35	0.786	0.838	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	36.65	9.78	0.819	0.838	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	36.65	51.21	0.858	0.838	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	36.66	209.06	0.876	0.838	bd
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	36.65	1054.48	0.883	0.838	bd

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Compound name: 123678-HxCDD
Response Factor: 0.840171
RRF SD: 0.0396039, Relative SD: 4.71379
Response type: Internal Std (Ref 21), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	36.74	1.23	0.827	0.840	db
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	36.74	2.31	0.777	0.840	db
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	36.73	9.76	0.820	0.840	db
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	36.73	51.26	0.861	0.840	db
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	36.74	207.82	0.873	0.840	db
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	36.73	1050.15	0.882	0.840	db

Compound name: 123789-HxCDD
Response Factor: 0.814232
RRF SD: 0.0259724, Relative SD: 3.18981
Response type: Internal Std (Ref Multiple), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	36.98	1.21	0.787	0.814	bd
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	36.98	2.44	0.794	0.814	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	36.97	9.74	0.793	0.814	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	36.97	51.49	0.838	0.814	bb
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	36.98	202.67	0.825	0.814	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	36.97	1040.62	0.847	0.814	bb

Compound name: 1234678-HpCDD
Response Factor: 1.00252
RRF SD: 0.0375376, Relative SD: 3.74431
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	40.02	1.24	0.993	1.003	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	40.02	2.34	0.938	1.003	bb
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	40.00	10.03	1.006	1.003	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	40.01	49.94	1.001	1.003	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	40.01	204.63	1.026	1.003	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	40.00	1047.70	1.050	1.003	bb

Compound name: OCDD
Response Factor: 0.910326
RRF SD: 0.0345333, Relative SD: 3.79351
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	2.500	44.20	2.39	0.870	0.910	bb
b15aug17a-4	CS1 UD170815-02 CS13F	5.000	44.21	5.25	0.955	0.910	bb
b15aug17a-5	CS2 UD170815-03 CS23E	20.000	44.19	19.18	0.873	0.910	bd

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Compound name: OCDD

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	44.19	99.64	0.907	0.910	bd
b15aug17a-7	CS4 UD170815-05 CS43D	400.000	44.20	402.90	0.917	0.910	bb
b15aug17a-8	CS5 UD170815-06 CS53F	2000.000	44.20	2064.41	0.940	0.910	bb

Compound name: 2378-TCDF
Response Factor: 0.920717
RRF SD: 0.0230046, Relative SD: 2.49856
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	0.250	30.44	0.25	0.930	0.921	bb
b15aug17a-4	CS1 UD170815-02 CS13F	0.500	30.44	0.49	0.909	0.921	bb
b15aug17a-5	CS2 UD170815-03 CS23E	2.000	30.42	1.94	0.895	0.921	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	10.000	30.43	9.78	0.900	0.921	bb
b15aug17a-7	CS4 UD170815-05 CS43D	40.000	30.43	40.60	0.935	0.921	bd
b15aug17a-8	CS5 UD170815-06 CS53F	200.000	30.42	207.43	0.955	0.921	bb

Compound name: 12378-PeCDF
Response Factor: 0.822065
RRF SD: 0.0343931, Relative SD: 4.18375
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	33.28	1.21	0.795	0.822	bd
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	33.29	2.34	0.770	0.822	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	33.28	9.99	0.822	0.822	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	33.28	51.50	0.847	0.822	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	33.28	203.42	0.836	0.822	bd
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	33.28	1049.73	0.863	0.822	bb

Compound name: 23478-PeCDF
Response Factor: 0.926478
RRF SD: 0.0266043, Relative SD: 2.87155
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	33.88	1.21	0.896	0.926	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	33.89	2.43	0.900	0.926	bb
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	33.88	9.87	0.914	0.926	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	33.88	50.64	0.938	0.926	bb
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	33.88	205.38	0.951	0.926	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	33.88	1034.54	0.958	0.926	bb

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Compound name: 123478-HxCDF
Response Factor: 0.99831
RRF SD: 0.0501135, Relative SD: 5.01983
Response type: Internal Std (Ref 27), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	35.95	1.15	0.917	0.998	bd
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	35.95	2.41	0.964	0.998	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	35.94	9.96	0.994	0.998	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	35.95	51.80	1.034	0.998	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	35.95	207.28	1.035	0.998	bd
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	35.94	1046.83	1.045	0.998	bd

Compound name: 123678-HxCDF
Response Factor: 0.934018
RRF SD: 0.0397506, Relative SD: 4.25587
Response type: Internal Std (Ref 28), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	36.05	1.20	0.896	0.934	db
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	36.06	2.34	0.874	0.934	db
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	36.04	10.29	0.961	0.934	dd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	36.04	50.49	0.943	0.934	db
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	36.05	204.44	0.955	0.934	db
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	36.04	1043.88	0.975	0.934	db

Compound name: 234678-HxCDF
Response Factor: 1.03257
RRF SD: 0.0448711, Relative SD: 4.34556
Response type: Internal Std (Ref 29), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	36.53	1.17	0.966	1.033	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	36.52	2.41	0.994	1.033	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	36.51	9.97	1.029	1.033	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	36.51	51.49	1.063	1.033	bb
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	36.53	206.77	1.068	1.033	bd
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	36.51	1041.92	1.076	1.033	bd

Compound name: 123789-HxCDF
Response Factor: 0.953148
RRF SD: 0.0461039, Relative SD: 4.83701
Response type: Internal Std (Ref 30), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	37.29	1.18	0.904	0.953	bd
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	37.28	2.34	0.893	0.953	bb
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	37.28	9.95	0.948	0.953	bb

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Compound name: 123789-HxCDF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	37.28	51.52	0.982	0.953	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	37.29	209.46	0.998	0.953	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	37.28	1042.81	0.994	0.953	bb

Compound name: 1234678-HpCDF
Response Factor: 1.09654
RRF SD: 0.0436776, Relative SD: 3.9832
Response type: Internal Std (Ref 31), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	38.78	1.20	1.051	1.097	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	38.78	2.41	1.056	1.097	bb
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	38.77	9.72	1.066	1.097	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	38.77	51.39	1.127	1.097	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	38.78	206.92	1.134	1.097	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	38.77	1044.92	1.146	1.097	bb

Compound name: 1234789-HpCDF
Response Factor: 1.10889
RRF SD: 0.0723086, Relative SD: 6.52078
Response type: Internal Std (Ref 32), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	40.66	1.15	1.024	1.109	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	40.67	2.36	1.046	1.109	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	40.65	9.59	1.064	1.109	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	40.65	52.14	1.156	1.109	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	40.66	213.29	1.183	1.109	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	40.65	1065.11	1.181	1.109	bb

Compound name: OCDF
Response Factor: 0.922127
RRF SD: 0.067038, Relative SD: 7.26993
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	2.500	44.51	2.34	0.863	0.922	bd
b15aug17a-4	CS1 UD170815-02 CS13F	5.000	44.50	4.59	0.847	0.922	bd
b15aug17a-5	CS2 UD170815-03 CS23E	20.000	44.48	19.31	0.890	0.922	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	44.49	101.37	0.935	0.922	bb
b15aug17a-7	CS4 UD170815-05 CS43D	400.000	44.49	428.39	0.988	0.922	bd
b15aug17a-8	CS5 UD170815-06 CS53F	2000.000	44.49	2191.73	1.011	0.922	bb

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Compound name: 13C-2378-TCDD
Response Factor: 1.14196
RRF SD: 0.0335753, Relative SD: 2.94016
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	31.18	98.80	1.128	1.142	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	31.19	99.23	1.133	1.142	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	31.18	98.33	1.123	1.142	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	31.18	98.42	1.124	1.142	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	31.18	99.27	1.134	1.142	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	31.18	105.95	1.210	1.142	bb

Compound name: 13C-12378-PeCDD
Response Factor: 0.961508
RRF SD: 0.0420986, Relative SD: 4.37839
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	34.08	102.17	0.982	0.962	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	34.07	100.66	0.968	0.962	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	34.07	98.29	0.945	0.962	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	34.06	95.02	0.914	0.962	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	34.08	96.66	0.929	0.962	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	34.06	107.20	1.031	0.962	bb

Compound name: 13C-123478-HxCDD
Response Factor: 1.02706
RRF SD: 0.00755639, Relative SD: 0.735729
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	36.65	100.86	1.036	1.027	bd
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	36.65	100.19	1.029	1.027	bd
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	36.64	99.33	1.020	1.027	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	36.64	99.25	1.019	1.027	bd
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	36.65	100.83	1.036	1.027	bd
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	36.64	99.53	1.022	1.027	bd

Compound name: 13C-123678-HxCDD
Response Factor: 1.12337
RRF SD: 0.0203759, Relative SD: 1.81382
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	36.73	96.88	1.088	1.123	db
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	36.73	100.58	1.130	1.123	db
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	36.72	99.03	1.112	1.123	db

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Compound name: 13C-123678-HxCDD

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	36.72	100.50	1.129	1.123	db
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	36.73	100.93	1.134	1.123	db
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	36.72	102.09	1.147	1.123	db

Compound name: 13C-1234678-HpCDD
Response Factor: 0.753246
RRF SD: 0.0155947, Relative SD: 2.07033
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	40.00	97.66	0.736	0.753	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	40.00	103.58	0.780	0.753	bd
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	39.99	99.55	0.750	0.753	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	39.99	100.74	0.759	0.753	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	40.00	98.45	0.742	0.753	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	39.99	100.01	0.753	0.753	bb

Compound name: 13C-OCDD
Response Factor: 0.725528
RRF SD: 0.0296316, Relative SD: 4.08414
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	200.000	44.19	192.73	0.699	0.726	bb
b15aug17a-4	CS1 UD170815-02 CS13F	200.000	44.19	202.47	0.735	0.726	bb
b15aug17a-5	CS2 UD170815-03 CS23E	200.000	44.18	203.53	0.738	0.726	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	200.000	44.18	196.57	0.713	0.726	bb
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	44.19	191.41	0.694	0.726	bb
b15aug17a-8	CS5 UD170815-06 CS53F	200.000	44.19	213.29	0.774	0.726	bb

Compound name: 13C-2378-TCDF
Response Factor: 1.33654
RRF SD: 0.0214119, Relative SD: 1.60204
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	30.42	100.77	1.347	1.337	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	30.42	99.30	1.327	1.337	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	30.41	98.22	1.313	1.337	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	30.41	99.28	1.327	1.337	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	30.41	99.62	1.331	1.337	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	30.39	102.81	1.374	1.337	bb

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Compound name: 13C-12378-PeCDF
Response Factor: 1.24228
RRF SD: 0.0382551, Relative SD: 3.07942
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	33.27	99.24	1.233	1.242	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	33.28	101.20	1.257	1.242	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	33.27	99.04	1.230	1.242	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	33.27	96.45	1.198	1.242	bd
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	33.28	98.60	1.225	1.242	bd
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	33.27	105.47	1.310	1.242	bb

Compound name: 13C-23478-PeCDF
Response Factor: 1.23372
RRF SD: 0.0518066, Relative SD: 4.19922
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	33.87	101.02	1.246	1.234	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	33.88	100.54	1.240	1.234	db
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	33.86	98.66	1.217	1.234	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	33.87	96.08	1.185	1.234	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	33.87	96.25	1.187	1.234	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	33.87	107.46	1.326	1.234	bb

Compound name: 13C-123478-HxCDF
Response Factor: 1.09893
RRF SD: 0.00909923, Relative SD: 0.828008
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	35.94	100.46	1.104	1.099	bd
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	35.94	100.34	1.103	1.099	bd
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	35.93	99.20	1.090	1.099	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	35.93	99.82	1.097	1.099	bd
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	35.94	101.19	1.112	1.099	bd
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	35.93	98.99	1.088	1.099	bd

Compound name: 13C-123678-HxCDF
Response Factor: 1.27191
RRF SD: 0.0313079, Relative SD: 2.46149
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	36.04	97.54	1.241	1.272	db
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	36.04	100.16	1.274	1.272	db
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	36.03	96.45	1.227	1.272	db

Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

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Compound name: 13C-123678-HxCDF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	36.03	101.93	1.296	1.272	dd
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	36.04	102.28	1.301	1.272	dd
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	36.03	101.64	1.293	1.272	dd

Compound name: 13C-234678-HxCDF
Response Factor: 1.07916
RRF SD: 0.0110759, Relative SD: 1.02635
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	36.52	98.73	1.065	1.079	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	36.51	99.55	1.074	1.079	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	36.51	100.00	1.079	1.079	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	36.50	99.53	1.074	1.079	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	36.51	101.74	1.098	1.079	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	36.51	100.45	1.084	1.079	bd

Compound name: 13C-123789-HxCDF
Response Factor: 0.987065
RRF SD: 0.012397, Relative SD: 1.25595
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	37.28	101.90	1.006	0.987	bd
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	37.27	99.09	0.978	0.987	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	37.27	99.17	0.979	0.987	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	37.26	99.56	0.983	0.987	bd
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	37.28	99.02	0.977	0.987	bd
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	37.26	101.26	0.999	0.987	bd

Compound name: 13C-1234678-HpCDF
Response Factor: 0.849447
RRF SD: 0.01276, Relative SD: 1.50215
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	38.76	98.13	0.834	0.849	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	38.76	102.49	0.871	0.849	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	38.76	100.30	0.852	0.849	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	38.76	100.07	0.850	0.849	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	38.76	98.80	0.839	0.849	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	38.76	100.20	0.851	0.849	bb

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Compound name: 13C-1234789-HpCDF
Response Factor: 0.675226
RRF SD: 0.0139153, Relative SD: 2.06084
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	40.65	97.13	0.656	0.675	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	40.65	102.19	0.690	0.675	bd
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	40.64	102.01	0.689	0.675	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	40.64	99.50	0.672	0.675	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	40.65	98.25	0.663	0.675	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	40.64	100.91	0.681	0.675	bb

Compound name: 13C-1234-TCDD
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	30.65	100.00	1.000	1.000	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	30.65	100.00	1.000	1.000	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	30.64	100.00	1.000	1.000	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	30.65	100.00	1.000	1.000	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	30.66	100.00	1.000	1.000	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	30.64	100.00	1.000	1.000	bb

Compound name: 13C-123789-HxCDD
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	36.97	100.00	1.000	1.000	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	36.97	100.00	1.000	1.000	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	36.96	100.00	1.000	1.000	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	36.96	100.00	1.000	1.000	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	36.97	100.00	1.000	1.000	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	36.96	100.00	1.000	1.000	bb

Compound name: 37Cl-2378-TCDD
Response Factor: 1.16079
RRF SD: 0.0627548, Relative SD: 5.40623
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	0.250	31.21	0.24	1.113	1.161	bb
b15aug17a-4	CS1 UD170815-02 CS13F	0.500	31.19	0.52	1.197	1.161	bb
b15aug17a-5	CS2 UD170815-03 CS23E	2.000	31.19	1.88	1.089	1.161	bb

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Compound name: 37Cl-2378-TCDD

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-6	CS3 UD170815-04 CS3A1	10.000	31.19	9.82	1.140	1.161	bb
b15aug17a-7	CS4 UD170815-05 CS43D	40.000	31.21	40.10	1.164	1.161	bb
b15aug17a-8	CS5 UD170815-06 CS53F	200.000	31.19	217.62	1.263	1.161	bb

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Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

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Method: C:\MassLynx\Default.pro\Methdb\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: 16 Aug 2017 10:15:01

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	7.99e2	1.11e3	1.91e3	31.21	1.001	0.72	NO	0.256	0.911	0.891	4.45	0.0393	1.71e4	1365	12.6	2.04e4	711	28.6	bd	bb
2	12378-PeCDD	4.22e3	2.79e3	7.00e3	34.09	1.000	1.51	NO	1.214	0.767	0.789	3.38	0.0259	9.89e4	866	114.2	6.68e4	562	118.8	bb	bb
3	123478-HxCDD	3.70e3	2.79e3	6.49e3	36.65	1.000	1.32	NO	1.199	0.804	0.838	4.80	0.0487	7.80e4	1179	66.2	6.11e4	1073	57.0	bd	bd
4	123678-HxCDD	3.85e3	3.17e3	7.02e3	36.74	1.000	1.21	NO	1.230	0.827	0.840	4.71	0.0475	8.69e4	1179	73.7	6.30e4	1073	58.7	db	db
5	123789-HxCDD	3.72e3	2.80e3	6.52e3	36.98	1.007	1.33	NO	1.209	0.787	0.814	3.19	0.0496	7.10e4	1179	60.2	5.43e4	1073	50.7	bd	bb
6	1234678-HpCDD	2.88e3	2.82e3	5.70e3	40.02	1.001	1.02	NO	1.238	0.993	1.003	3.74	0.0504	4.31e4	754	57.1	4.48e4	713	62.9	bb	bb
7	OCDD	4.41e3	5.08e3	9.49e3	44.20	1.000	0.87	NO	2.390	0.870	0.910	3.79	0.0804	5.48e4	698	78.4	5.67e4	707	80.2	bb	bb
8	2378-TCDF	1.06e3	1.27e3	2.33e3	30.44	1.001	0.84	NO	0.252	0.930	0.921	2.50	0.0462	1.70e4	653	26.0	1.62e4	1353	12.0	bb	bb
9	12378-PeCDF	5.65e3	3.46e3	9.11e3	33.28	1.000	1.64	NO	1.209	0.795	0.822	4.18	0.0301	1.37e5	861	158.7	9.38e4	1377	68.2	bd	bb
10	23478-PeCDF	6.29e3	4.09e3	1.04e4	33.88	1.000	1.54	NO	1.209	0.896	0.926	2.87	0.0258	1.61e5	861	187.0	1.05e5	1377	75.9	bb	bb
11	123478-HxCDF	4.38e3	3.52e3	7.89e3	35.95	1.000	1.24	NO	1.148	0.917	0.998	5.02	0.0260	9.69e4	814	119.0	7.69e4	798	96.5	bd	bd
12	123678-HxCDF	4.78e3	3.89e3	8.67e3	36.05	1.000	1.23	NO	1.199	0.896	0.934	4.26	0.0264	1.12e5	814	138.1	8.36e4	798	104.8	db	db
13	234678-HxCDF	4.56e3	3.46e3	8.02e3	36.53	1.000	1.32	NO	1.169	0.966	1.033	4.35	0.0283	1.04e5	814	127.4	7.28e4	798	91.3	bb	bb
14	123789-HxCDF	3.91e3	3.17e3	7.09e3	37.29	1.000	1.23	NO	1.185	0.904	0.953	4.84	0.0359	7.88e4	814	96.7	5.87e4	798	73.6	bd	bb
15	1234678-HpCDF	3.50e3	3.33e3	6.83e3	38.78	1.001	1.05	NO	1.198	1.051	1.097	3.98	0.0303	6.27e4	635	98.7	5.27e4	555	95.0	bb	bb
16	1234789-HpCDF	2.54e3	2.69e3	5.24e3	40.66	1.000	0.95	NO	1.154	1.024	1.109	6.52	0.0459	3.74e4	635	59.0	3.85e4	555	69.3	bb	bb
17	OCDF	4.61e3	4.80e3	9.41e3	44.51	1.007	0.96	NO	2.339	0.863	0.922	7.27	0.0826	5.00e4	562	89.0	5.35e4	901	59.4	bd	bb
18	13C-2378-TCDD	3.68e5	4.71e5	8.39e5	31.18	1.017	0.78	NO	98.805	1.128	1.142	2.94	0.134	6.49e6	3518	1846.2	8.30e6	2565	3233.5	bb	bb
19	13C-12378-PeCDD	4.51e5	2.79e5	7.31e5	34.08	1.112	1.61	NO	102.166	0.982	0.962	4.38	0.0924	1.08e7	1781	6056.3	6.64e6	1755	3785.0	bb	bb
20	13C-123478-HxCDD	3.54e5	2.93e5	6.46e5	36.65	0.991	1.21	NO	100.862	1.036	1.027	0.74	0.0824	7.56e6	2188	3453.9	6.21e6	1962	3166.2	bd	bd
21	13C-123678-HxCDD	3.72e5	3.07e5	6.79e5	36.73	0.993	1.21	NO	96.883	1.088	1.123	1.81	0.0753	7.71e6	2188	3526.3	6.33e6	1962	3224.6	db	db
22	13C-1234678-HpCDD	2.33e5	2.26e5	4.59e5	40.00	1.082	1.03	NO	97.664	0.736	0.753	2.07	0.0719	3.68e6	1335	2756.7	3.61e6	1321	2732.5	bb	bb
23	13C-OCDD	3.97e5	4.75e5	8.72e5	44.19	1.195	0.84	NO	192.726	0.699	0.726	4.08	0.0953	4.37e6	1643	2659.6	5.05e6	1749	2887.0	bb	bd
24	13C-2378-TCDF	4.33e5	5.69e5	1.00e6	30.42	0.992	0.76	NO	100.768	1.347	1.337	1.60	0.159	5.10e6	5543	919.7	6.72e6	2897	2318.4	bb	bb
25	13C-12378-PeCDF	5.63e5	3.54e5	9.17e5	33.27	1.085	1.59	NO	99.241	1.233	1.242	3.08	0.127	1.39e7	2710	5135.4	8.91e6	3584	2485.5	bb	bb
26	13C-23478-PeCDF	5.68e5	3.59e5	9.27e5	33.87	1.105	1.58	NO	101.016	1.246	1.234	4.20	0.128	1.43e7	2710	5289.5	9.14e6	3584	2551.2	bb	bb
27	13C-123478-HxCDF	2.34e5	4.55e5	6.89e5	35.94	0.972	0.51	NO	100.461	1.104	1.099	0.83	0.118	5.28e6	4141	1274.2	1.02e7	2199	4651.0	bd	bd
28	13C-123678-HxCDF	2.64e5	5.10e5	7.74e5	36.04	0.975	0.52	NO	97.540	1.241	1.272	2.46	0.102	5.58e6	4141	1347.7	1.06e7	2199	4834.3	db	dd
29	13C-234678-HxCDF	2.28e5	4.37e5	6.65e5	36.52	0.988	0.52	NO	98.730	1.065	1.079	1.03	0.120	4.72e6	4141	1139.9	9.17e6	2199	4170.3	bb	bb
30	13C-123789-HxCDF	2.14e5	4.13e5	6.27e5	37.28	1.008	0.52	NO	101.905	1.006	0.987	1.26	0.131	4.02e6	4141	971.7	7.59e6	2199	3453.5	bd	bd
31	13C-1234678-HpCDF	1.57e5	3.63e5	5.20e5	38.76	1.048	0.43	NO	98.128	0.834	0.849	1.50	0.0876	2.70e6	1285	2101.3	6.16e6	2366	2604.3	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	1.24e5	2.85e5	4.09e5	40.65	1.099	0.43	NO	97.131	0.656	0.675	2.06	0.110	1.76e6	1285	1372.8	4.12e6	2366	1742.4	bb	bb
33	13C-1234-TCDD	3.29e5	4.15e5	7.44e5	30.65	0.000	0.79	NO	100.000	1.000	1.000	0.00	0.153	4.40e6	3518	1250.2	5.51e6	2565	2148.8	bb	bb
34	13C-123789-HxCDD	3.41e5	2.83e5	6.24e5	36.97	0.000	1.20	NO	100.000	1.000	1.000	0.00	0.0846	6.70e6	2188	3062.5	5.56e6	1962	2833.8	bb	bb
35	37Cl-2378-TCDD	2.07e3		2.07e3	31.21	1.018			0.240	1.113	1.161	5.41	0.0289	3.76e4	1335	28.1				bb	

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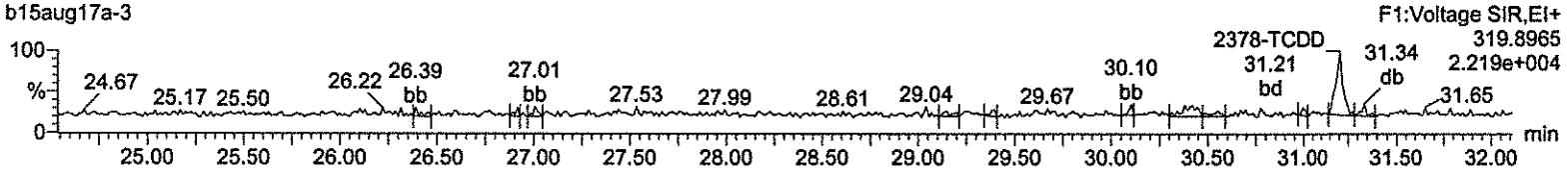
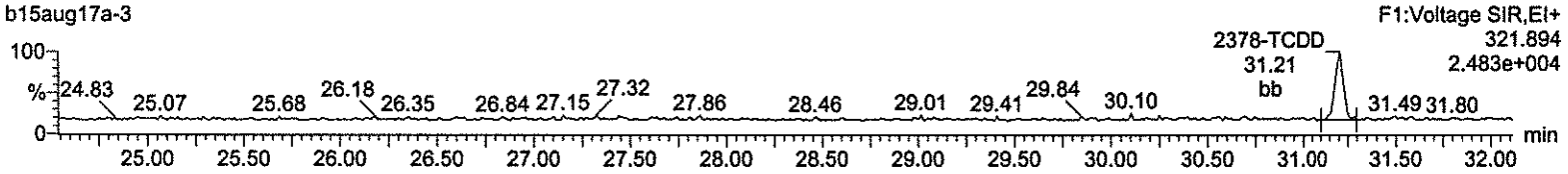
Method: C:\MassLynx\Default.pro\Methdb\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: 16 Aug 2017 10:15:01

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-tetradioxins



Total-tetradioxins



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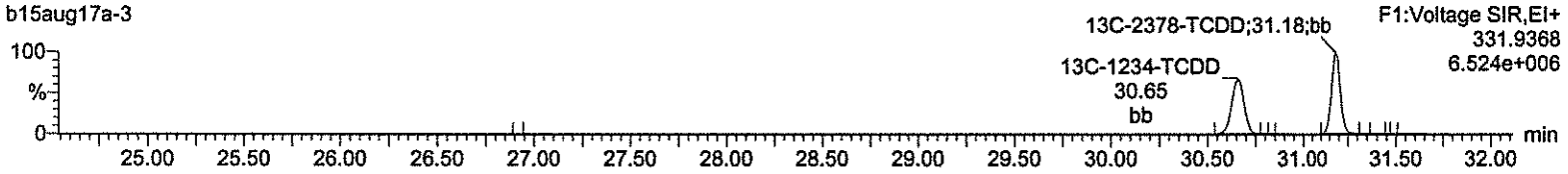

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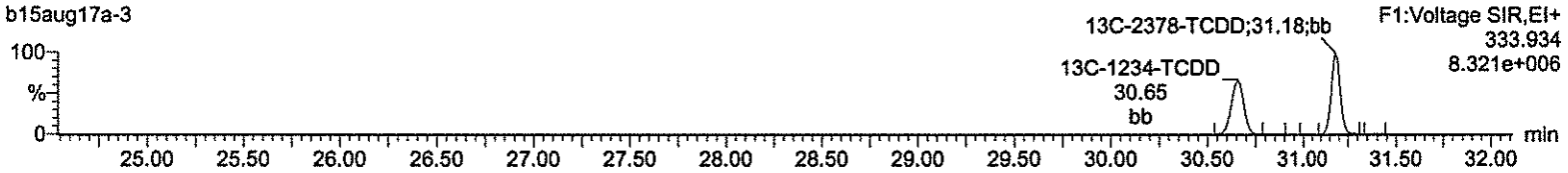

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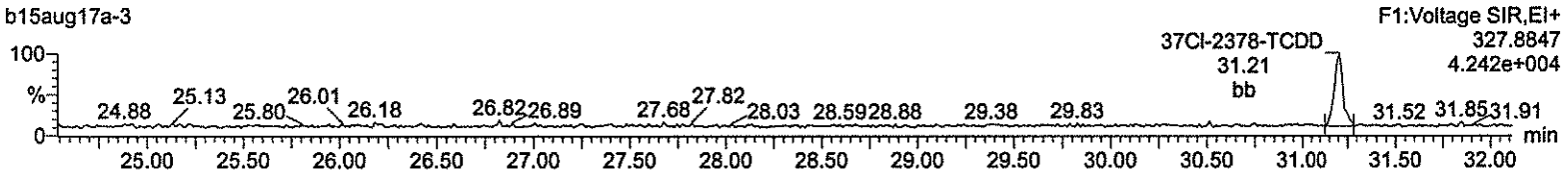

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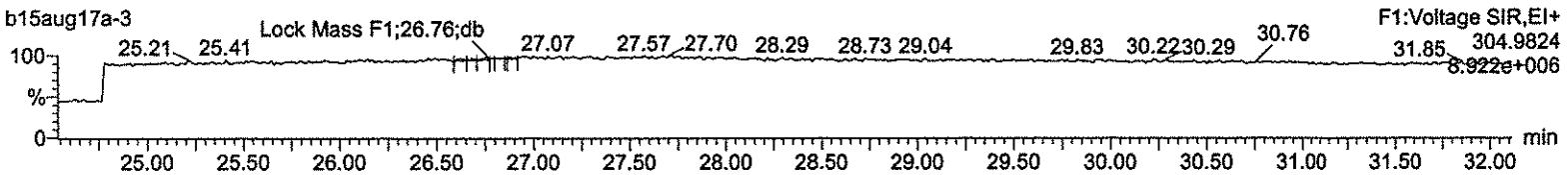

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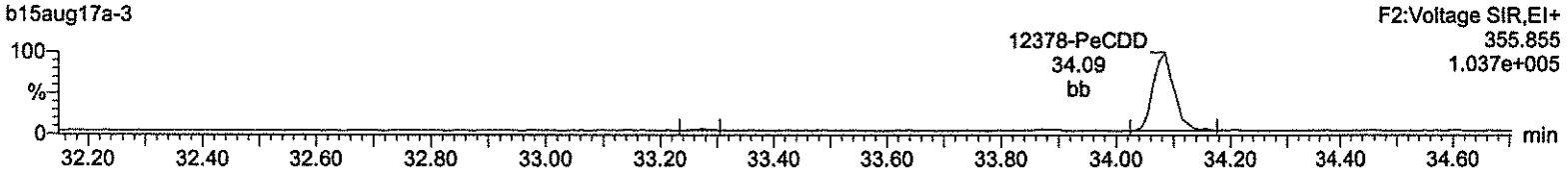
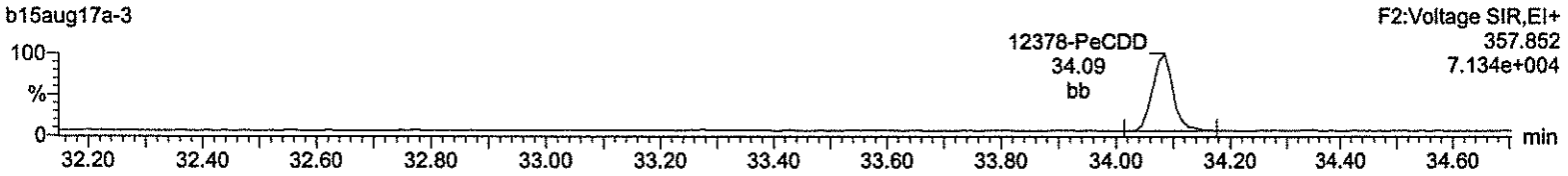
Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-pentadioxins



Total-pentadioxins



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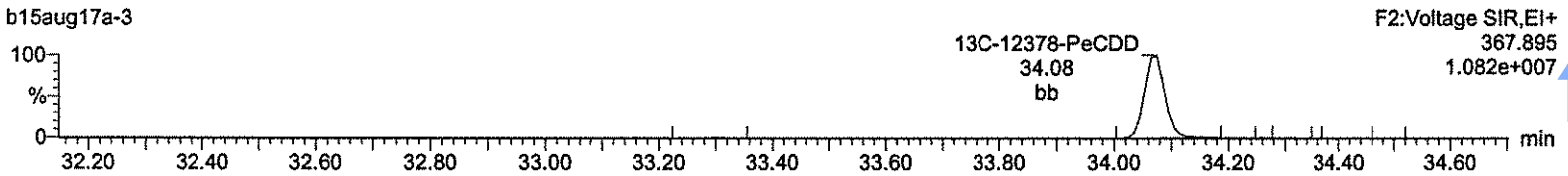

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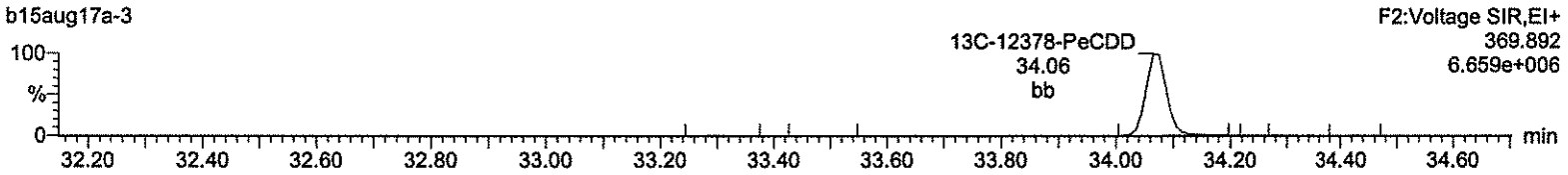

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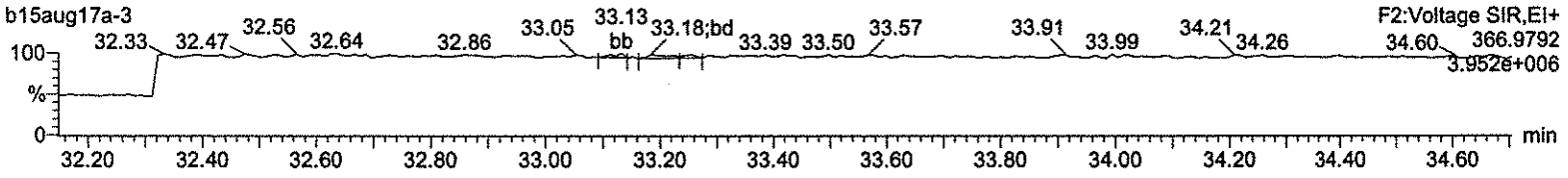

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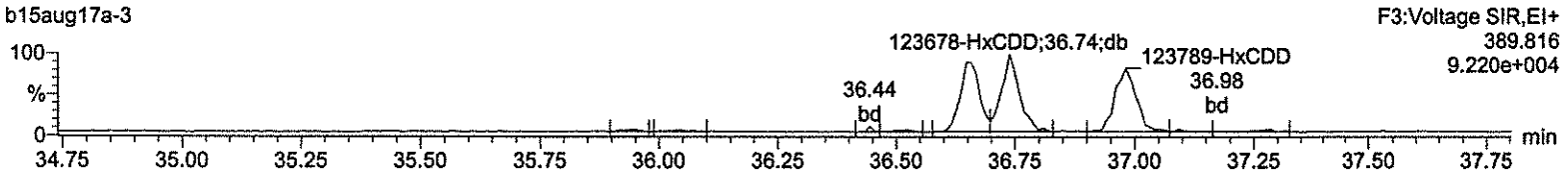
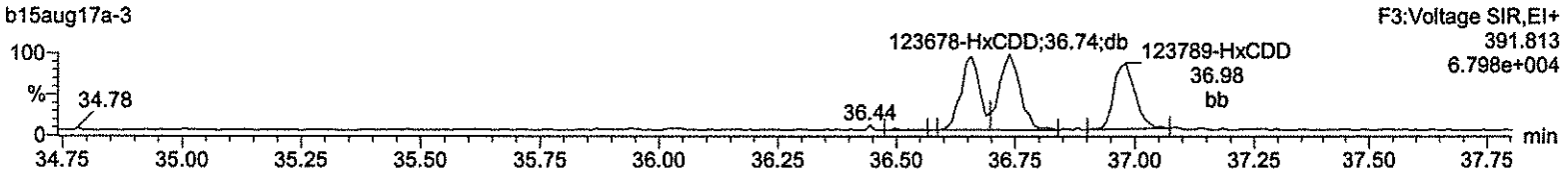
Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-hexadioxins



Total-hexadioxins



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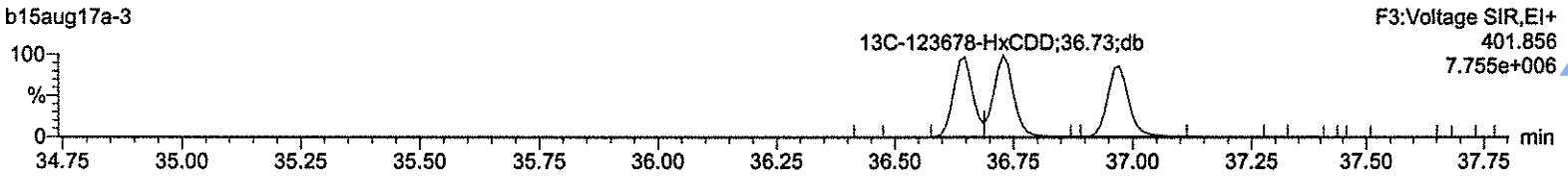

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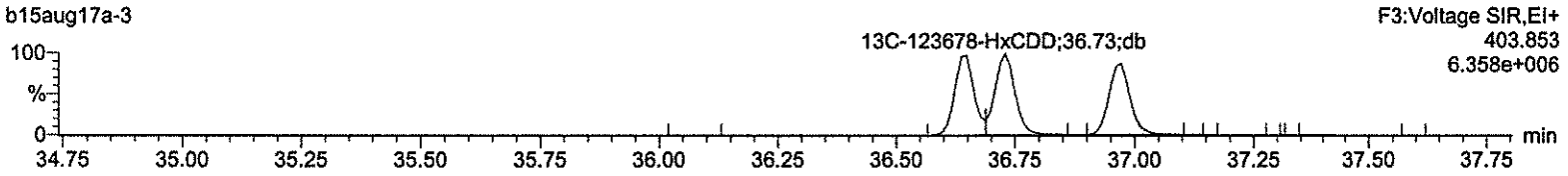

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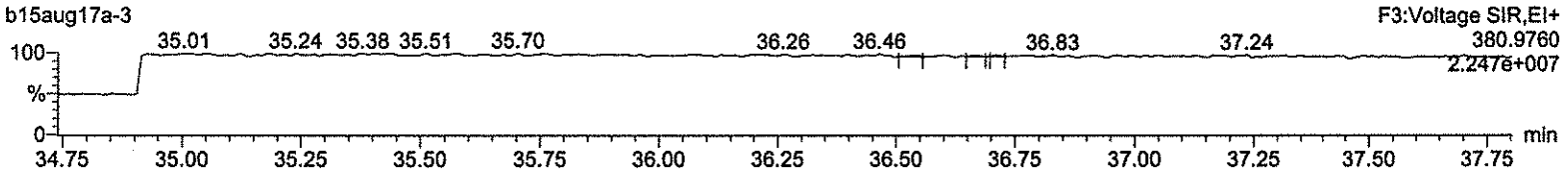

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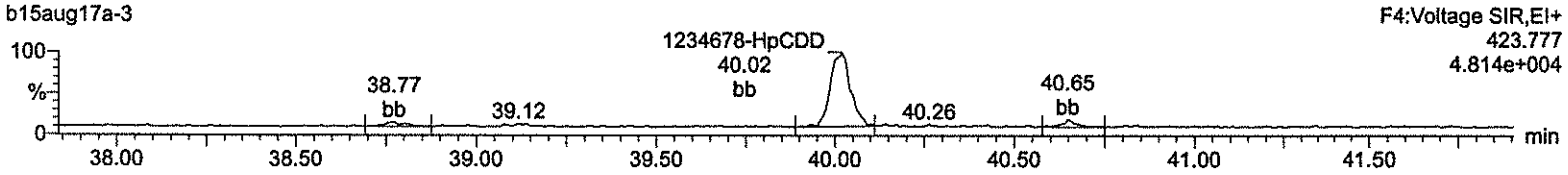
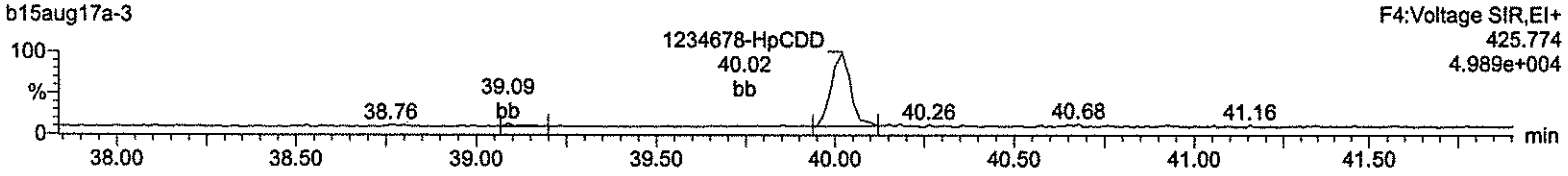
Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-heptadioxins



Total-heptadioxins



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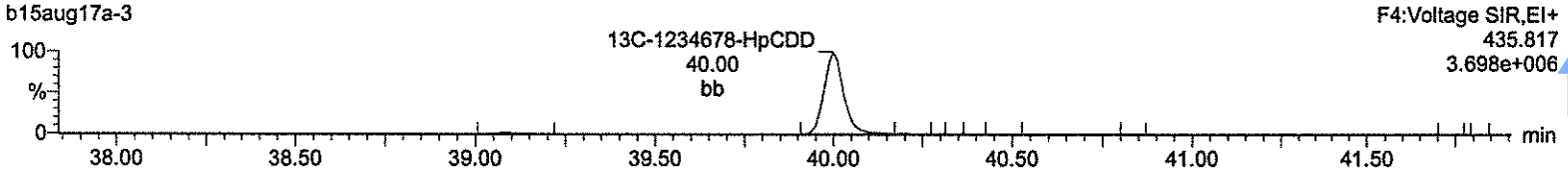

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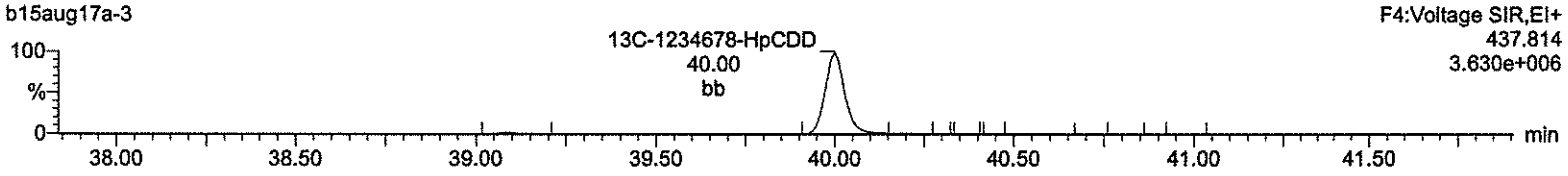

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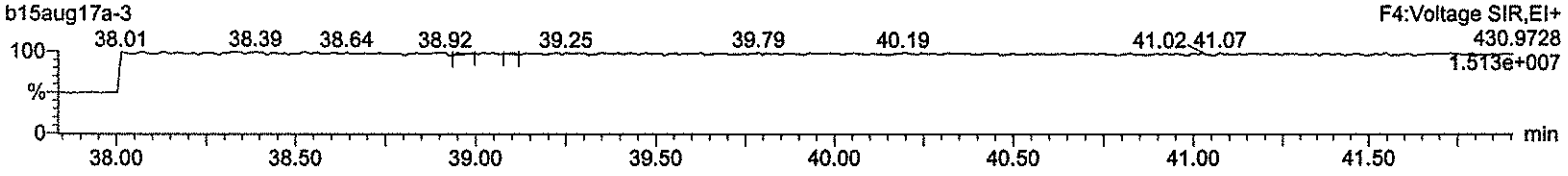

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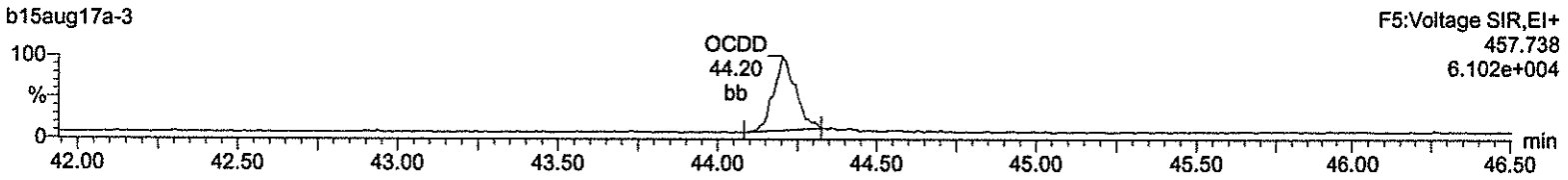
Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

OCDD



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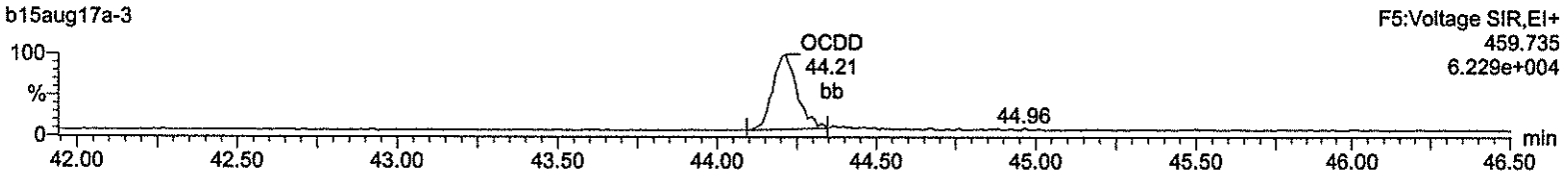

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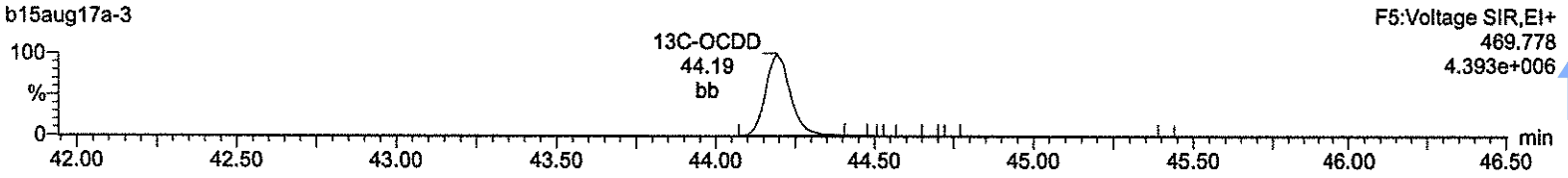

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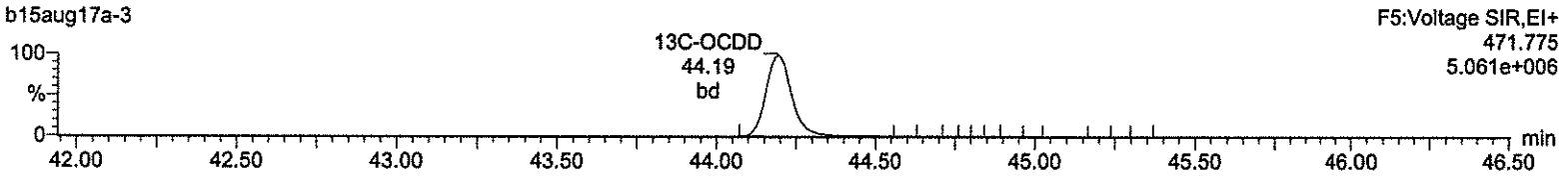

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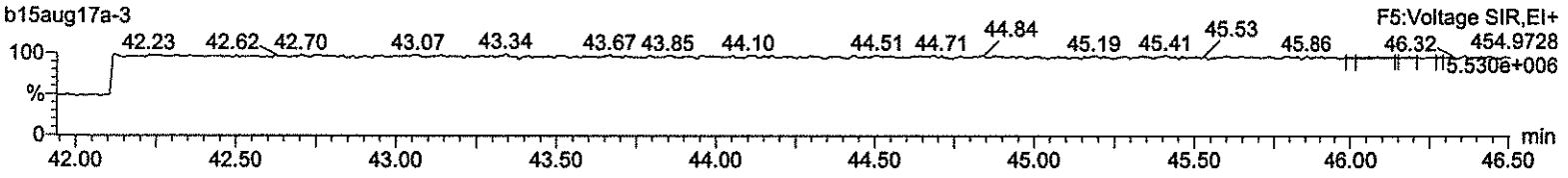

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Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
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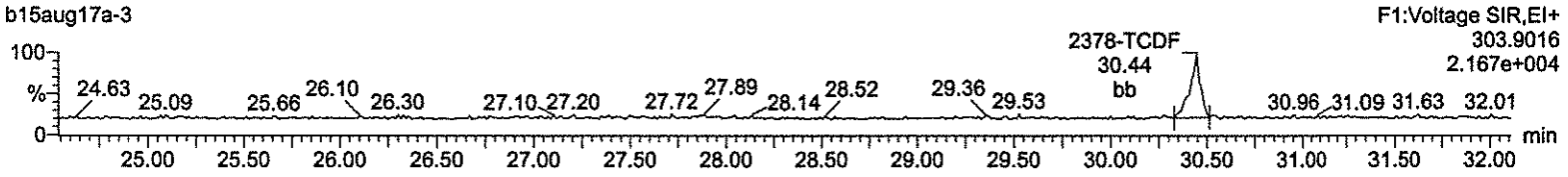
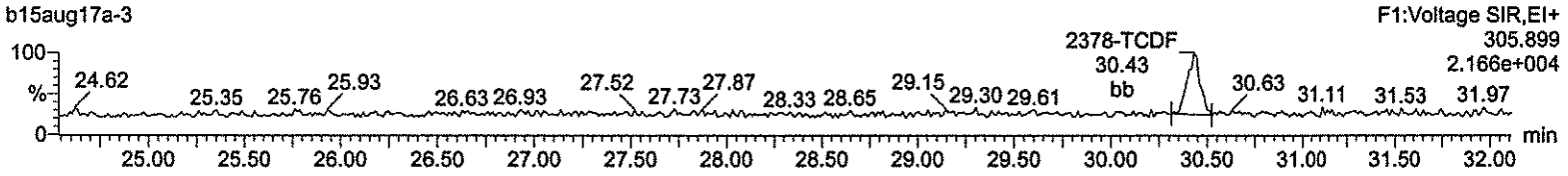
Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-tetrafurans



Total-tetrafurans



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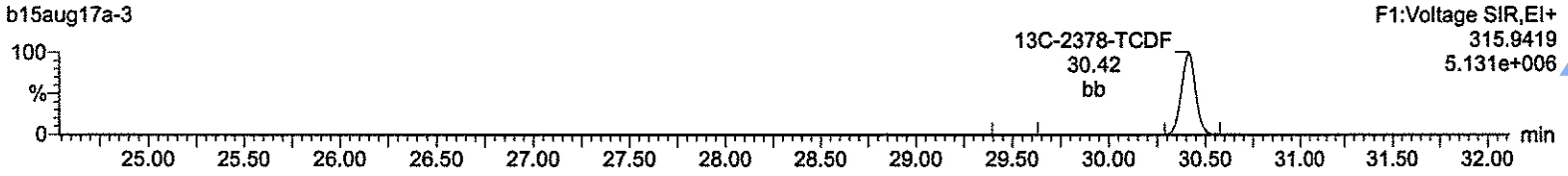

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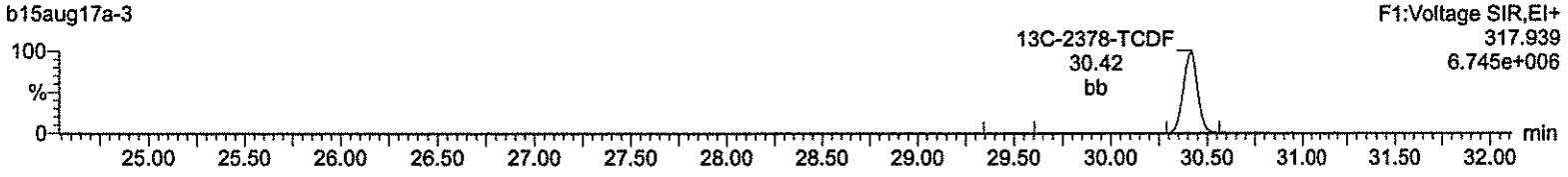

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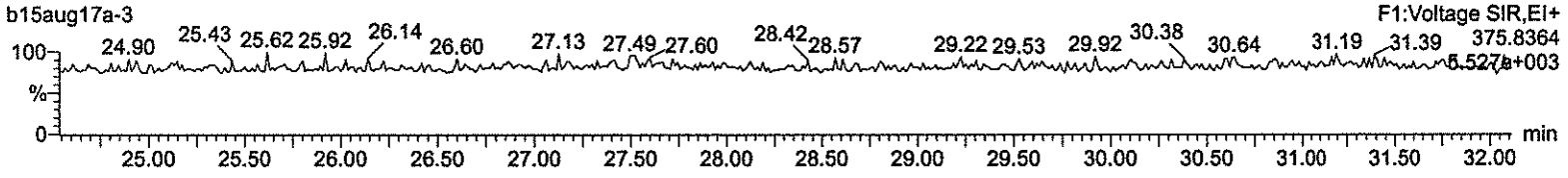

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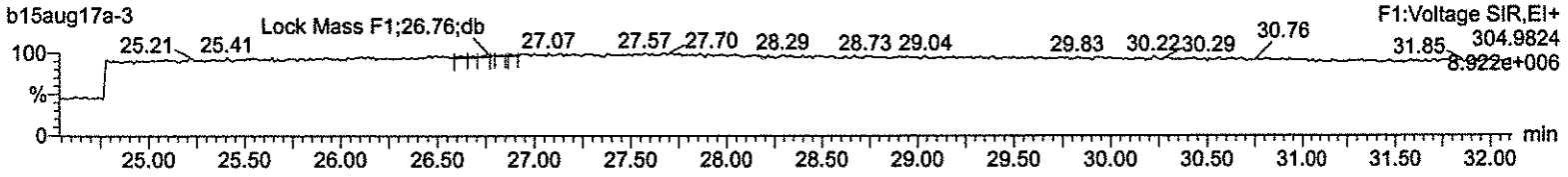

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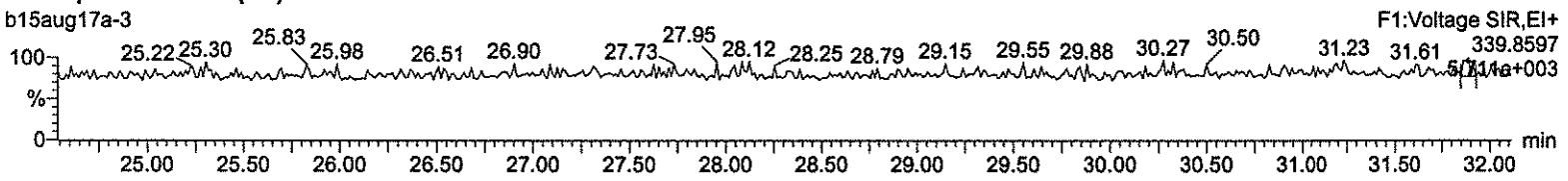
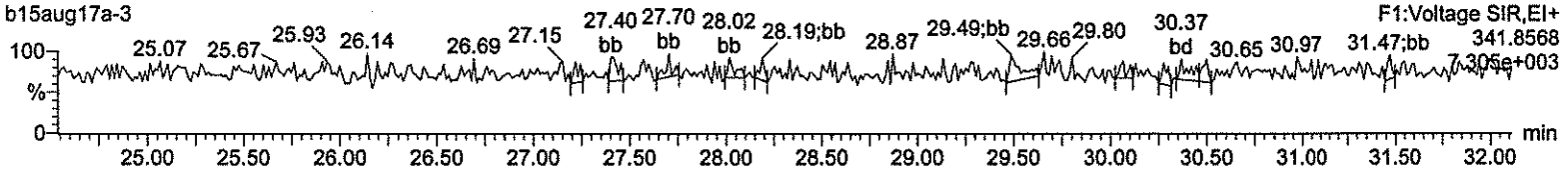
Total-pentafurans (F1)



Total-pentafurans (F1)



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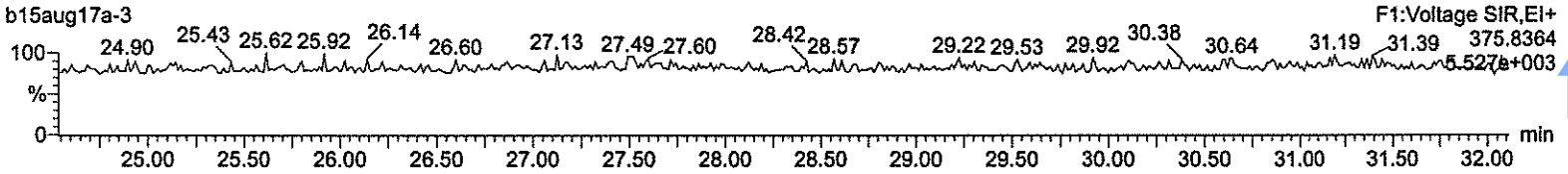

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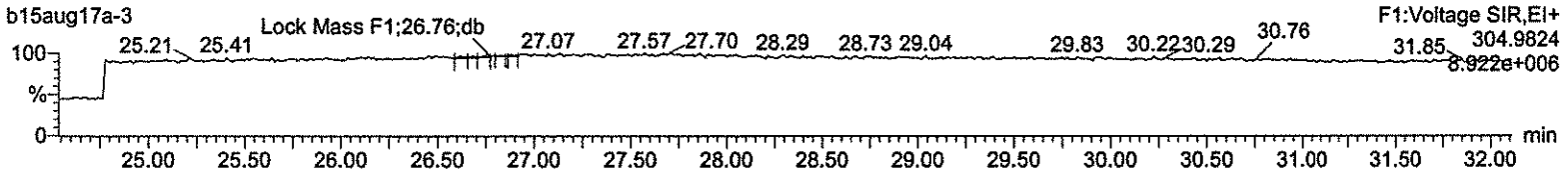

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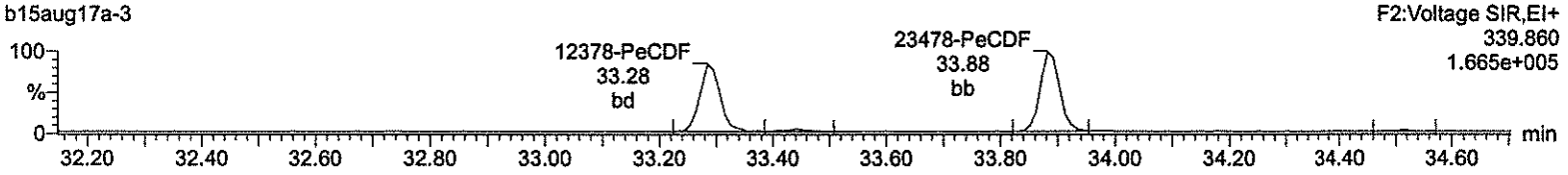
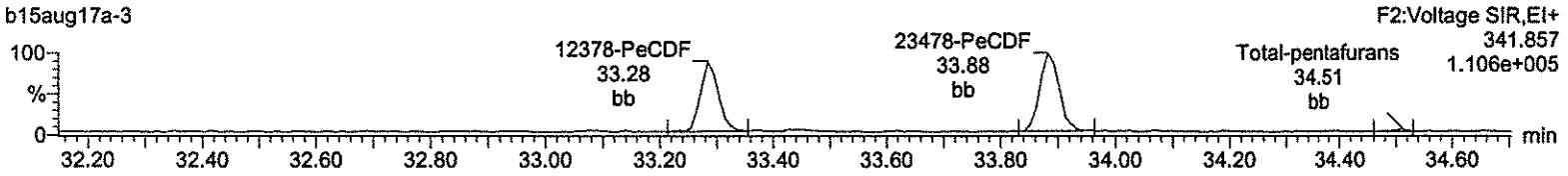
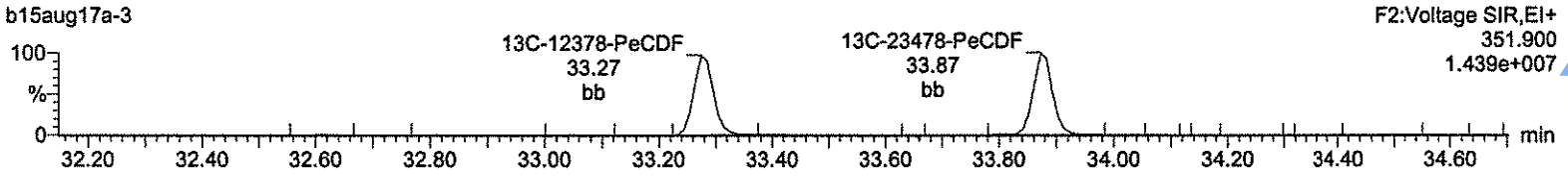
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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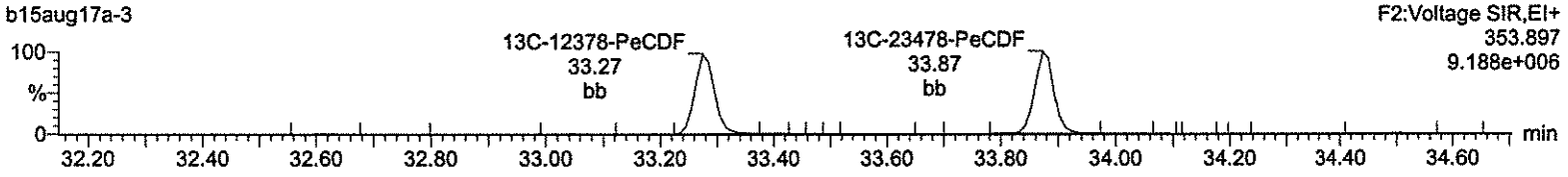

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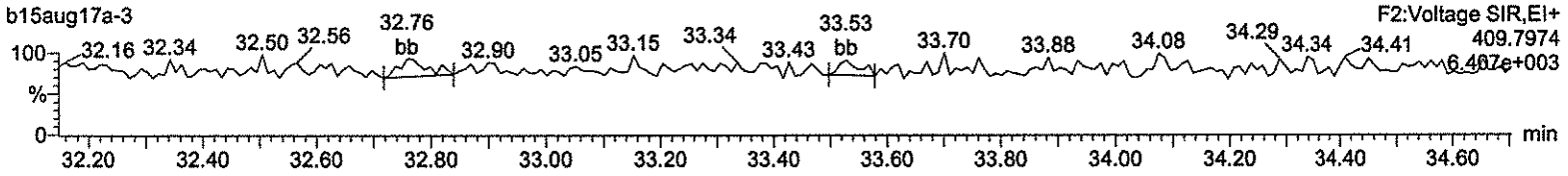

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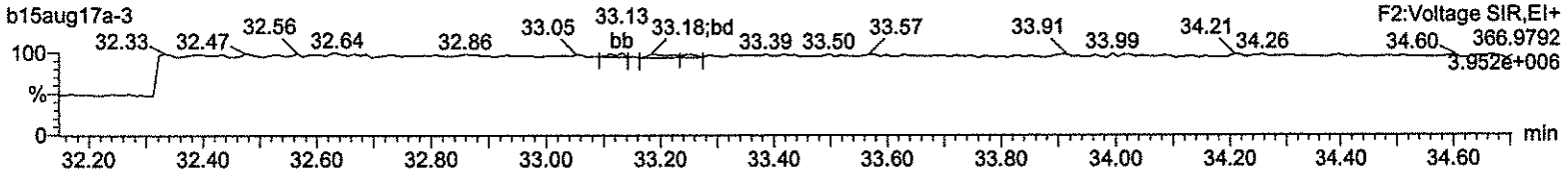

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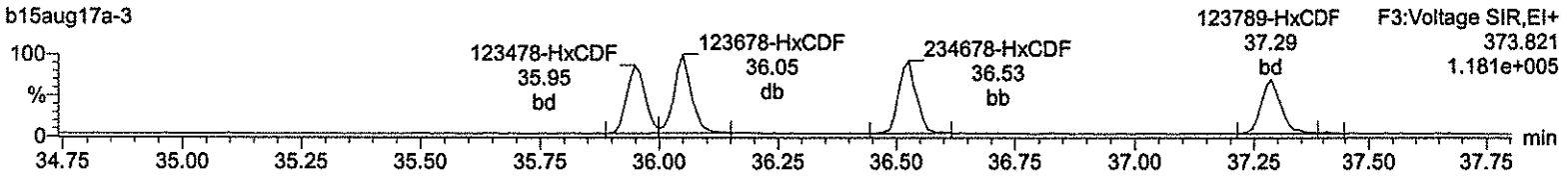
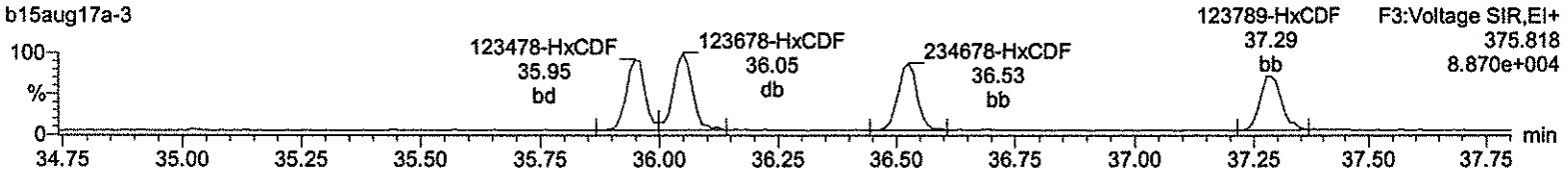
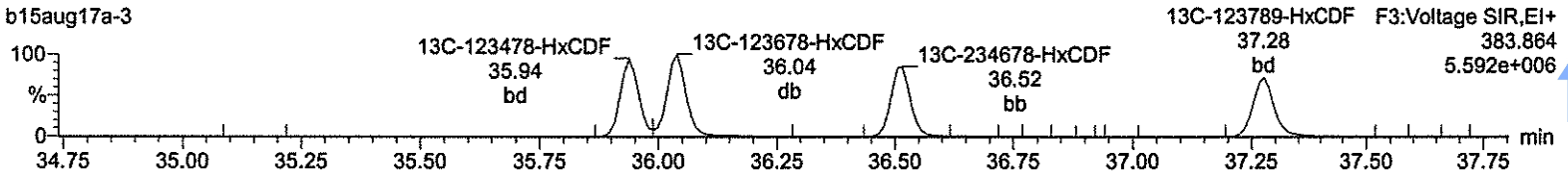
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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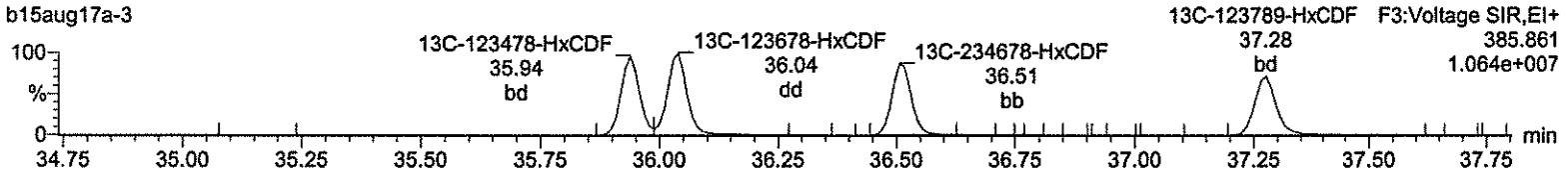
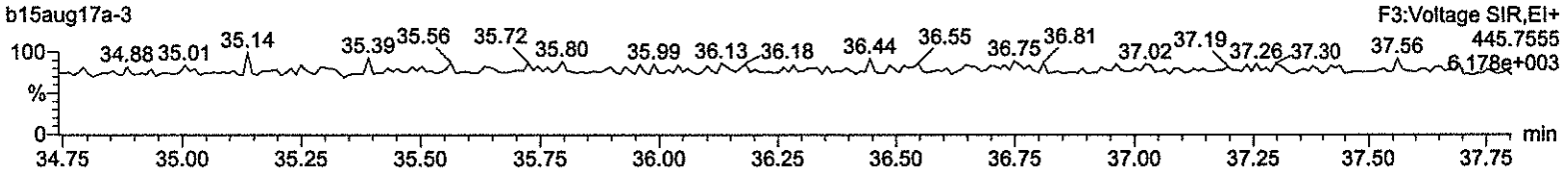


OcDPE



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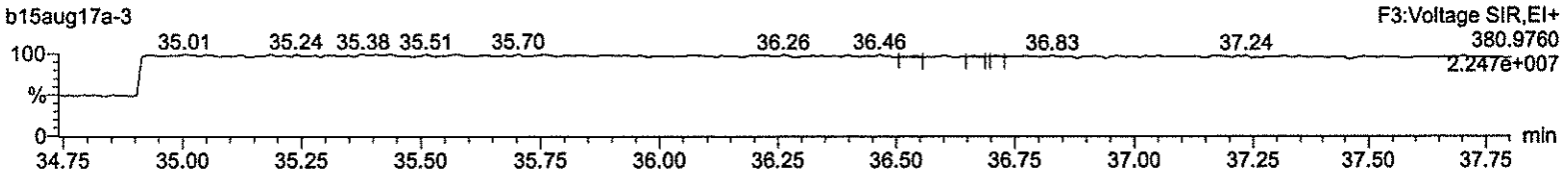

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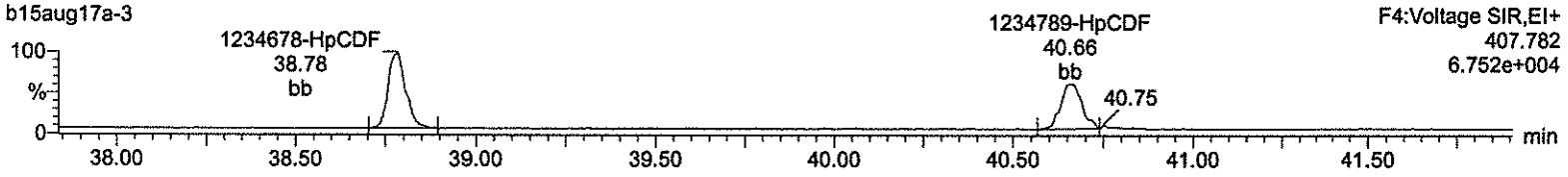
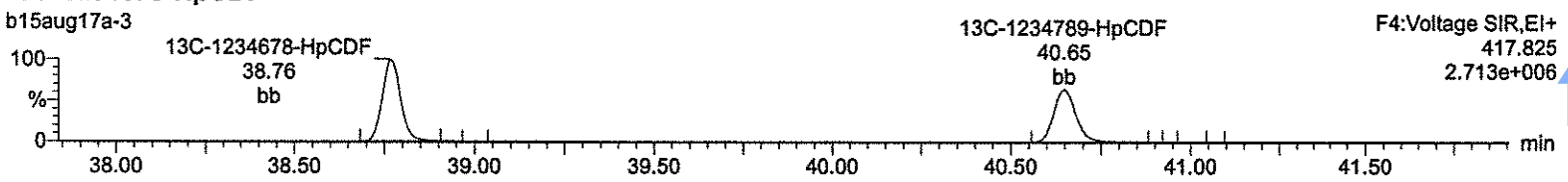
Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-heptafurans



Total-heptafurans

13C-1234678-HpCDF



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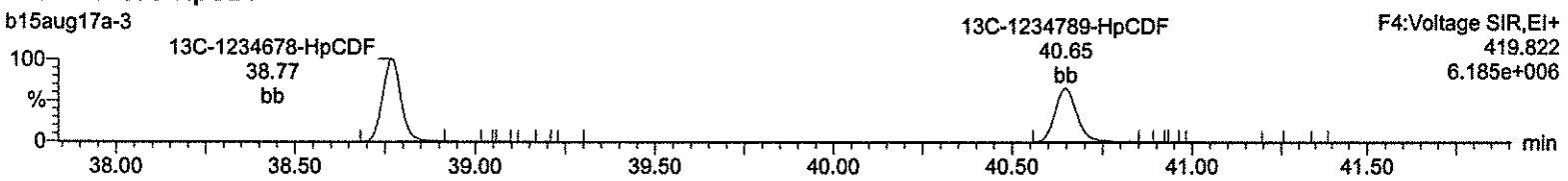

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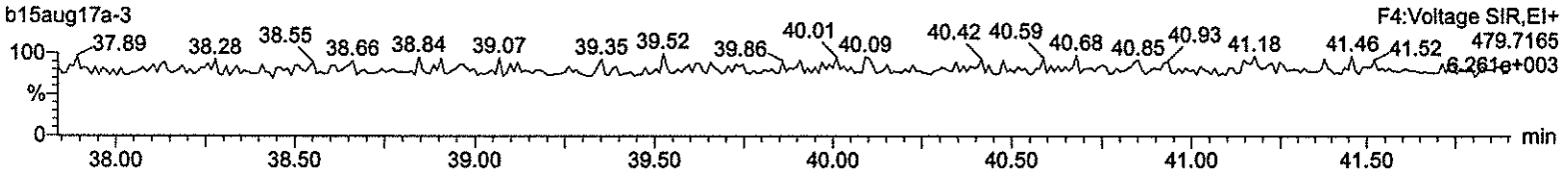

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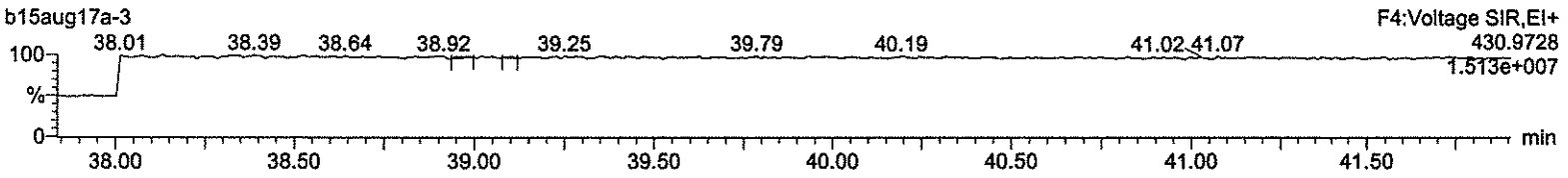

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Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

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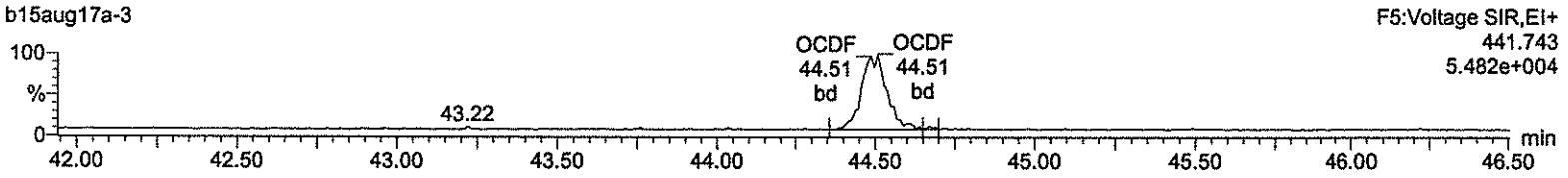
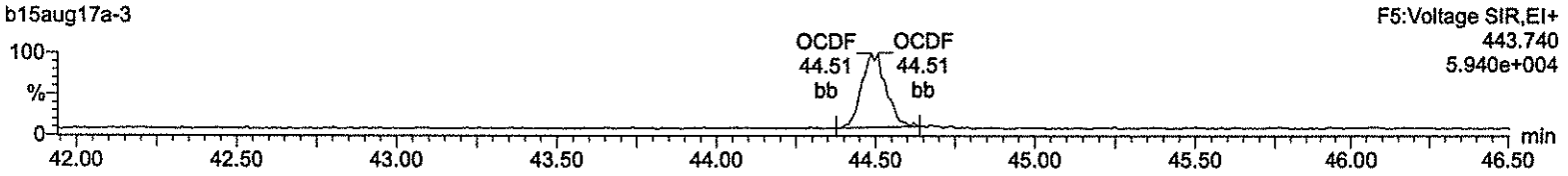


OCDF



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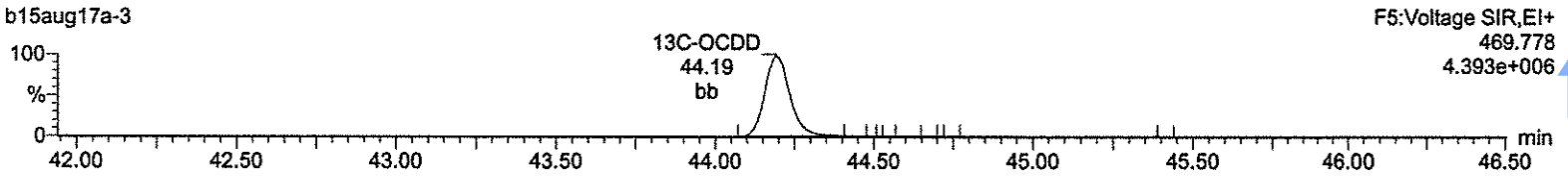

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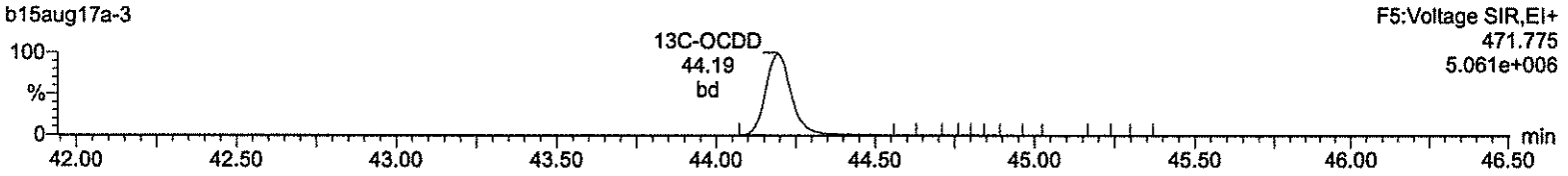

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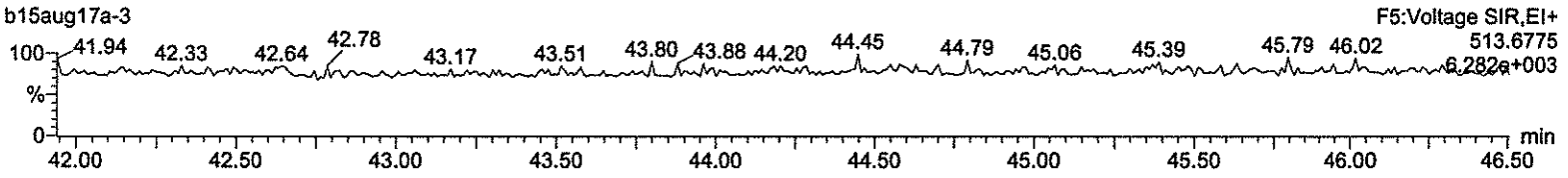
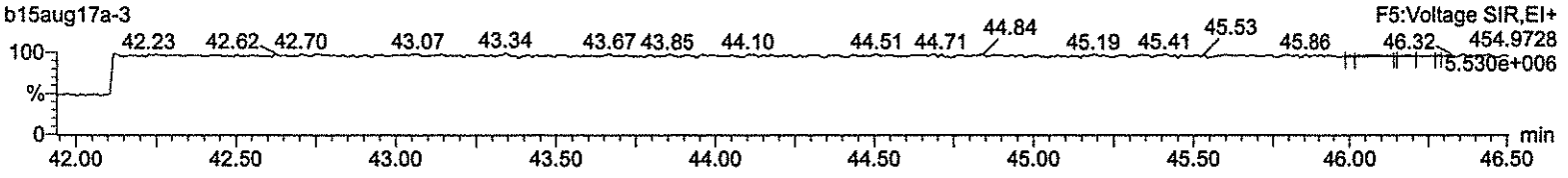


Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
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Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	1.38e3	1.75e3	3.13e3	31.19	1.000	0.79	NO	0.466	0.831	0.891	4.45	0.0422	2.31e4	1338	17.2	3.32e4	678	49.0	bb	bb
2	12378-PeCDD	7.28e3	5.00e3	1.23e4	34.08	1.000	1.46	NO	2.416	0.763	0.789	3.38	0.0268	1.85e5	926	199.5	1.28e5	450	283.2	bb	bb
3	123478-HxCDD	6.26e3	4.89e3	1.11e4	36.66	1.000	1.28	NO	2.347	0.786	0.838	4.80	0.0437	1.37e5	780	175.6	1.12e5	1023	109.1	bd	bd
4	123678-HxCDD	6.87e3	5.23e3	1.21e4	36.74	1.000	1.31	NO	2.313	0.777	0.840	4.71	0.0435	1.42e5	780	181.8	1.03e5	1023	100.5	db	db
5	123789-HxCDD	6.55e3	5.27e3	1.18e4	36.98	1.007	1.24	NO	2.438	0.794	0.814	3.19	0.0449	1.25e5	780	160.0	1.00e5	1023	97.8	bd	bb
6	1234678-HpCDD	5.09e3	5.00e3	1.01e4	40.02	1.001	1.02	NO	2.340	0.938	1.003	3.74	0.0605	8.06e4	785	102.7	7.80e4	762	102.4	bb	bb
7	OCDD	9.25e3	1.01e4	1.93e4	44.21	1.000	0.92	NO	5.247	0.955	0.910	3.79	0.0922	1.03e5	684	150.0	1.13e5	794	141.7	bb	bd
8	2378-TCDF	1.70e3	2.32e3	4.02e3	30.44	1.001	0.73	NO	0.494	0.909	0.921	2.50	0.0497	2.23e4	610	36.6	2.94e4	1297	22.7	bb	bb
9	12378-PeCDF	9.83e3	6.27e3	1.61e4	33.29	1.000	1.57	NO	2.342	0.770	0.822	4.18	0.0290	2.44e5	823	296.1	1.67e5	1220	136.5	bd	bb
10	23478-PeCDF	1.13e4	7.23e3	1.86e4	33.89	1.000	1.57	NO	2.429	0.900	0.926	2.87	0.0264	2.84e5	823	345.6	1.80e5	1220	147.6	bb	bb
11	123478-HxCDF	7.98e3	6.67e3	1.47e4	35.95	1.000	1.20	NO	2.415	0.964	0.998	5.02	0.0300	1.80e5	841	213.8	1.49e5	800	186.0	bd	bd
12	123678-HxCDF	8.62e3	6.73e3	1.54e4	36.06	1.001	1.28	NO	2.341	0.874	0.934	4.26	0.0313	1.78e5	841	211.1	1.46e5	800	182.1	db	db
13	234678-HxCDF	8.08e3	6.63e3	1.47e4	36.52	1.000	1.22	NO	2.406	0.994	1.033	4.35	0.0302	1.86e5	841	221.4	1.40e5	800	175.3	bd	bb
14	123789-HxCDF	6.84e3	5.19e3	1.20e4	37.28	1.000	1.32	NO	2.342	0.893	0.953	4.84	0.0429	1.31e5	841	155.6	1.05e5	800	130.9	bb	bb
15	1234678-HpCDF	6.48e3	6.18e3	1.27e4	38.78	1.001	1.05	NO	2.406	1.056	1.097	3.98	0.0351	1.05e5	574	183.3	1.09e5	686	158.4	bb	bd
16	1234789-HpCDF	4.92e3	5.02e3	9.95e3	40.67	1.000	0.98	NO	2.358	1.046	1.109	6.52	0.0522	7.39e4	574	128.7	8.53e4	686	124.4	bd	bb
17	OCDF	8.27e3	8.87e3	1.71e4	44.50	1.007	0.93	NO	4.591	0.847	0.922	7.27	0.0882	9.11e4	632	144.2	1.02e5	800	127.9	bd	bb
18	13C-2378-TCDD	3.28e5	4.26e5	7.54e5	31.19	1.018	0.77	NO	99.228	1.133	1.142	2.94	0.124	5.84e6	3075	1899.9	7.53e6	1963	3837.7	bb	bb
19	13C-12378-PeCDD	3.98e5	2.46e5	6.44e5	34.07	1.112	1.61	NO	100.664	0.968	0.962	4.38	0.0901	1.01e7	1891	5316.4	6.19e6	1185	5224.7	bb	bb
20	13C-123478-HxCDD	3.12e5	2.55e5	5.67e5	36.65	0.991	1.22	NO	100.193	1.029	1.027	0.74	0.0936	6.76e6	2280	2966.8	5.48e6	1902	2882.6	bd	bd
21	13C-123678-HxCDD	3.40e5	2.83e5	6.23e5	36.73	0.993	1.20	NO	100.577	1.130	1.123	1.81	0.0856	6.73e6	2280	2949.5	5.72e6	1902	3004.7	db	db
22	13C-1234678-HpCDD	2.19e5	2.11e5	4.30e5	40.00	1.082	1.04	NO	103.583	0.780	0.753	2.07	0.102	3.25e6	1528	2126.8	3.14e6	1831	1715.3	bd	bd
23	13C-OCDD	3.73e5	4.37e5	8.10e5	44.19	1.195	0.85	NO	202.474	0.735	0.726	4.08	0.102	4.05e6	1484	2730.8	4.78e6	1746	2739.6	bb	bd
24	13C-2378-TCDF	3.80e5	5.03e5	8.83e5	30.42	0.992	0.76	NO	99.303	1.327	1.337	1.60	0.171	4.48e6	5437	824.5	5.91e6	2673	2212.1	bb	bb
25	13C-12378-PeCDF	5.15e5	3.22e5	8.37e5	33.28	1.086	1.60	NO	101.201	1.257	1.242	3.08	0.139	1.32e7	3525	3741.3	8.08e6	2598	3111.5	bb	bb
26	13C-23478-PeCDF	5.06e5	3.19e5	8.25e5	33.88	1.105	1.58	NO	100.543	1.240	1.234	4.20	0.140	1.28e7	3525	3630.5	7.84e6	2598	3016.4	db	db
27	13C-123478-HxCDF	2.05e5	4.02e5	6.08e5	35.94	0.972	0.51	NO	100.343	1.103	1.099	0.83	0.106	4.63e6	1726	2684.2	9.11e6	3328	2737.1	bd	bd
28	13C-123678-HxCDF	2.41e5	4.62e5	7.02e5	36.04	0.975	0.52	NO	100.159	1.274	1.272	2.46	0.0913	4.81e6	1726	2784.5	9.35e6	3328	2809.3	db	dd
29	13C-234678-HxCDF	2.02e5	3.90e5	5.92e5	36.51	0.988	0.52	NO	99.550	1.074	1.079	1.03	0.108	4.49e6	1726	2600.2	8.55e6	3328	2570.2	bb	bb
30	13C-123789-HxCDF	1.82e5	3.57e5	5.39e5	37.27	1.008	0.51	NO	99.086	0.978	0.987	1.26	0.118	3.39e6	1726	1963.8	6.76e6	3328	2031.6	bb	bb
31	13C-1234678-HpCDF	1.43e5	3.37e5	4.80e5	38.76	1.048	0.42	NO	102.492	0.871	0.849	1.50	0.0972	2.44e6	1596	1525.7	5.54e6	1996	2773.6	bb	bd
32	13C-1234789-HpCDF	1.15e5	2.65e5	3.80e5	40.65	1.099	0.43	NO	102.195	0.690	0.675	2.06	0.122	1.64e6	1596	1029.4	3.76e6	1996	1881.5	bd	bd
33	13C-1234-TCDD	2.93e5	3.73e5	6.65e5	30.65	0.000	0.79	NO	100.000	1.000	1.000	0.00	0.142	3.91e6	3075	1270.2	4.97e6	1963	2534.4	bb	bb
34	13C-123789-HxCDD	3.02e5	2.49e5	5.51e5	36.97	0.000	1.21	NO	100.000	1.000	1.000	0.00	0.0961	5.96e6	2280	2611.8	4.85e6	1902	2550.7	bb	bb
35	37Cl-2378-TCDD	3.98e3		3.98e3	31.19	1.018			0.516	1.197	1.161	5.41	0.0288	6.63e4	1187	55.8				bb	

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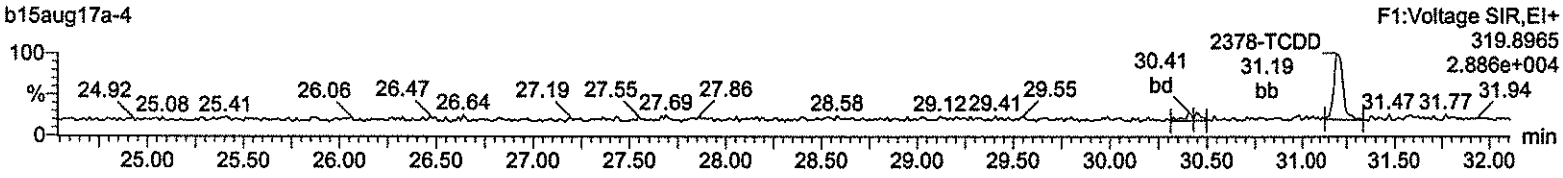
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-tetradioxins



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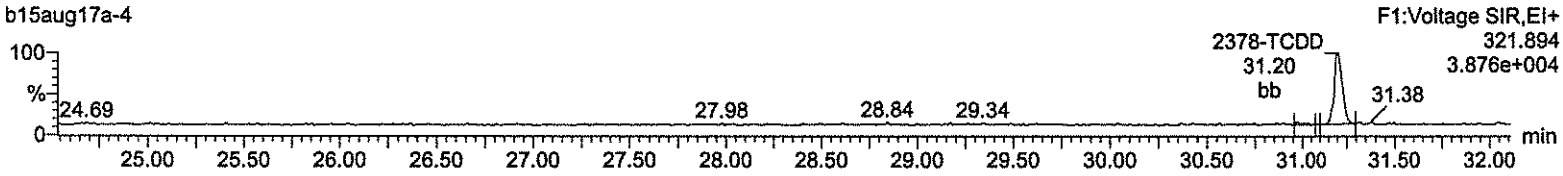

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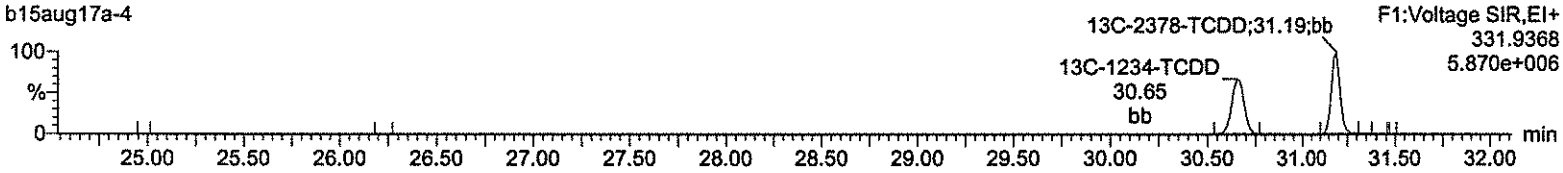

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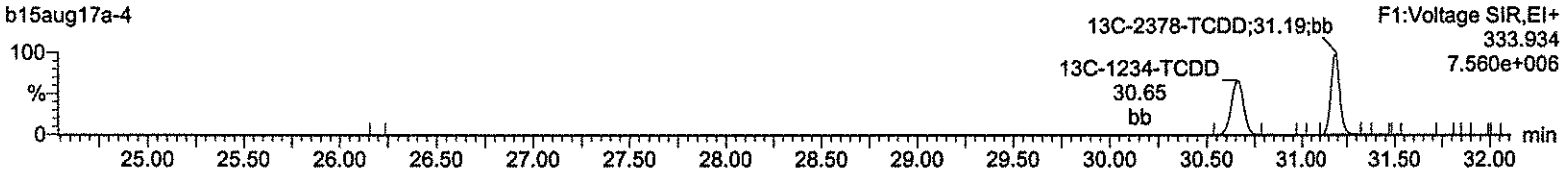

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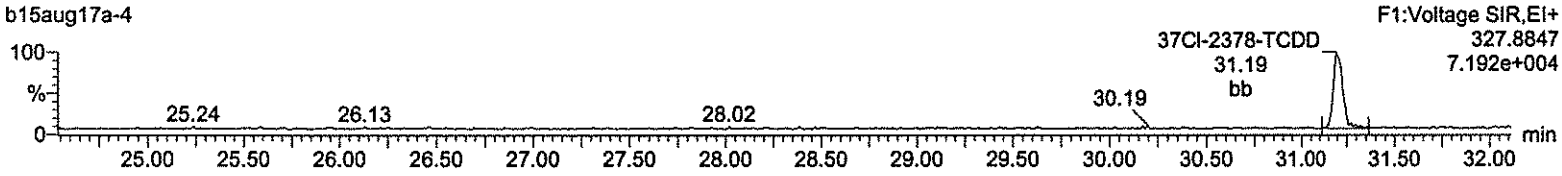

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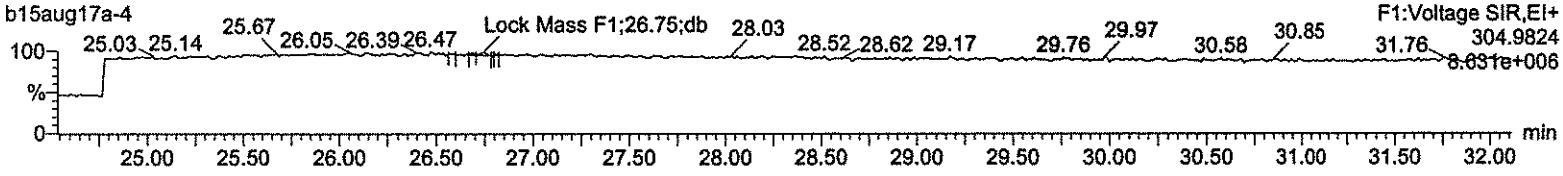

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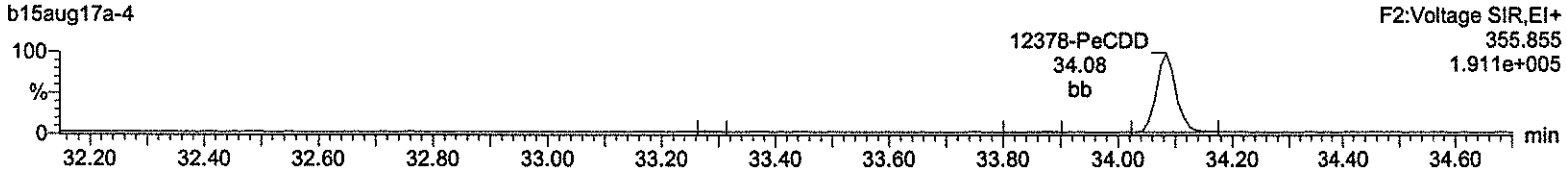
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-pentadioxins



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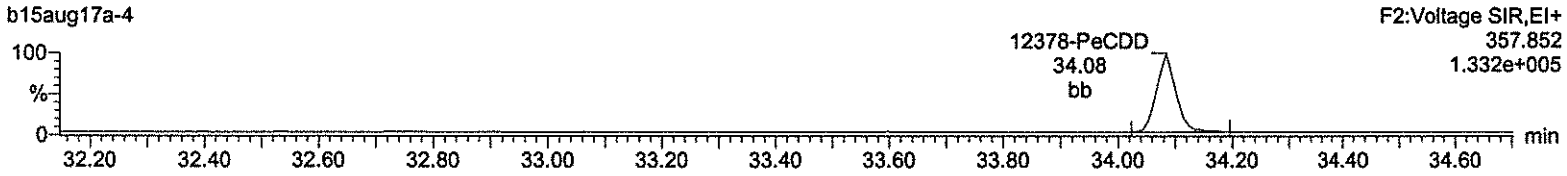

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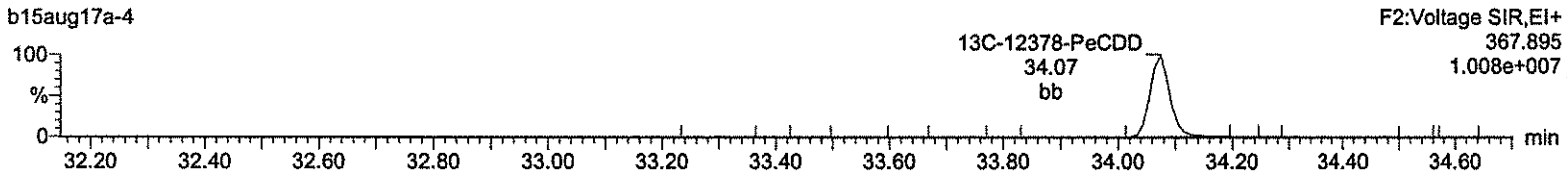

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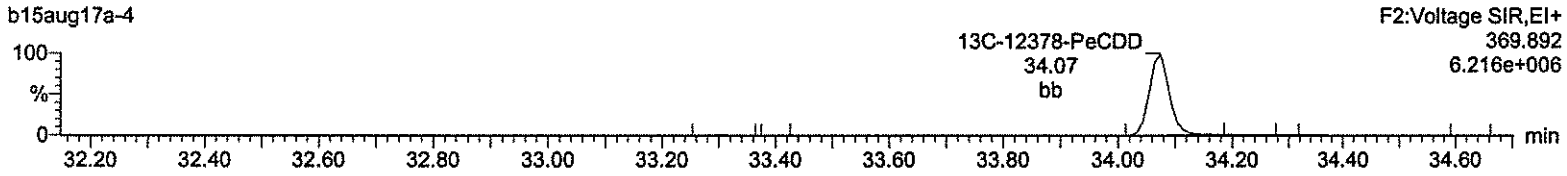
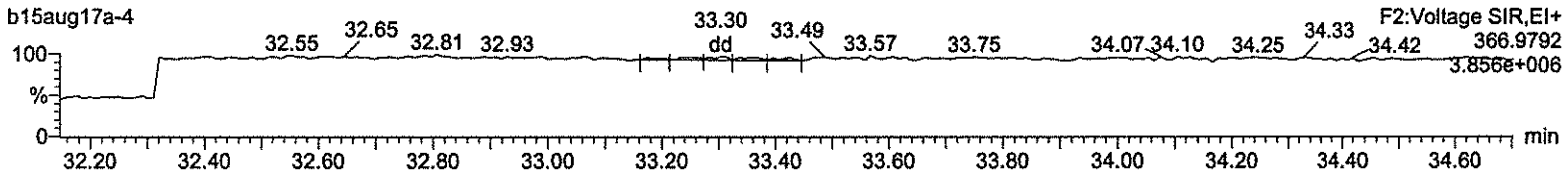


Lock Mass F2



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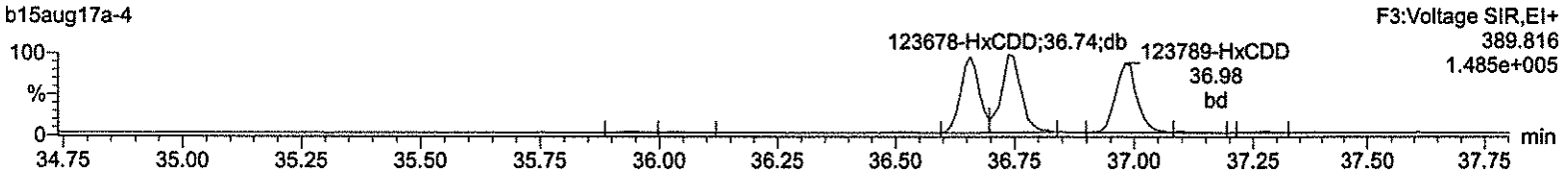
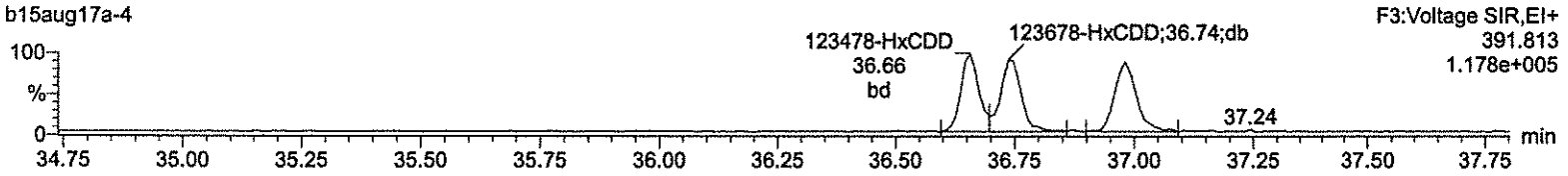
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-hexadioxins



Total-hexadioxins



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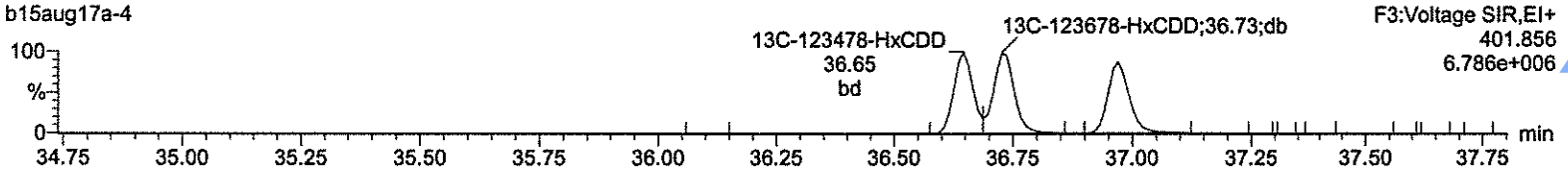

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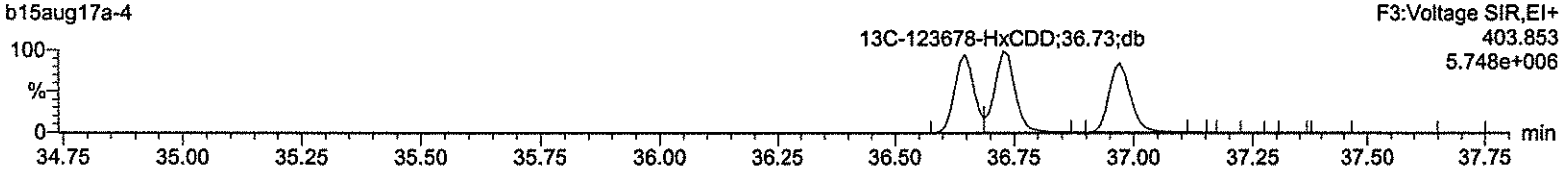
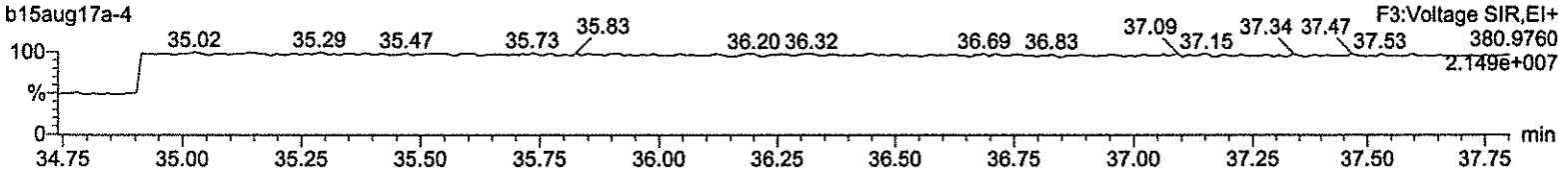


Lock Mass F3



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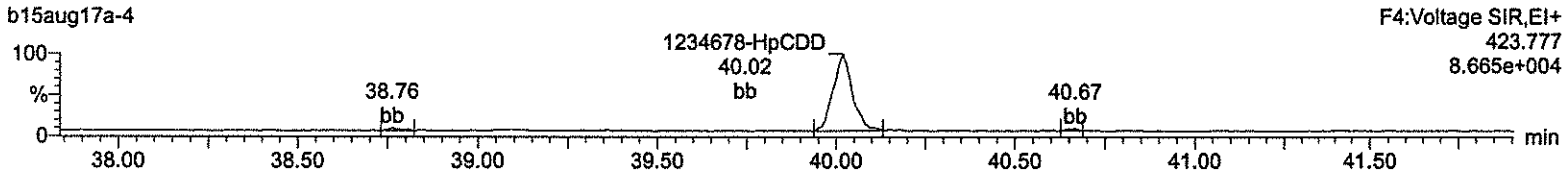
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

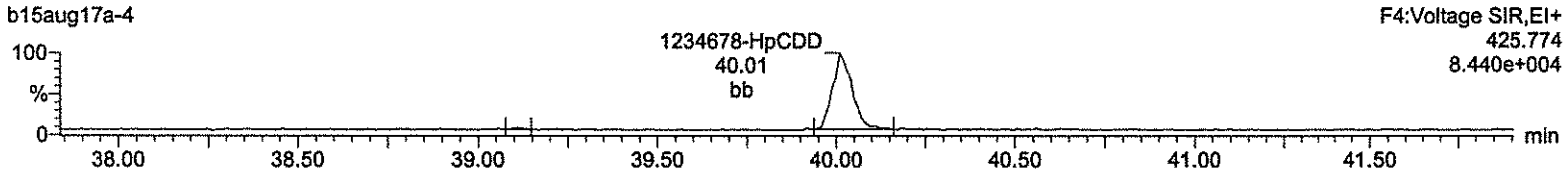
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-heptadioxins



Total-heptadioxins



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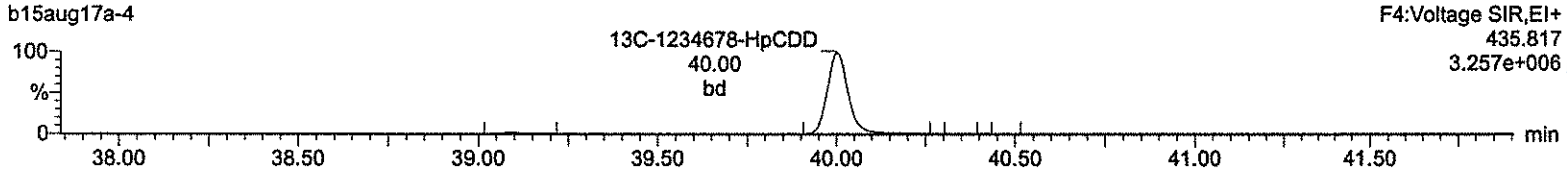

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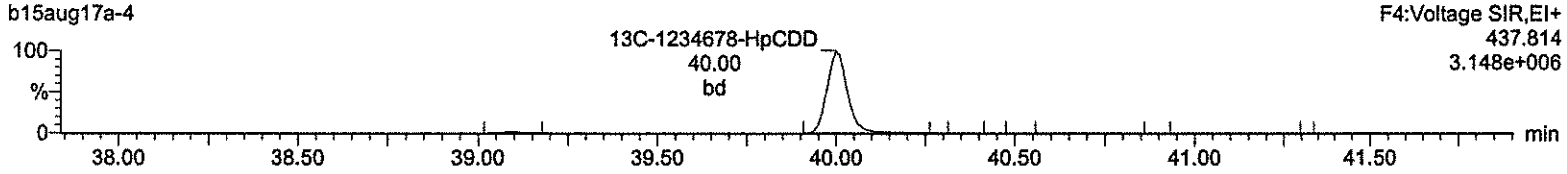

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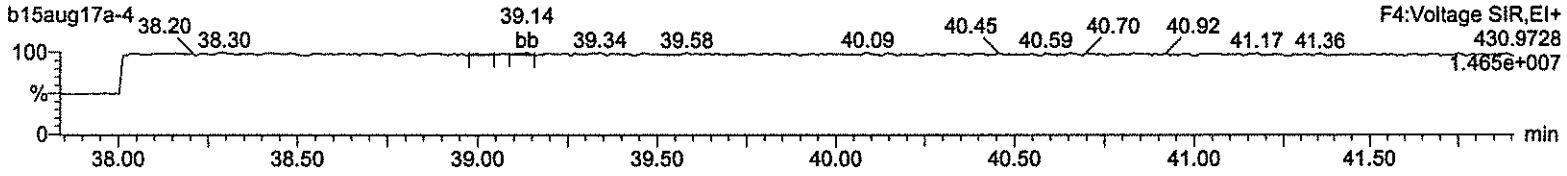

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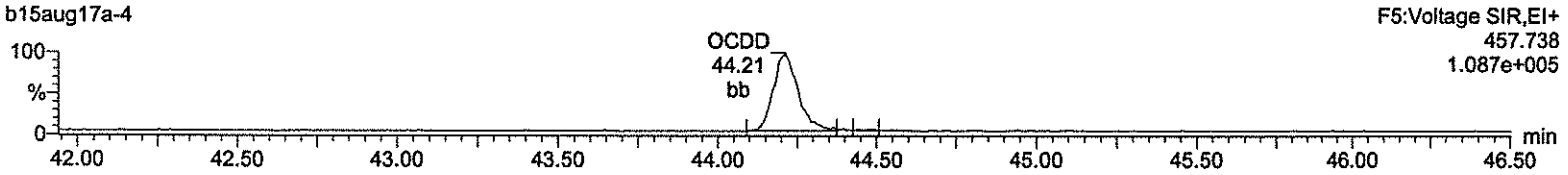
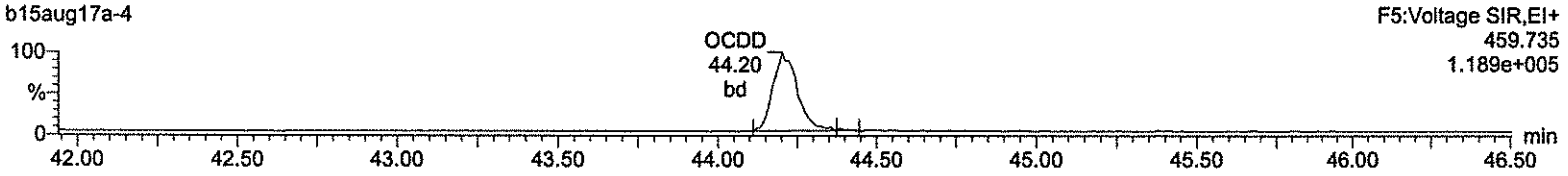
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

OCDD



OCDD



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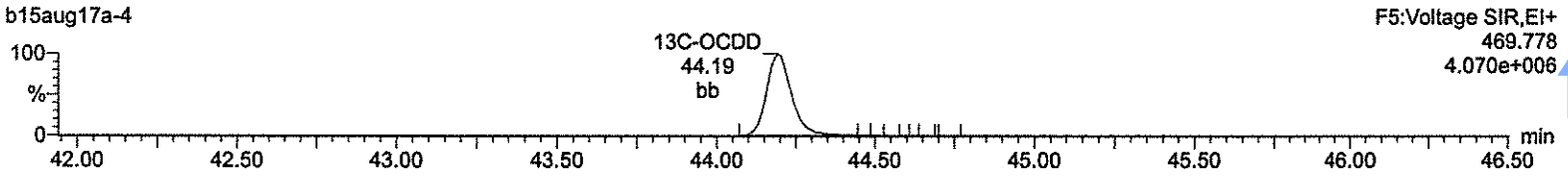

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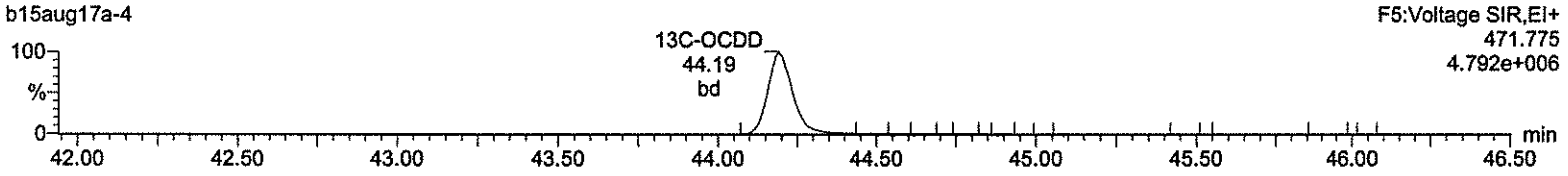
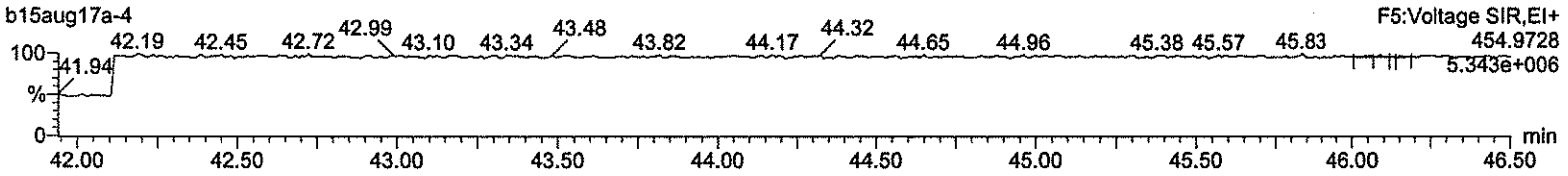


Lock Mass F5



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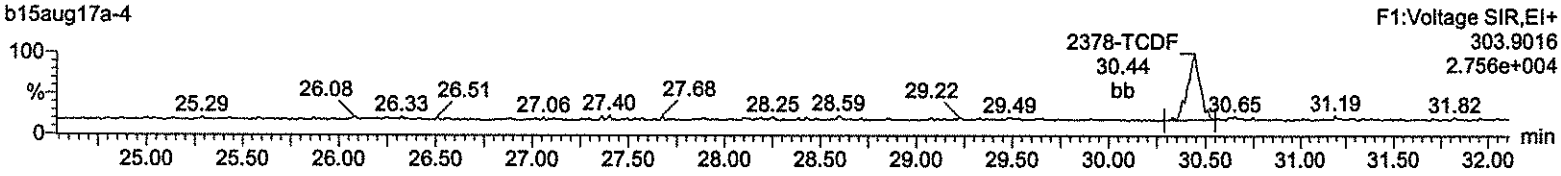
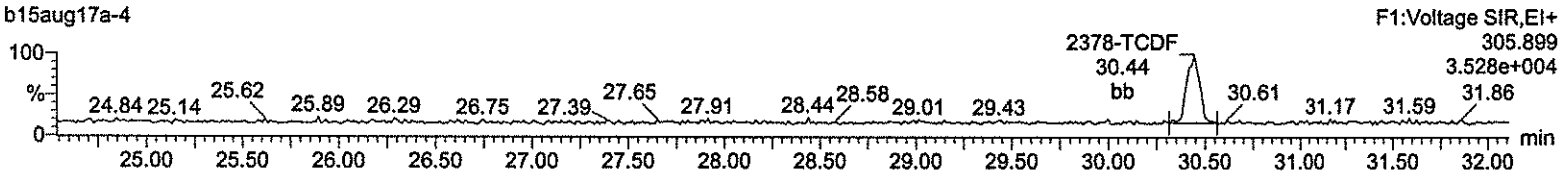
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-tetrafurans



Total-tetrafurans



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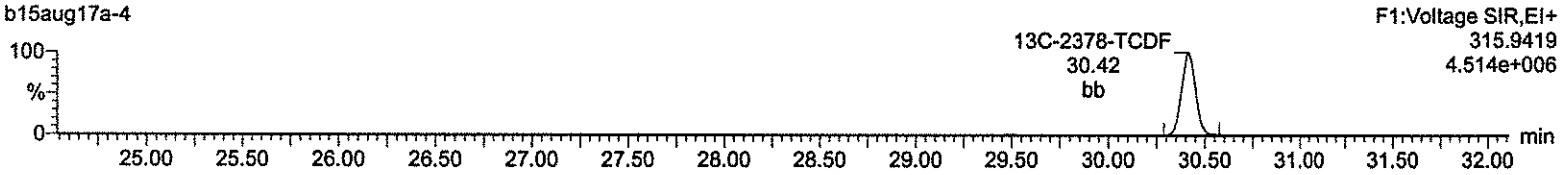

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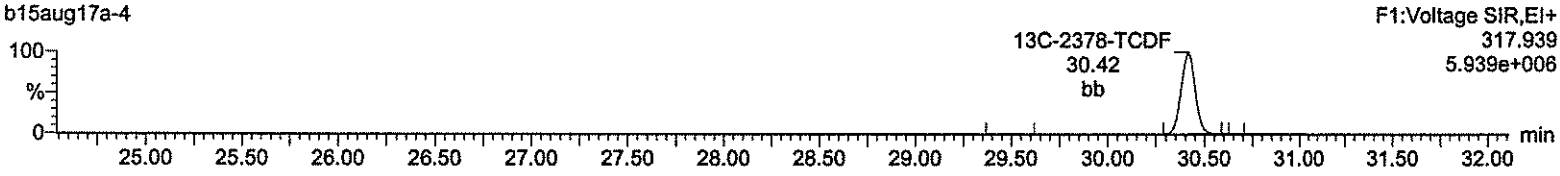
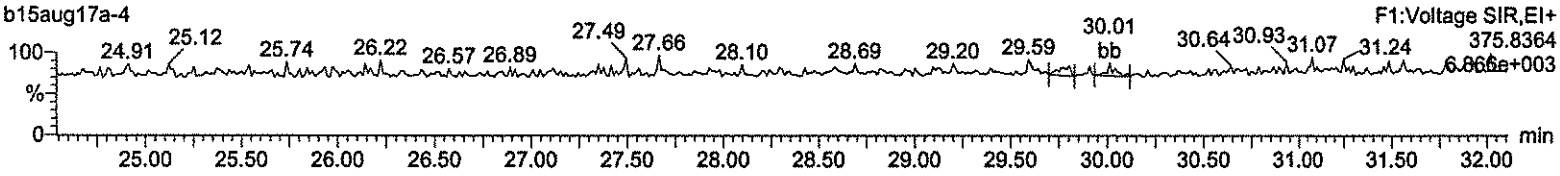
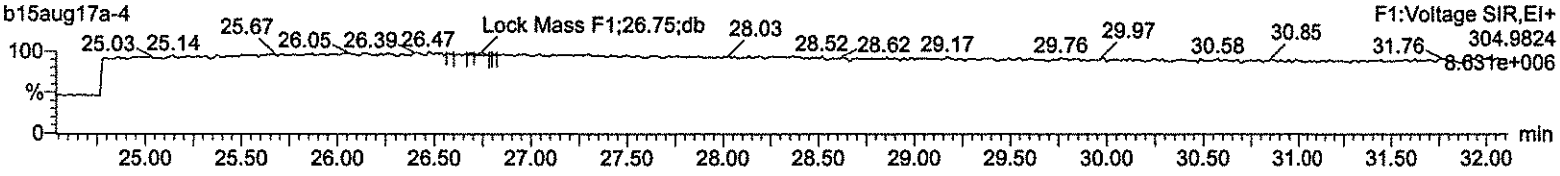


HxDPE



Lock Mass F1



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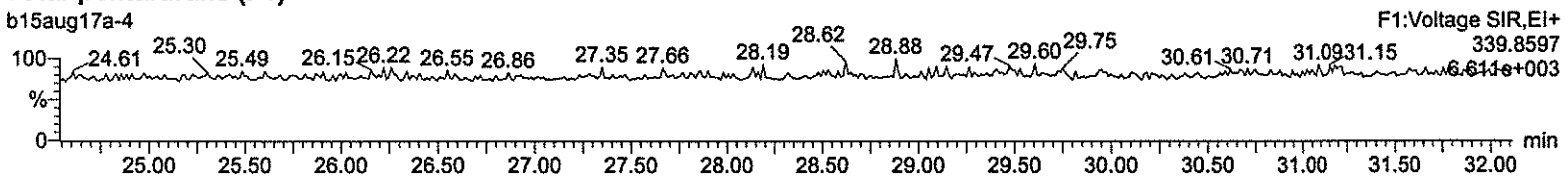
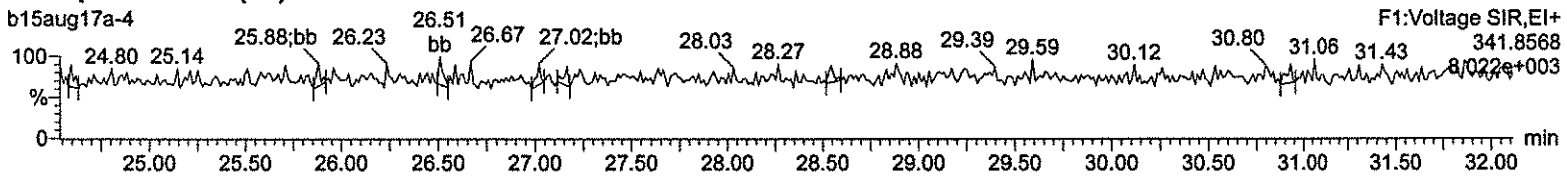
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-pentafurans (F1)



Total-pentafurans (F1)



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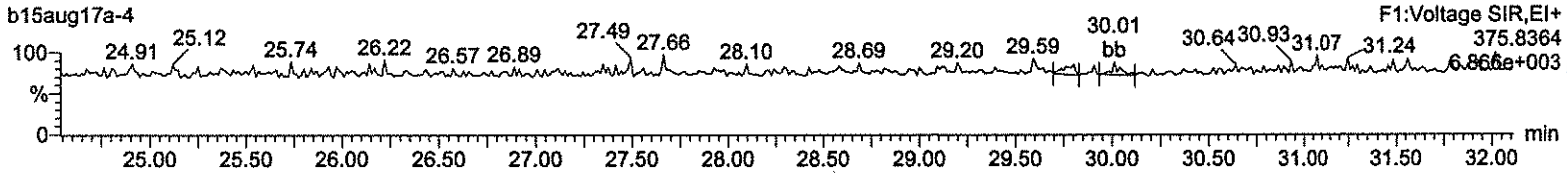
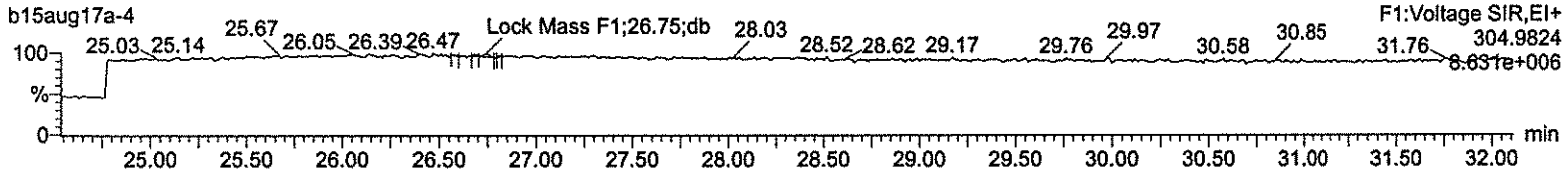


Lock Mass F1



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Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
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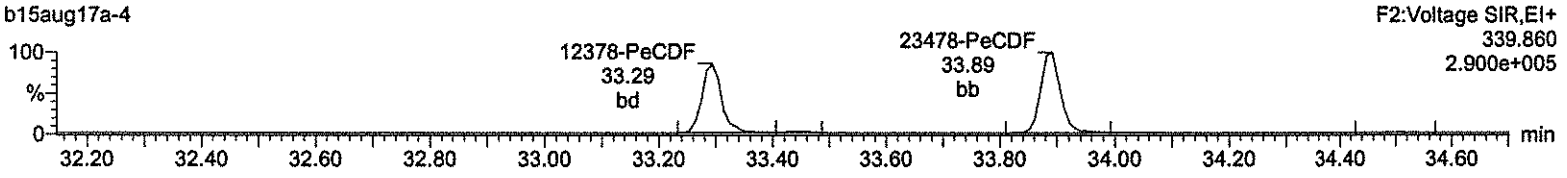
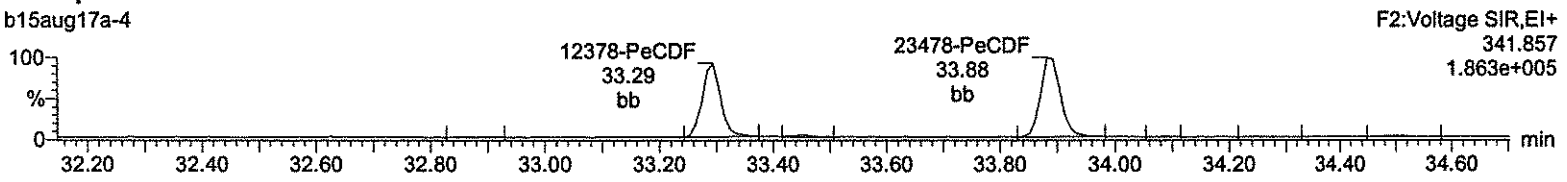
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

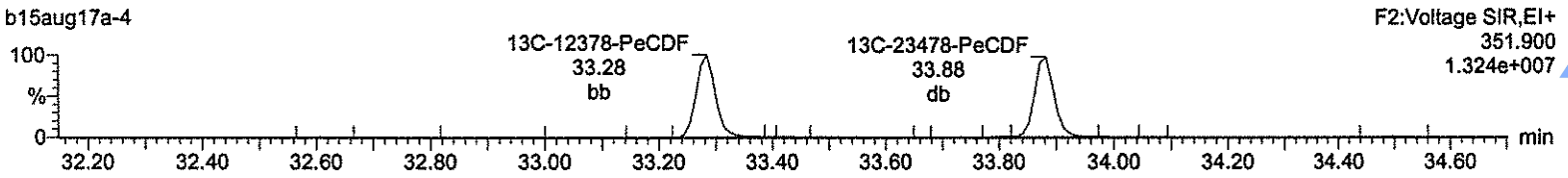
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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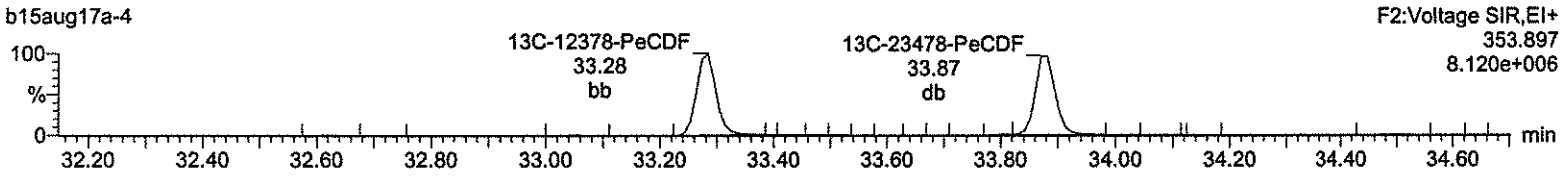
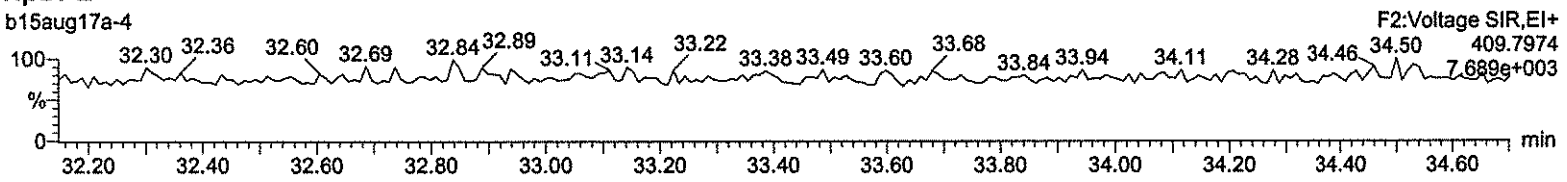
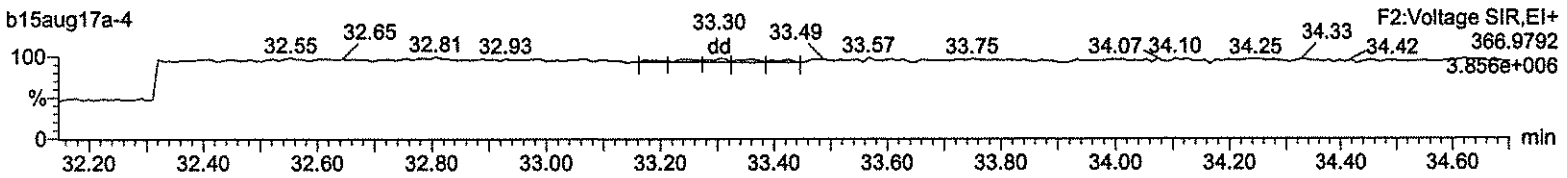


HpDPE



Lock Mass F2



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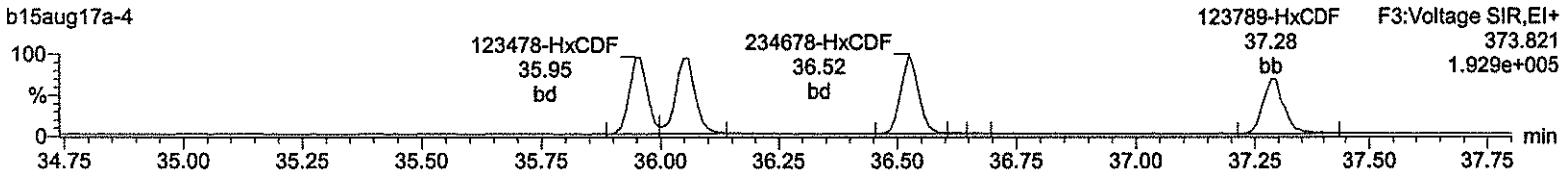
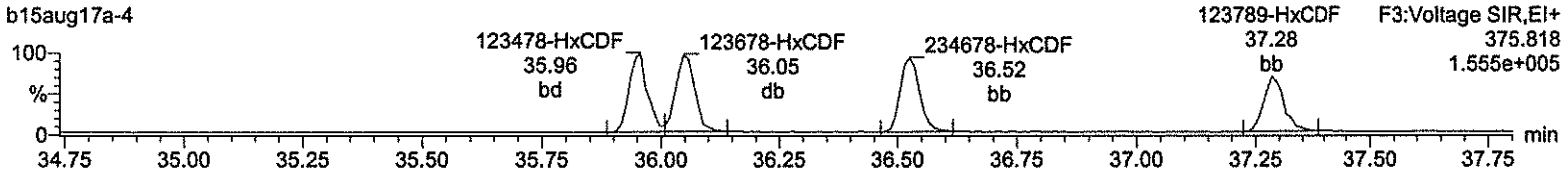
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-hexafurans



Total-hexafurans



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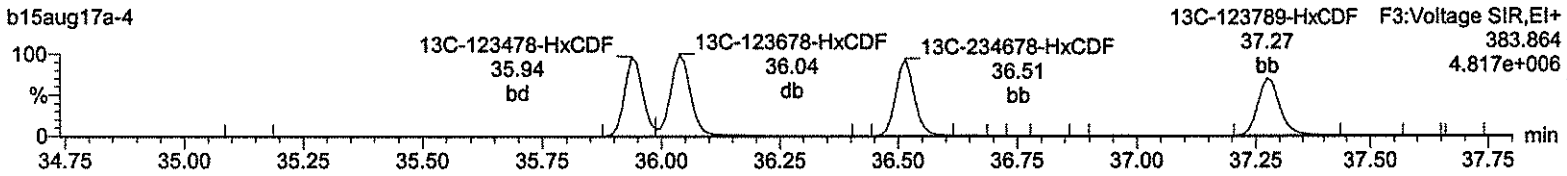

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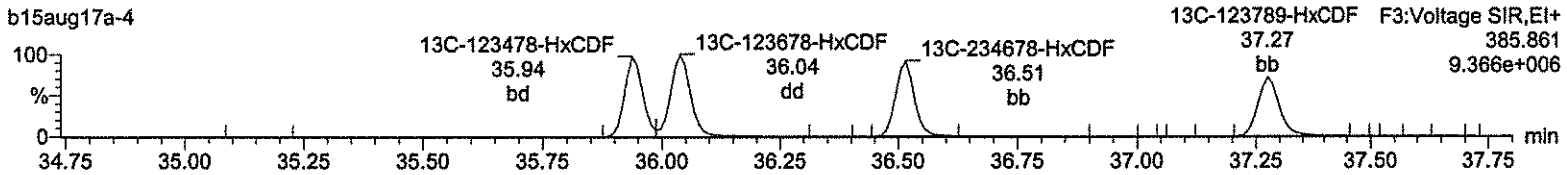
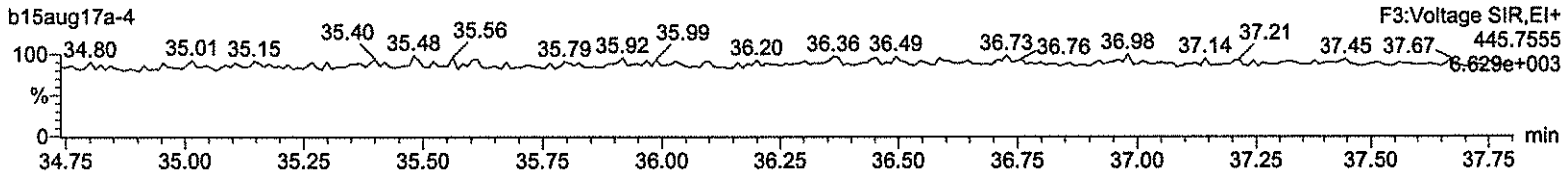
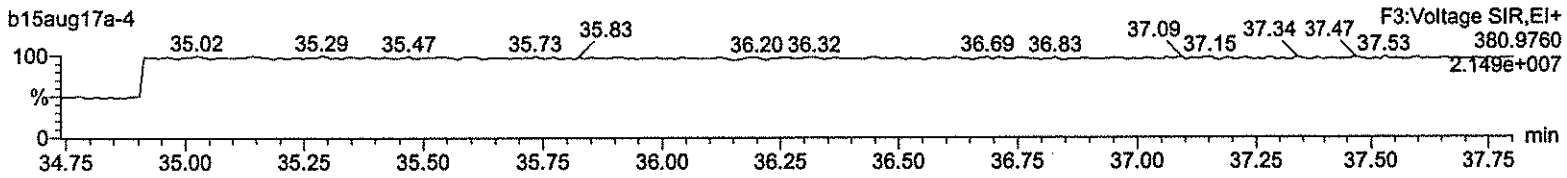


OcDPE



Lock Mass F3



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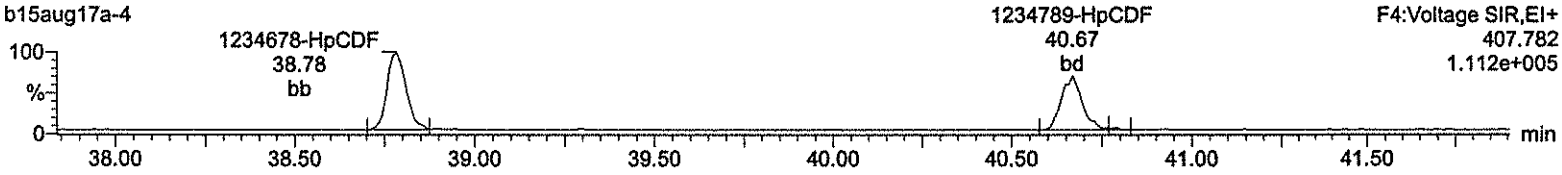
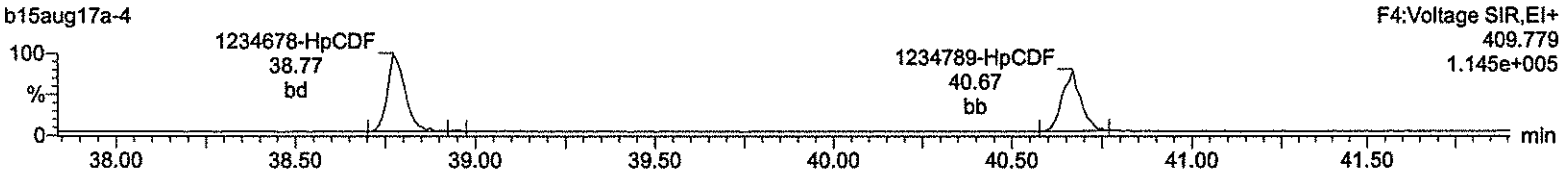
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

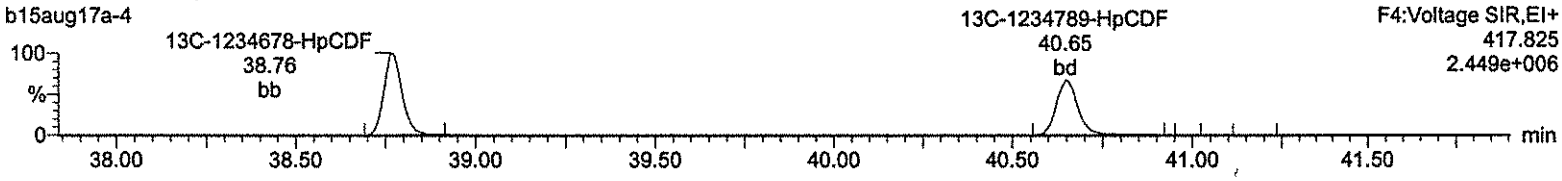
Total-heptafurans



Total-heptafurans



13C-1234678-HpCDF



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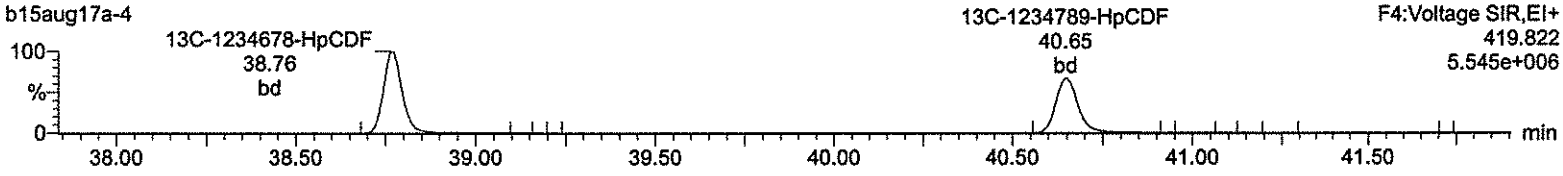

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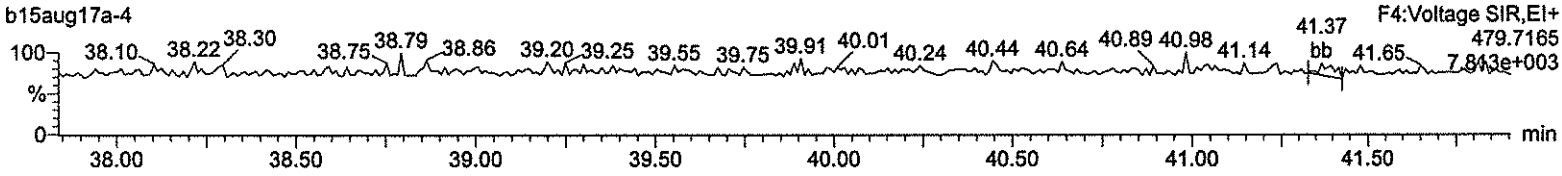
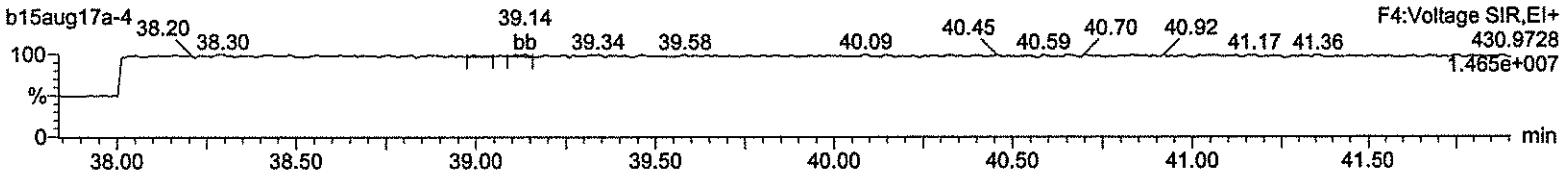


Lock Mass F4



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Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

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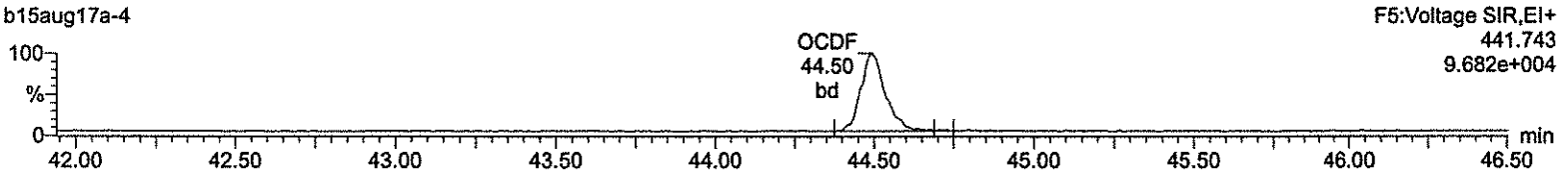
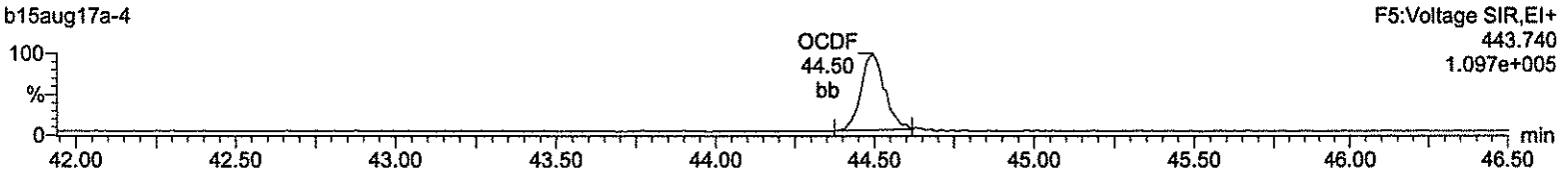
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

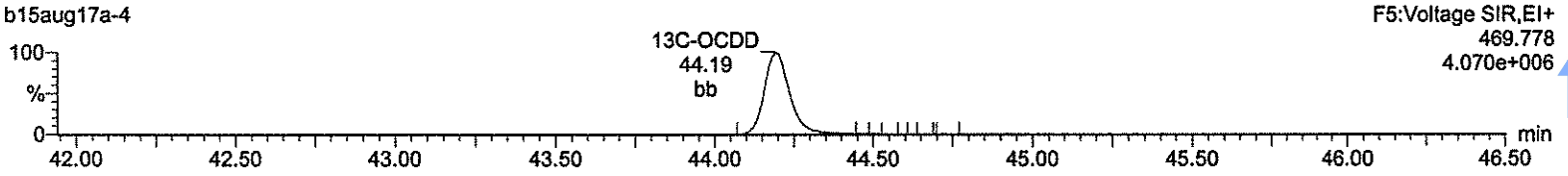
OCDF



OCDF



13C-OCDD



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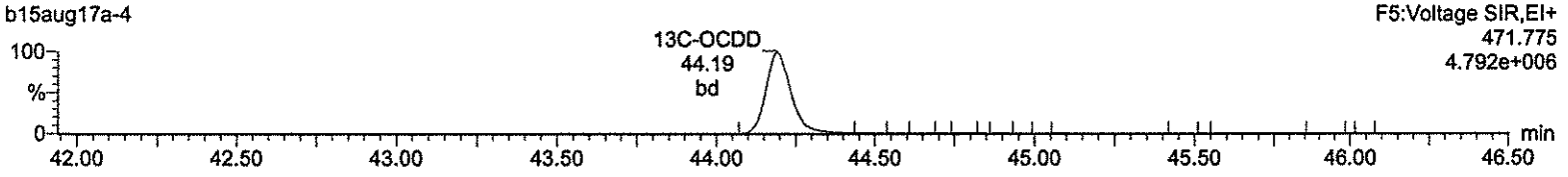
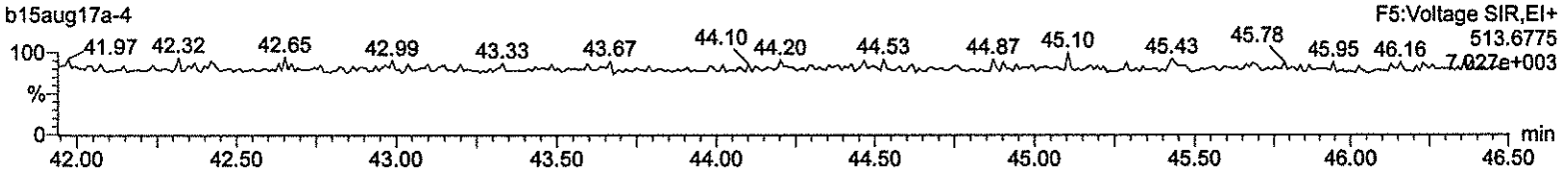
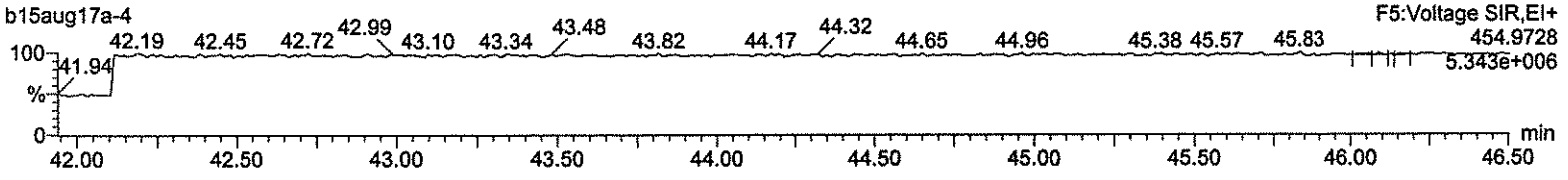


DeDPE



Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

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Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	5.60e3	7.68e3	1.33e4	31.19	1.000	0.73	NO	1.921	0.855	0.891	4.45	0.0428	9.40e4	1378	68.2	1.32e5	671	197.3	bb	bb
2	12378-PeCDD	3.04e4	1.96e4	5.00e4	34.08	1.000	1.55	NO	9.702	0.766	0.789	3.38	0.0342	7.47e5	993	752.7	4.92e5	741	663.5	bb	bb
3	123478-HxCDD	2.58e4	2.09e4	4.67e4	36.65	1.000	1.24	NO	9.780	0.819	0.838	4.80	0.0590	5.64e5	1323	426.4	4.40e5	1035	424.8	bd	bd
4	123678-HxCDD	2.83e4	2.26e4	5.09e4	36.73	1.000	1.25	NO	9.760	0.820	0.840	4.71	0.0561	5.75e5	1323	434.7	4.79e5	1035	462.6	db	db
5	123789-HxCDD	2.69e4	2.04e4	4.72e4	36.97	1.007	1.32	NO	9.740	0.793	0.814	3.19	0.0592	5.25e5	1323	397.0	3.78e5	1035	365.6	bd	bb
6	1234678-HpCDD	2.14e4	2.07e4	4.21e4	40.00	1.000	1.04	NO	10.035	1.006	1.003	3.74	0.0744	3.30e5	1061	311.0	3.08e5	824	373.5	bb	bd
7	OCDD	3.36e4	3.83e4	7.20e4	44.19	1.000	0.88	NO	19.175	0.873	0.910	3.79	0.119	3.67e5	840	437.3	4.27e5	1045	408.9	bd	bb
8	2378-TCDF	7.05e3	9.20e3	1.62e4	30.42	1.000	0.77	NO	1.944	0.895	0.921	2.50	0.0528	8.27e4	746	110.8	1.06e5	1290	82.2	bb	bb
9	12378-PeCDF	4.20e4	2.78e4	6.99e4	33.28	1.000	1.51	NO	9.995	0.822	0.822	4.18	0.0279	1.04e6	787	1315.1	6.99e5	1119	624.8	bd	bd
10	23478-PeCDF	4.62e4	3.07e4	7.69e4	33.88	1.001	1.50	NO	9.868	0.914	0.926	2.87	0.0260	1.14e6	787	1448.4	7.74e5	1119	691.8	bb	bb
11	123478-HxCDF	3.31e4	2.75e4	6.05e4	35.94	1.000	1.20	NO	9.961	0.994	0.998	5.02	0.0502	7.33e5	1435	510.6	6.12e5	1288	475.2	bd	bd
12	123678-HxCDF	3.55e4	3.04e4	6.58e4	36.04	1.000	1.17	NO	10.287	0.961	0.934	4.26	0.0508	7.44e5	1435	518.6	6.08e5	1288	472.1	dd	dd
13	234678-HxCDF	3.42e4	2.78e4	6.20e4	36.51	1.000	1.23	NO	9.970	1.029	1.033	4.35	0.0536	6.67e5	1435	464.7	5.71e5	1288	443.1	bd	bd
14	123789-HxCDF	2.83e4	2.35e4	5.18e4	37.28	1.000	1.21	NO	9.947	0.948	0.953	4.84	0.0713	5.44e5	1435	379.4	4.54e5	1288	352.4	bb	bd
15	1234678-HpCDF	2.53e4	2.54e4	5.07e4	38.77	1.000	1.00	NO	9.719	1.066	1.097	3.98	0.0459	4.41e5	769	573.3	4.35e5	862	504.1	bb	bd
16	1234789-HpCDF	2.05e4	2.04e4	4.09e4	40.65	1.000	1.00	NO	9.592	1.064	1.109	6.52	0.0671	2.90e5	769	377.3	2.91e5	862	337.6	bb	bb
17	OCDF	3.43e4	3.91e4	7.34e4	44.48	1.007	0.88	NO	19.312	0.890	0.922	7.27	0.122	3.70e5	986	374.8	4.18e5	959	435.6	bd	bb
18	13C-2378-TCDD	3.41e5	4.35e5	7.76e5	31.18	1.018	0.78	NO	98.327	1.123	1.142	2.94	0.121	5.90e6	3077	1918.1	7.45e6	1899	3924.0	bb	bb
19	13C-12378-PeCDD	4.04e5	2.50e5	6.53e5	34.07	1.112	1.62	NO	98.290	0.945	0.962	4.38	0.0779	9.91e6	1252	7915.4	5.93e6	1453	4080.3	bb	bb
20	13C-123478-HxCDD	3.14e5	2.56e5	5.70e5	36.64	0.991	1.22	NO	99.329	1.020	1.027	0.74	0.100	6.56e6	2119	3098.4	5.26e6	2231	2358.5	bd	bd
21	13C-123678-HxCDD	3.40e5	2.82e5	6.21e5	36.72	0.993	1.21	NO	99.030	1.112	1.123	1.81	0.0916	6.83e6	2119	3225.3	5.73e6	2231	2568.6	db	db
22	13C-1234678-HpCDD	2.12e5	2.06e5	4.19e5	39.99	1.082	1.03	NO	99.547	0.750	0.753	2.07	0.120	3.21e6	2109	1520.4	3.10e6	1697	1828.1	bb	bb
23	13C-OCDD	3.83e5	4.42e5	8.25e5	44.18	1.195	0.87	NO	203.529	0.738	0.726	4.08	0.102	4.02e6	1522	2644.8	4.81e6	1614	2982.2	bb	bb
24	13C-2378-TCDF	3.90e5	5.18e5	9.07e5	30.41	0.992	0.75	NO	98.216	1.313	1.337	1.60	0.164	4.50e6	5073	886.4	6.04e6	2837	2128.5	bb	bb
25	13C-12378-PeCDF	5.23e5	3.27e5	8.51e5	33.27	1.086	1.60	NO	99.042	1.230	1.242	3.08	0.154	1.28e7	3750	3411.7	7.92e6	3169	2498.8	bd	bd
26	13C-23478-PeCDF	5.17e5	3.24e5	8.41e5	33.86	1.105	1.59	NO	98.655	1.217	1.234	4.20	0.155	1.21e7	3750	3237.8	7.75e6	3169	2446.3	bb	bb
27	13C-123478-HxCDF	2.05e5	4.03e5	6.09e5	35.93	0.972	0.51	NO	99.197	1.090	1.099	0.83	0.134	4.58e6	2981	1536.2	9.05e6	3257	2778.7	bd	bd
28	13C-123678-HxCDF	2.33e5	4.52e5	6.85e5	36.03	0.975	0.51	NO	96.451	1.227	1.272	2.46	0.116	4.88e6	2981	1635.6	9.41e6	3257	2887.9	db	db
29	13C-234678-HxCDF	2.02e5	4.00e5	6.03e5	36.51	0.988	0.51	NO	100.005	1.079	1.079	1.03	0.137	4.13e6	2981	1385.2	7.94e6	3257	2437.7	bb	bd
30	13C-123789-HxCDF	1.89e5	3.57e5	5.47e5	37.27	1.008	0.53	NO	99.175	0.979	0.987	1.26	0.150	3.47e6	2981	1164.8	6.63e6	3257	2034.0	bb	bb
31	13C-1234678-HpCDF	1.44e5	3.32e5	4.76e5	38.76	1.049	0.44	NO	100.298	0.852	0.849	1.50	0.105	2.46e6	1654	1486.0	5.55e6	2110	2632.4	bb	bb
32	13C-1234789-HpCDF	1.17e5	2.68e5	3.85e5	40.64	1.099	0.43	NO	102.010	0.689	0.675	2.06	0.132	1.66e6	1654	1003.6	3.71e6	2110	1758.4	bd	bb
33	13C-1234-TCDD	3.03e5	3.88e5	6.91e5	30.64	0.000	0.78	NO	100.000	1.000	1.000	0.00	0.138	3.96e6	3077	1286.6	5.17e6	1899	2723.7	bb	bb
34	13C-123789-HxCDD	3.02e5	2.57e5	5.58e5	36.96	0.000	1.18	NO	100.000	1.000	1.000	0.00	0.103	5.71e6	2119	2694.9	4.82e6	2231	2159.3	bb	bb
35	37Cl-2378-TCDD	1.51e4		1.51e4	31.19	1.018			1.876	1.089	1.161	5.41	0.0302	2.48e5	1265	196.2				bb	

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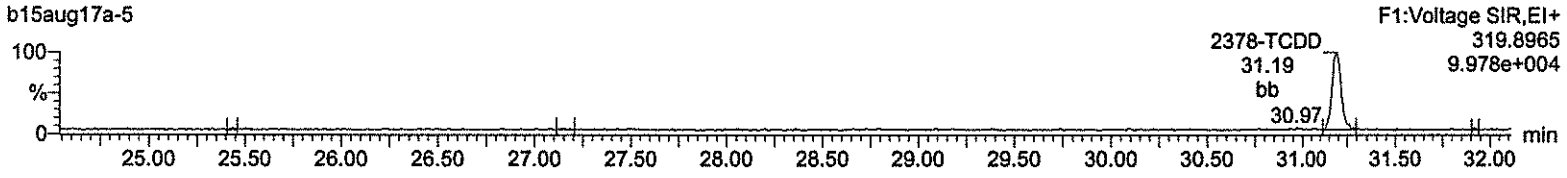
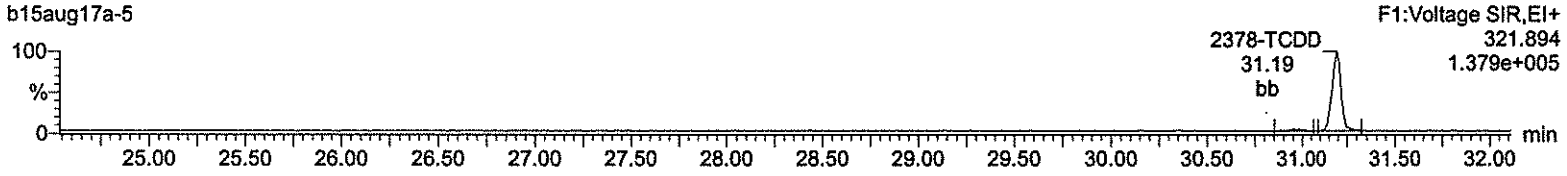
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

Total-tetradioxins



Total-tetradioxins



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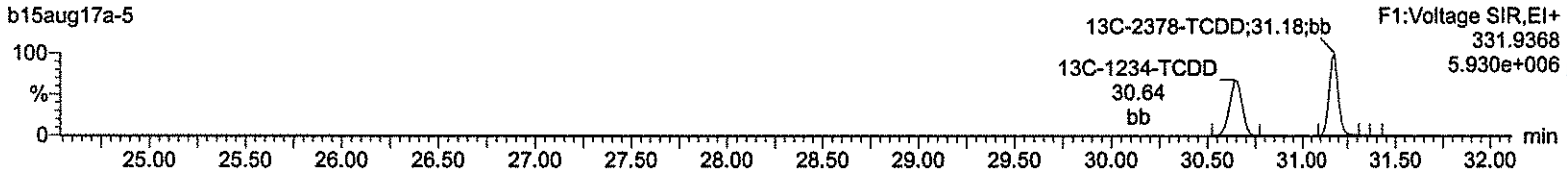

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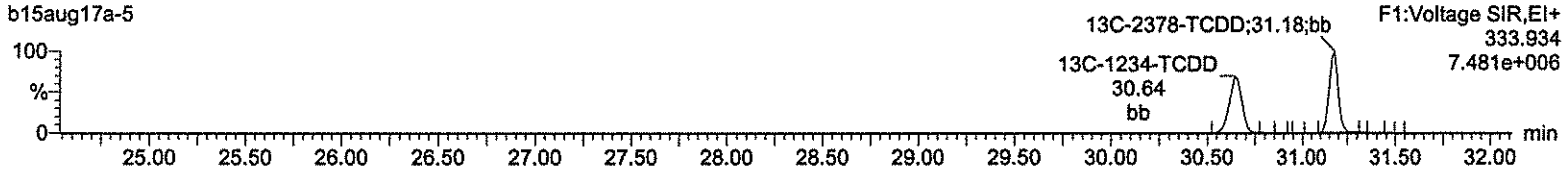

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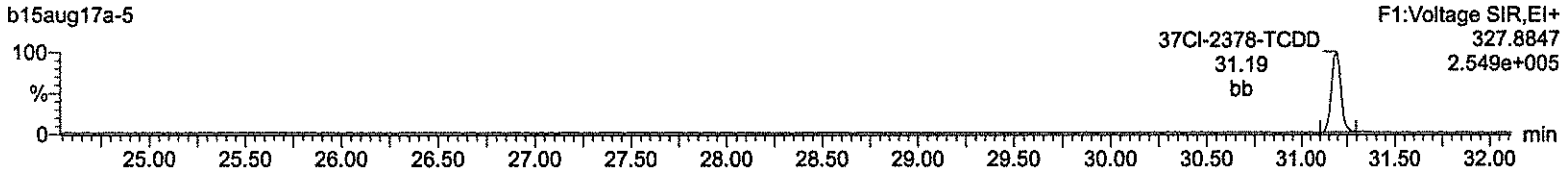

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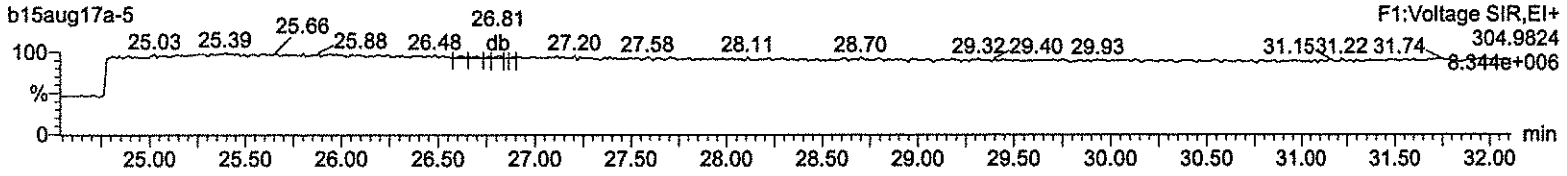

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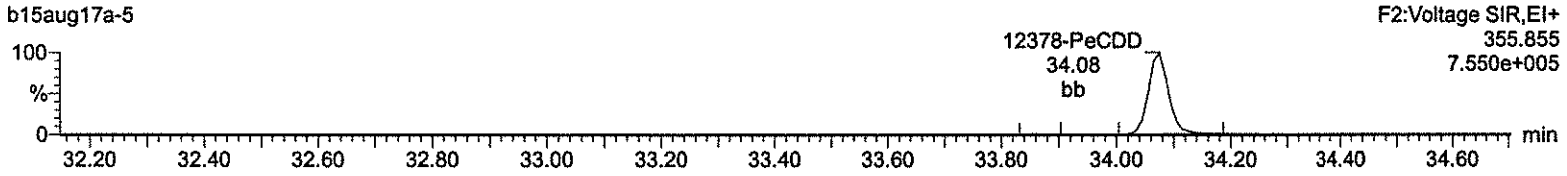
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

Total-pentadioxins



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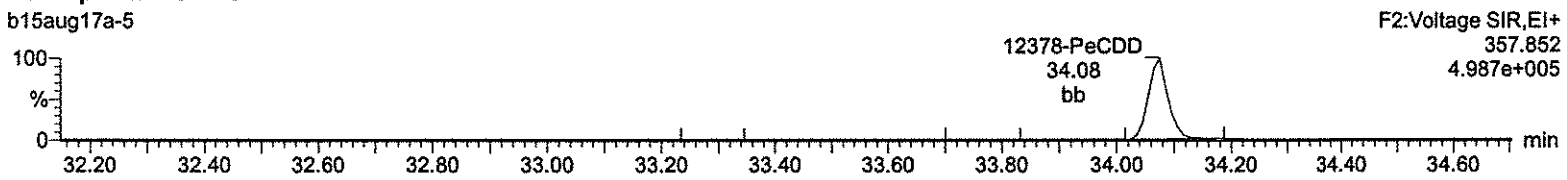

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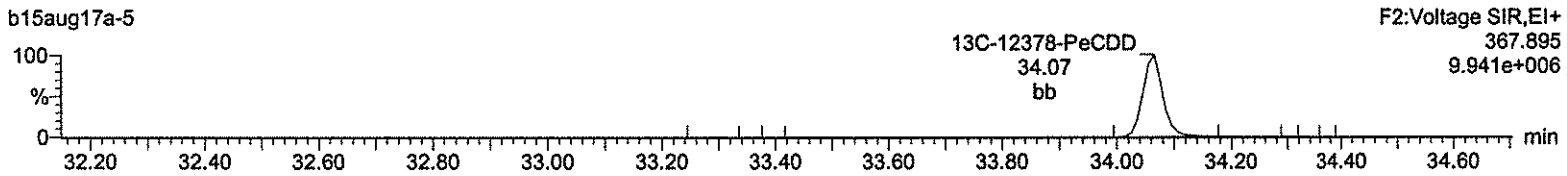

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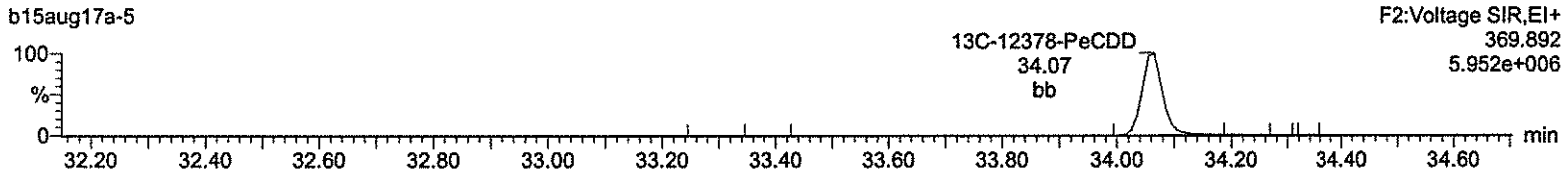

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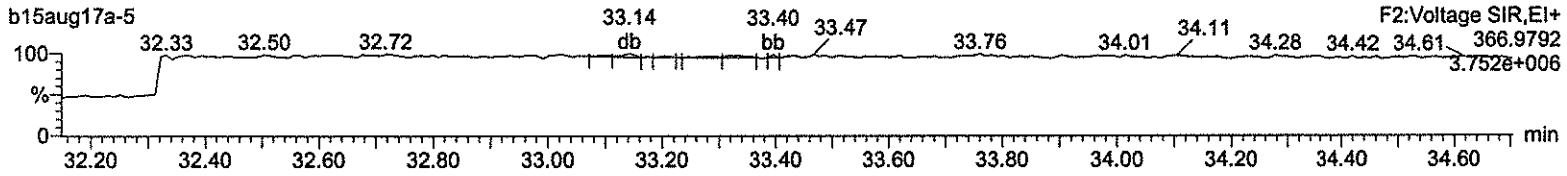

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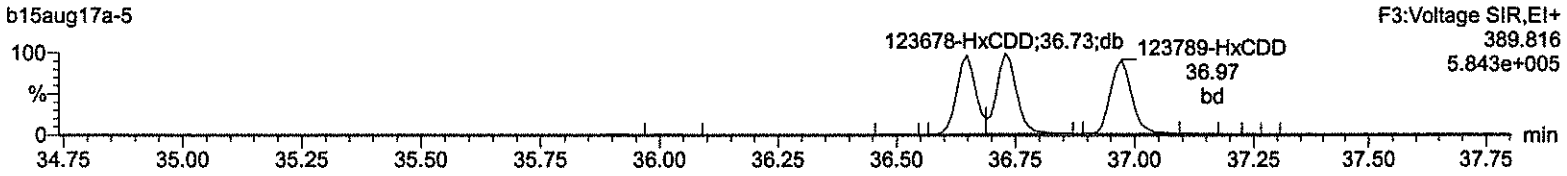
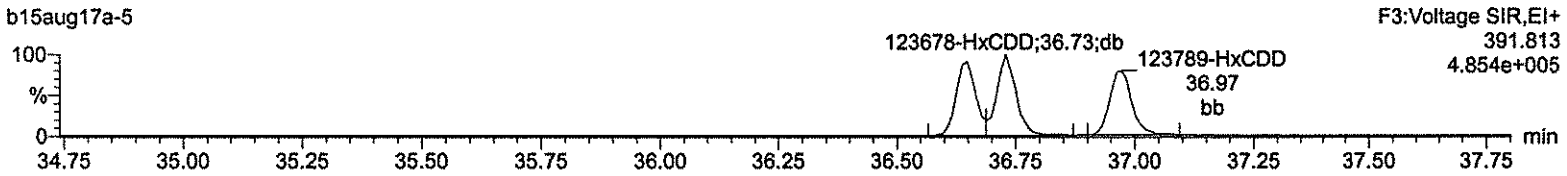
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

Total-hexadioxins



Total-hexadioxins



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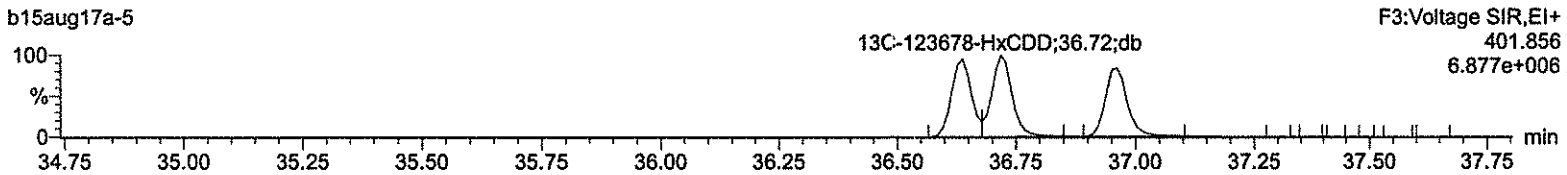

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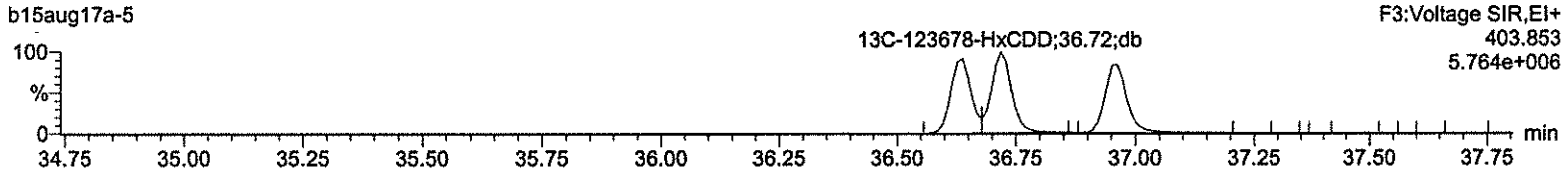

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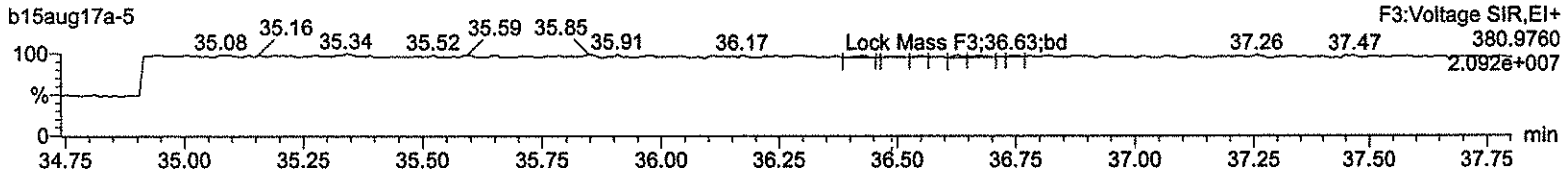

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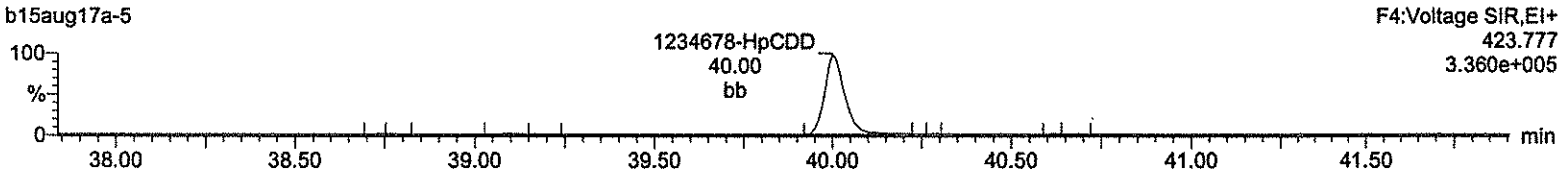
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

Total-heptadioxins



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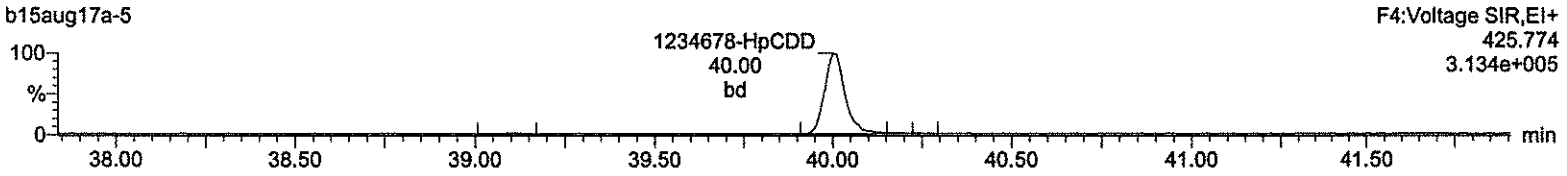

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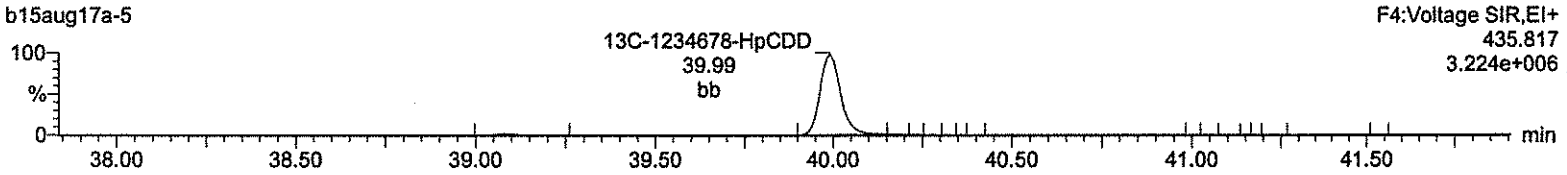

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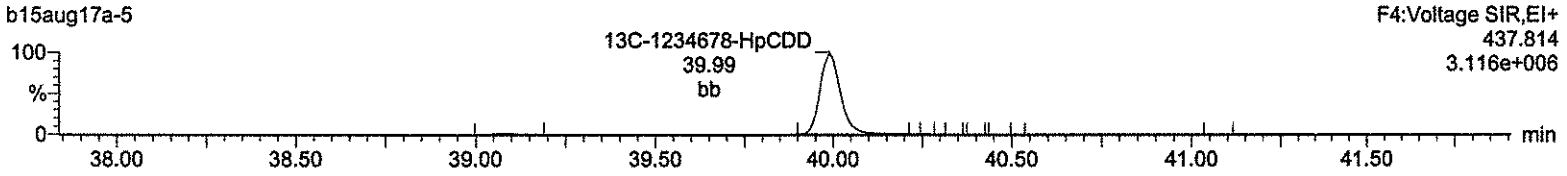

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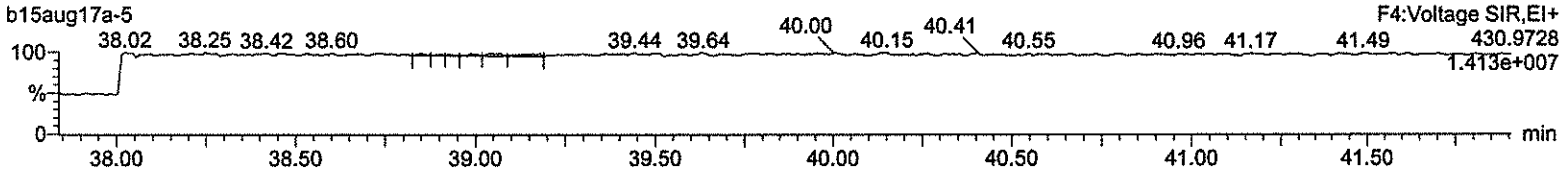

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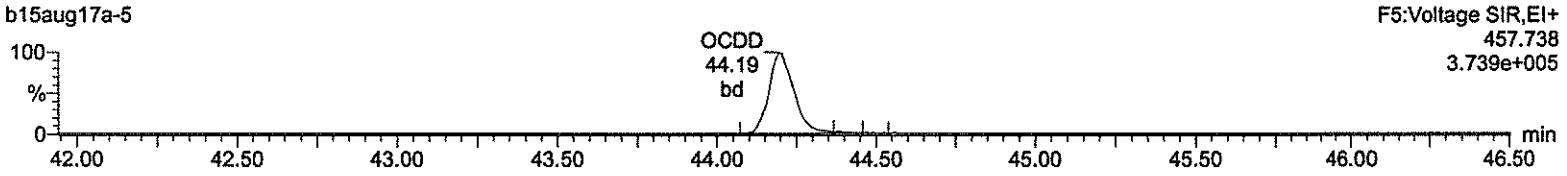

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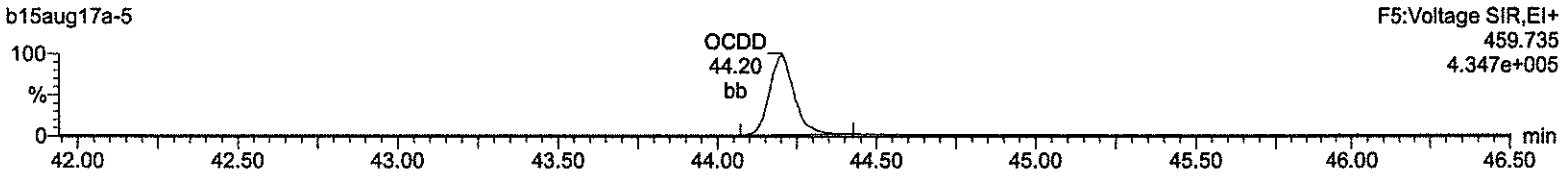

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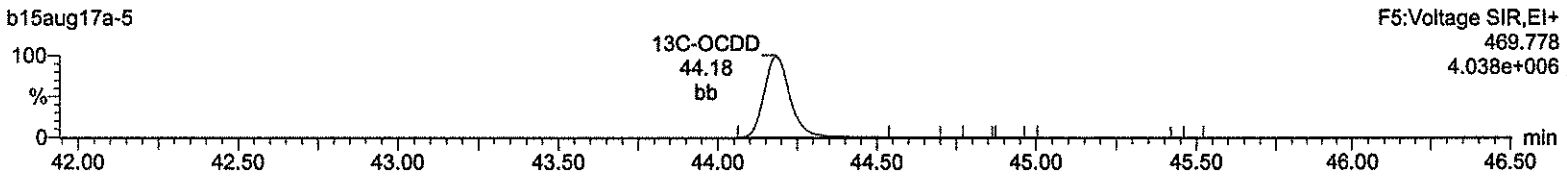

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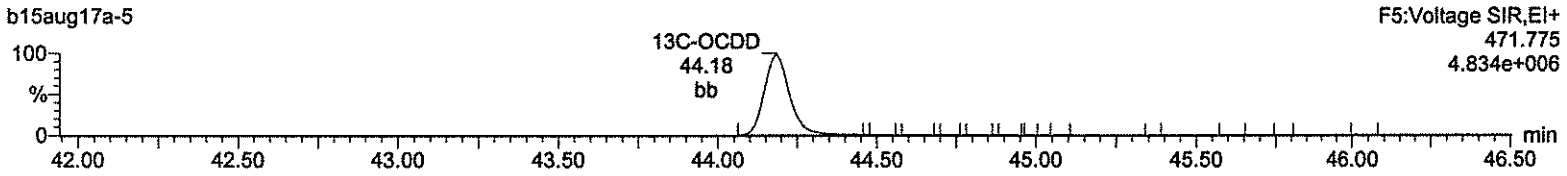

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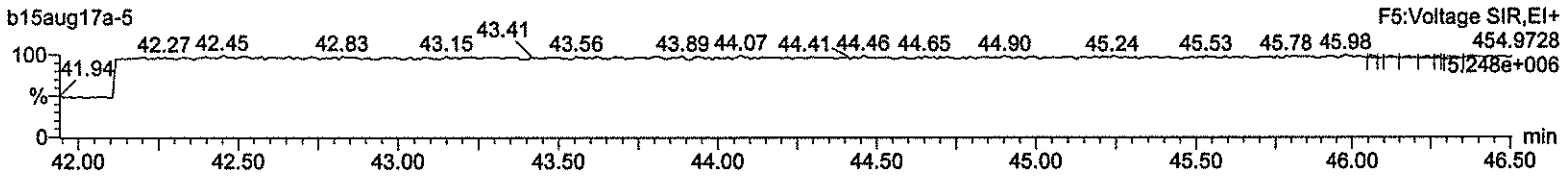

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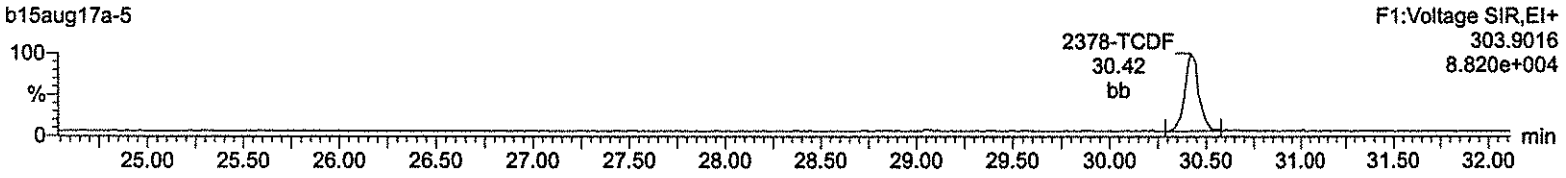
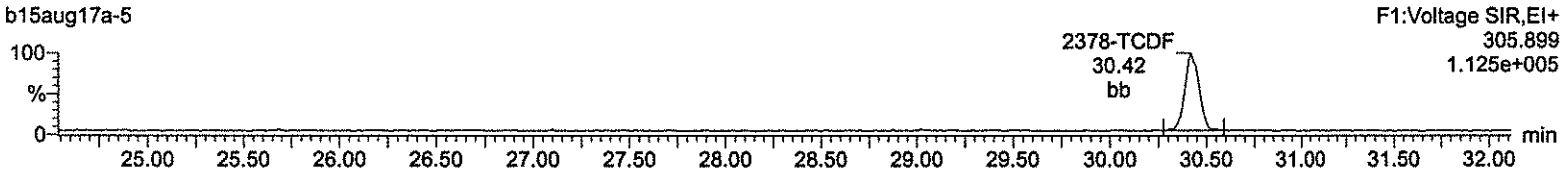
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

Total-tetrafurans



Total-tetrafurans



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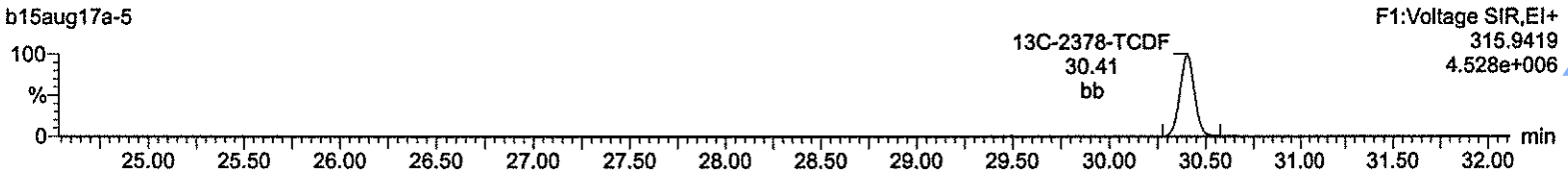

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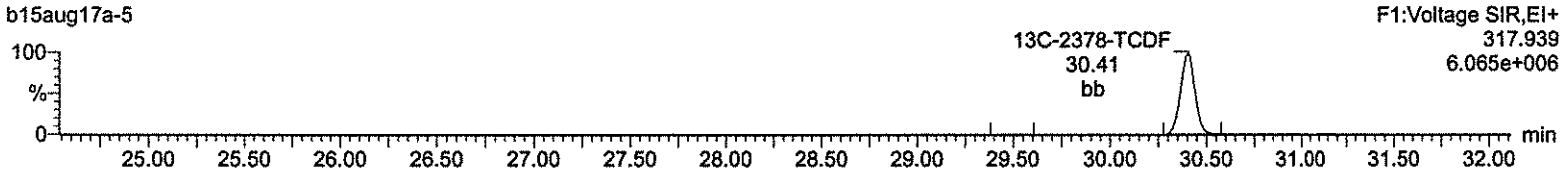

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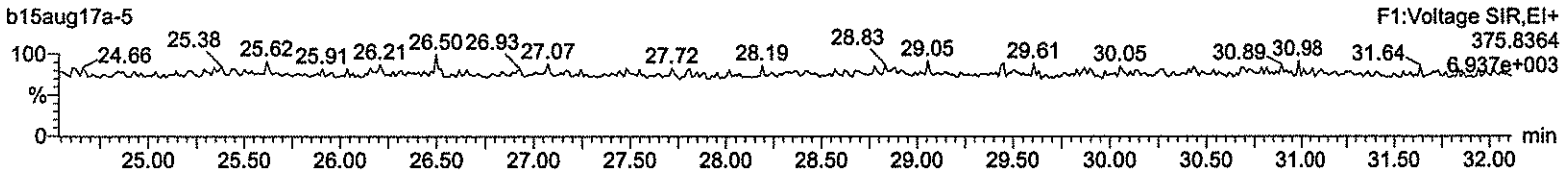

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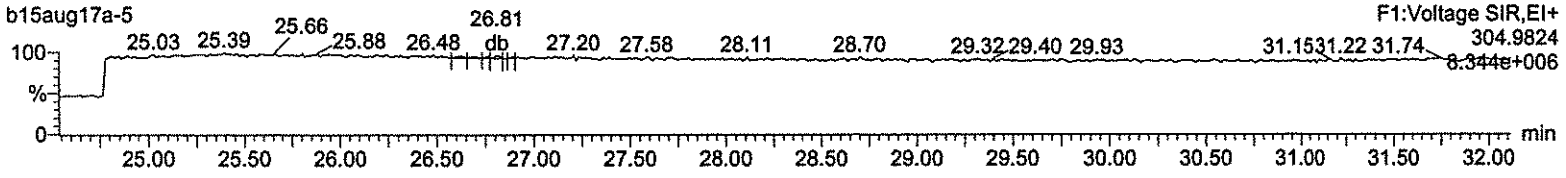

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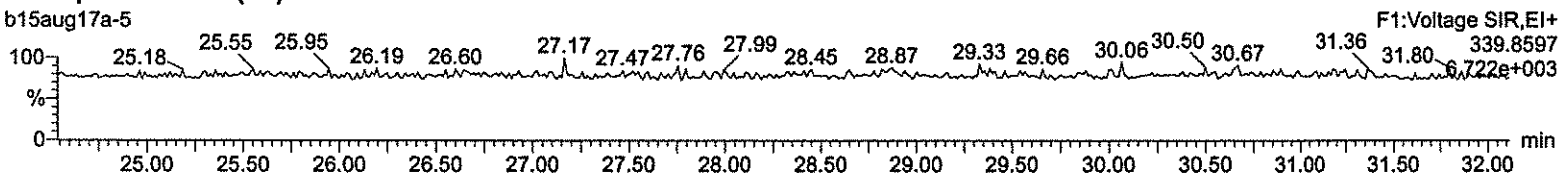
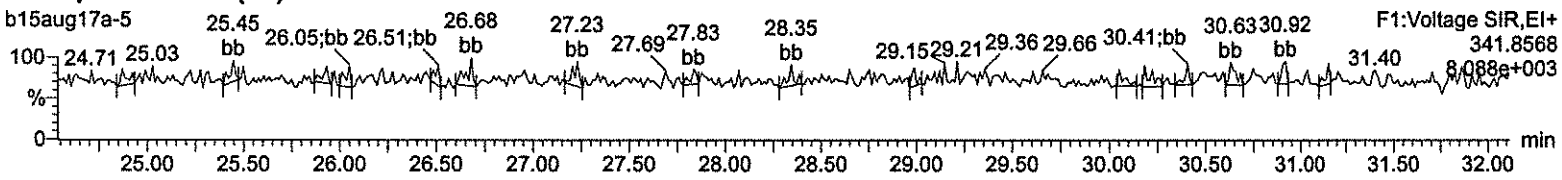
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

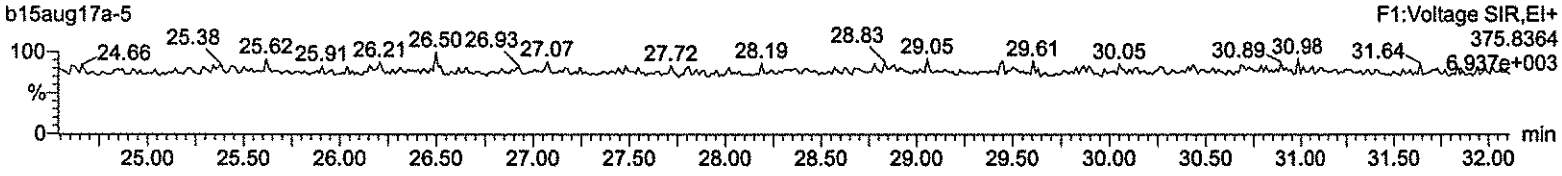
Total-pentafurans (F1)



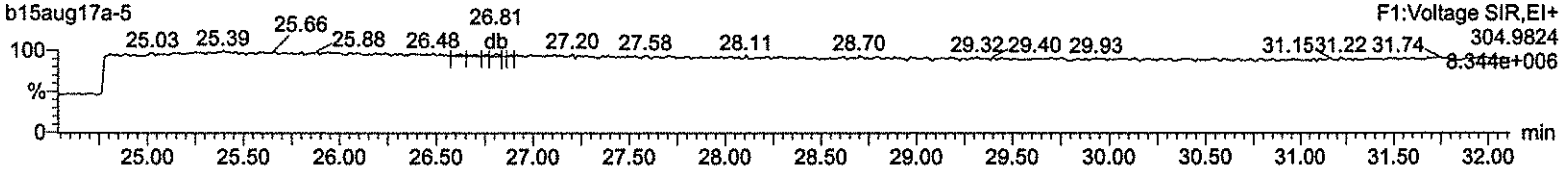
Total-pentafurans (F1)



HxDPE



Lock Mass F1



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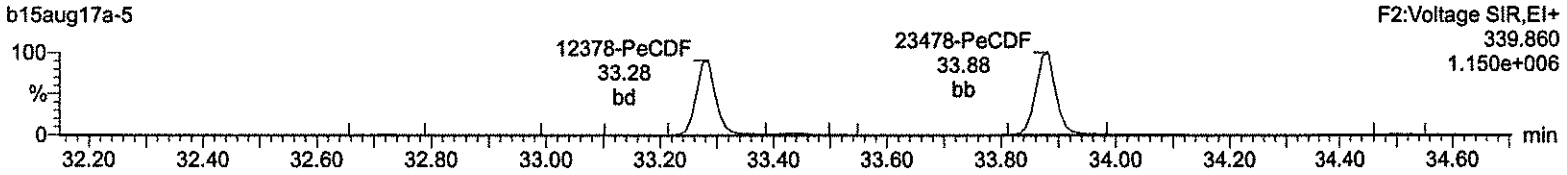
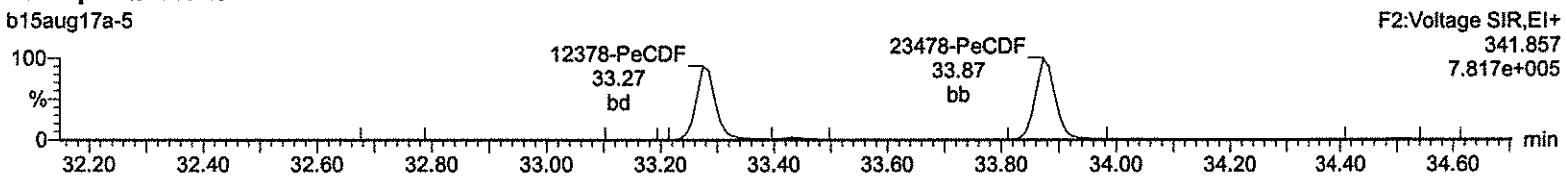
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

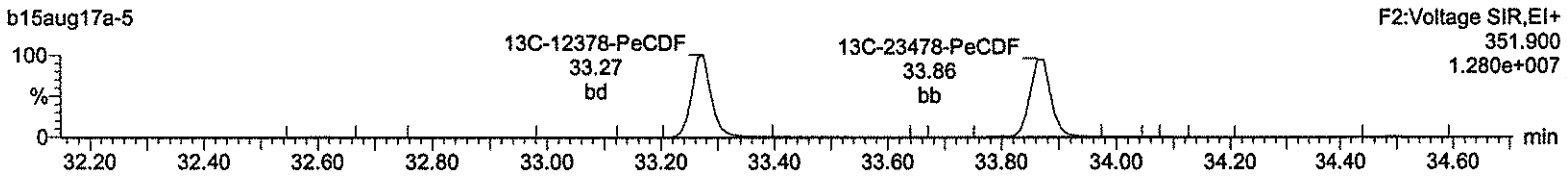
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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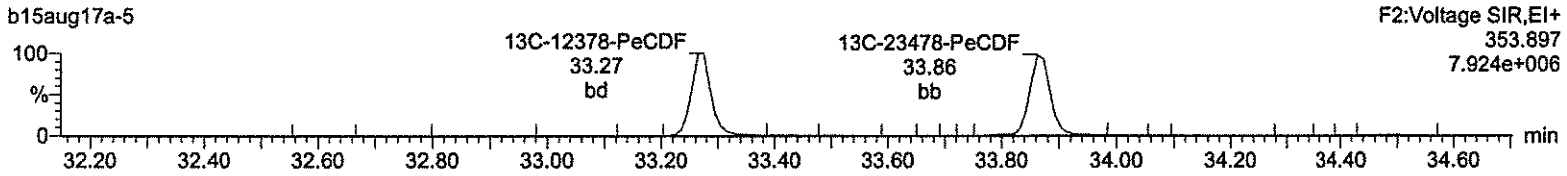
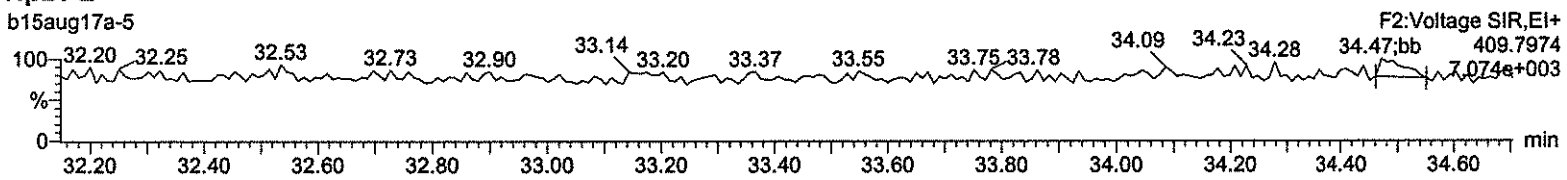
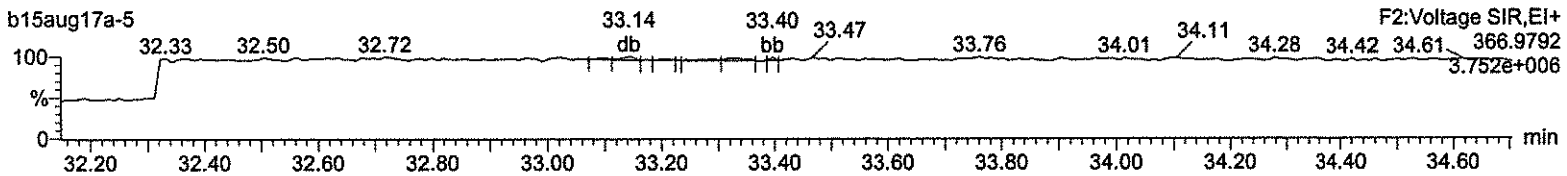


HpDPE



Lock Mass F2



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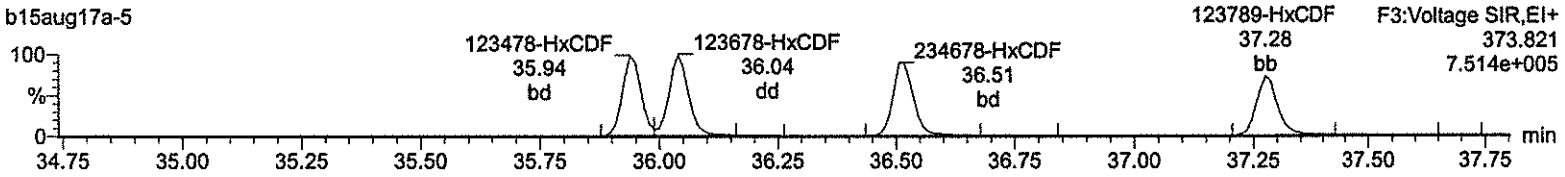
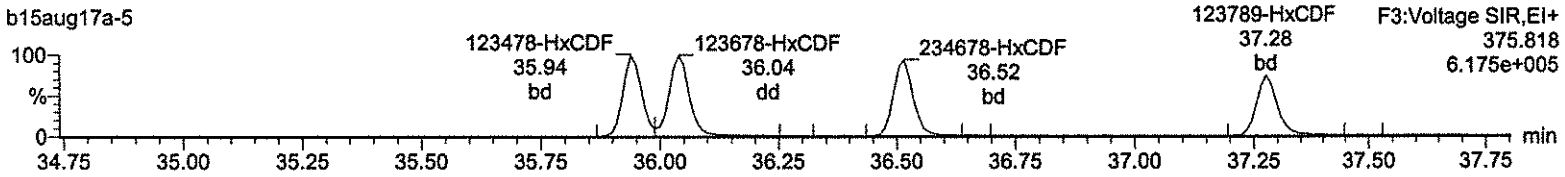
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

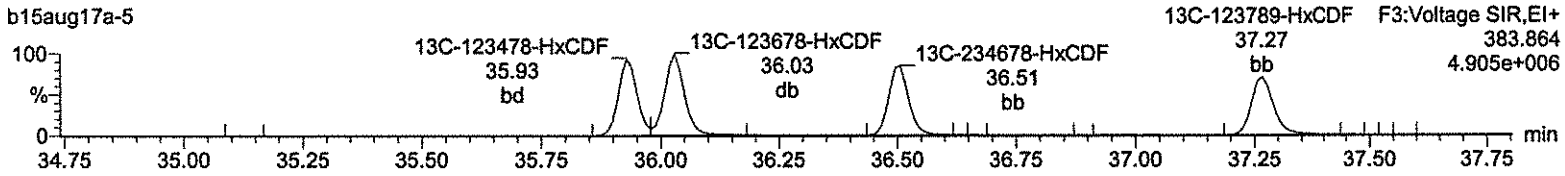
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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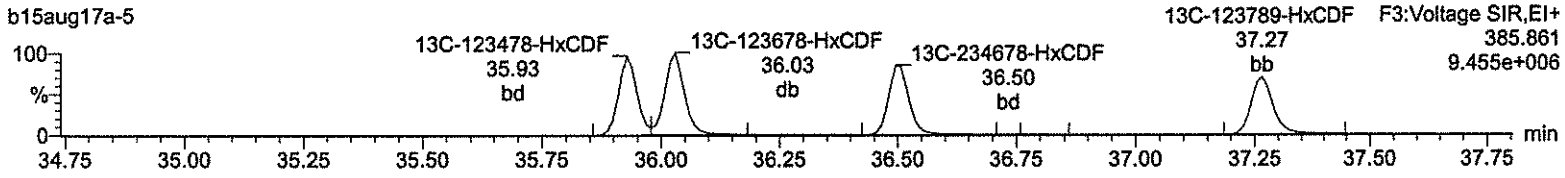
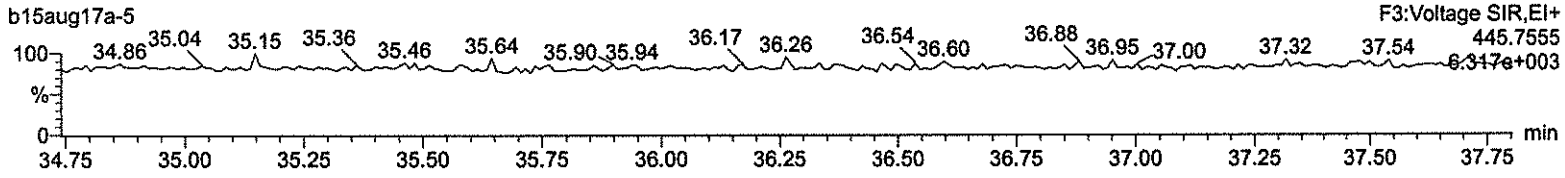
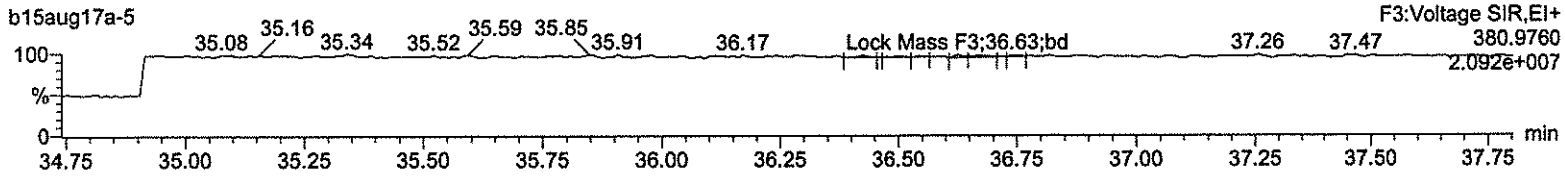


OcDPE



Lock Mass F3



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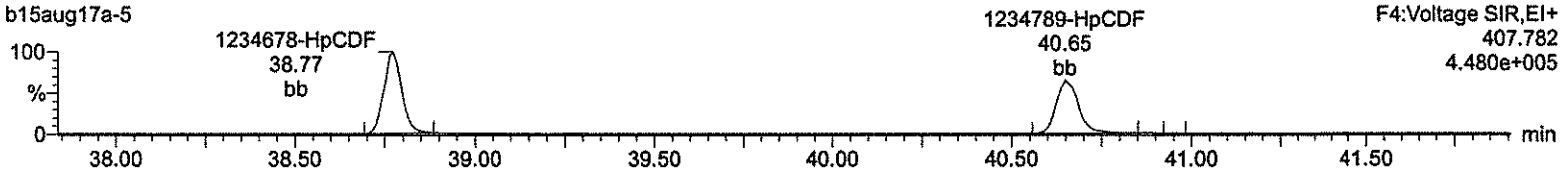
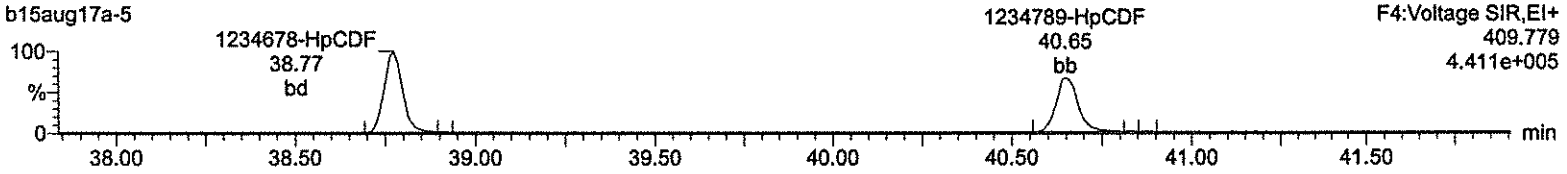
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

Total-heptafurans



Total-heptafurans



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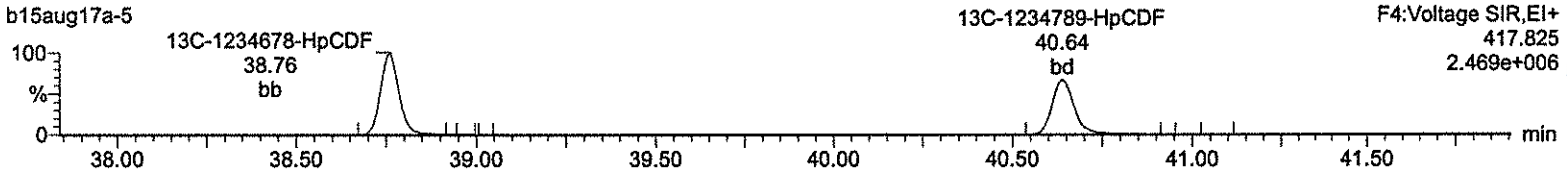

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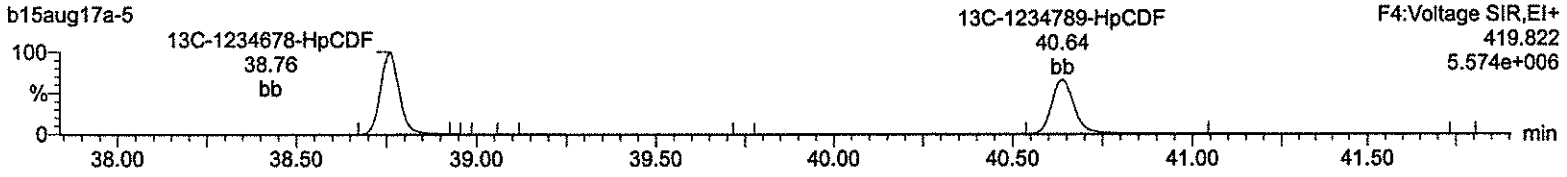
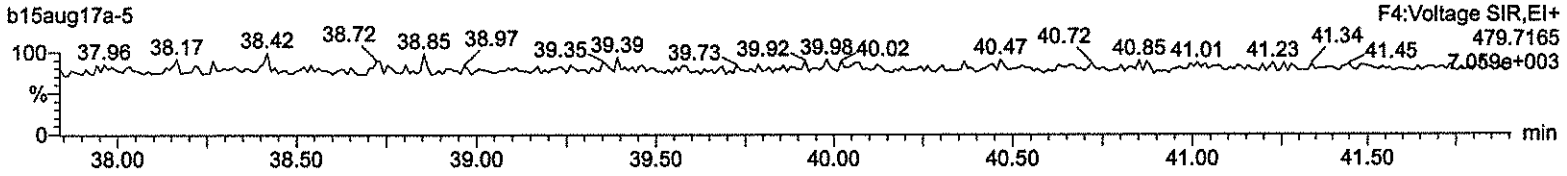
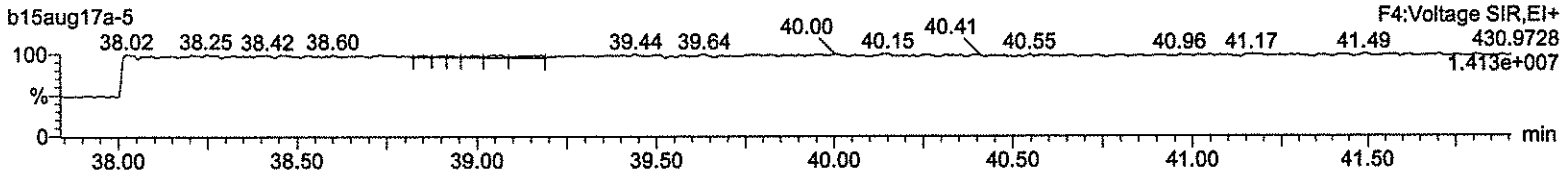


NoDPE



Lock Mass F4



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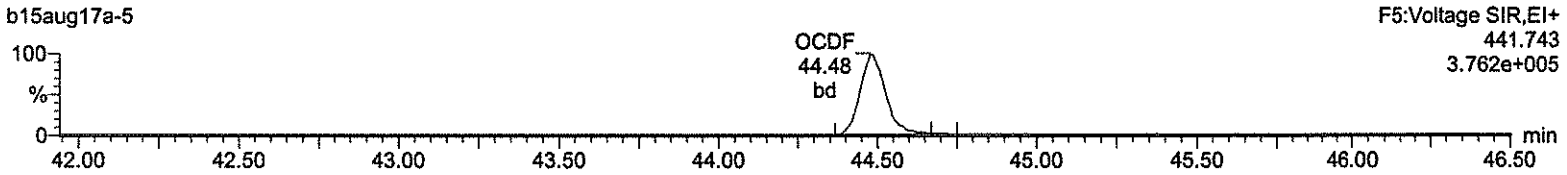
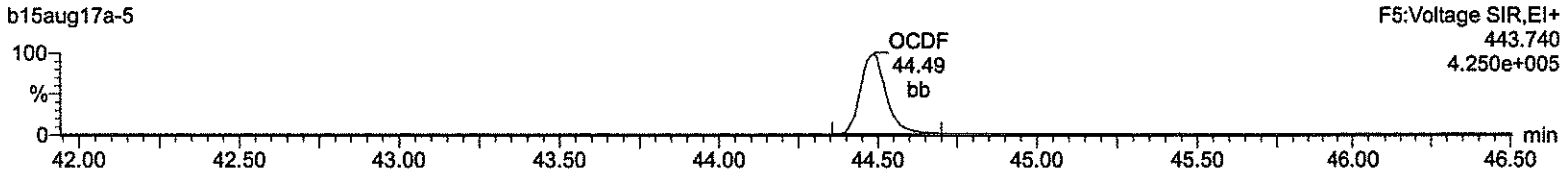
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

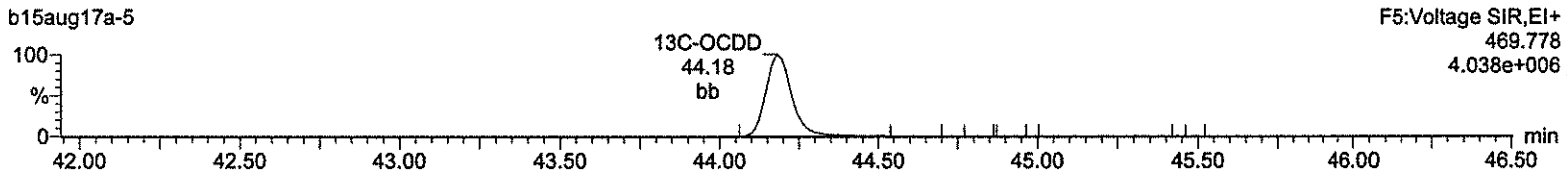
OCDF



OCDF



13C-OCDD



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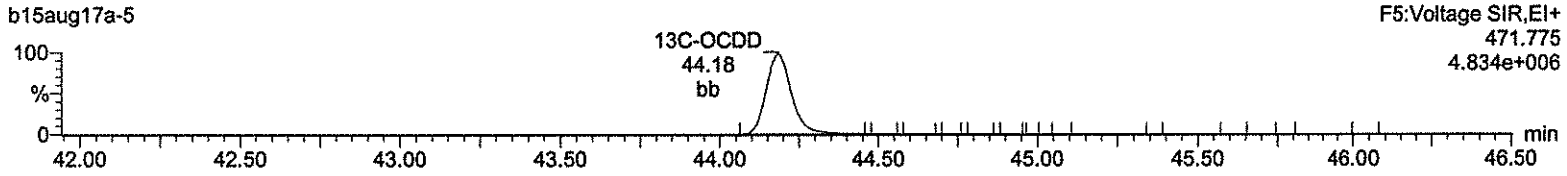
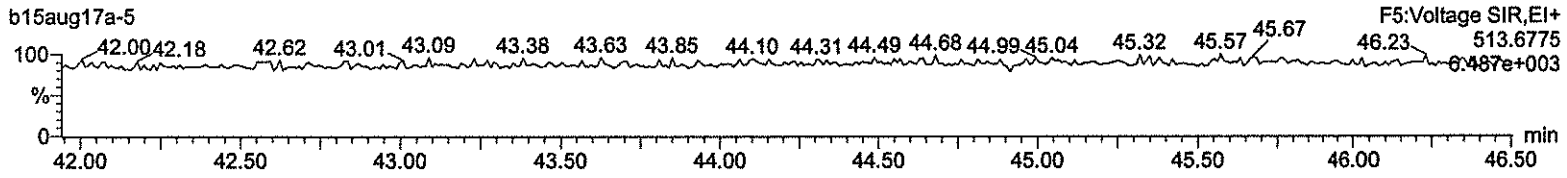
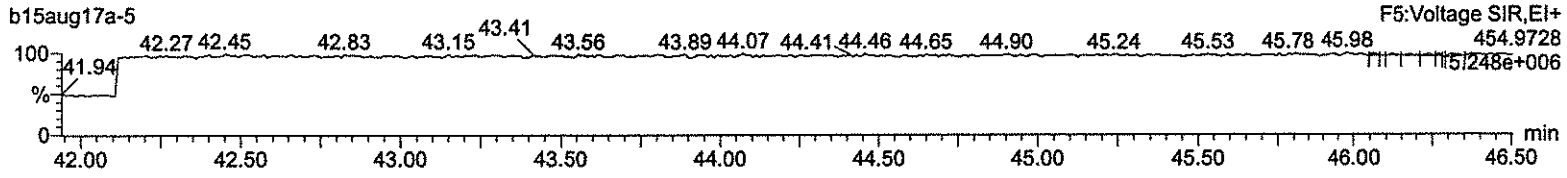


DeDPE



Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

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Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	2.87e4	4.08e4	6.95e4	31.19	1.000	0.70	NO	10.138	0.903	0.891	4.45	0.0444	4.99e5	1292	386.1	7.21e5	818	881.7	bb	bd
2	12378-PeCDD	1.54e5	1.00e5	2.55e5	34.07	1.000	1.53	NO	51.563	0.814	0.789	3.38	0.0437	3.80e6	1179	3223.1	2.46e6	938	2620.2	bb	bb
3	123478-HxCDD	1.31e5	1.03e5	2.34e5	36.65	1.000	1.27	NO	51.214	0.858	0.838	4.80	0.0794	2.85e6	1879	1515.7	2.25e6	1276	1764.7	bd	bd
4	123678-HxCDD	1.45e5	1.15e5	2.60e5	36.73	1.000	1.26	NO	51.264	0.861	0.840	4.71	0.0805	2.76e6	1879	1470.1	2.20e6	1276	1721.9	db	dd
5	123789-HxCDD	1.35e5	1.06e5	2.41e5	36.97	1.007	1.28	NO	51.486	0.838	0.814	3.19	0.0824	2.66e6	1879	1417.2	2.05e6	1276	1604.4	bb	db
6	1234678-HpCDD	1.04e5	9.97e4	2.03e5	40.01	1.001	1.04	NO	49.944	1.001	1.003	3.74	0.0999	1.57e6	1327	1184.3	1.49e6	1151	1296.0	bd	bb
7	OCDD	1.65e5	1.81e5	3.46e5	44.19	1.000	0.91	NO	99.637	0.907	0.910	3.79	0.154	1.79e6	1071	1673.9	1.95e6	1218	1602.8	bd	bd
8	2378-TCDF	3.47e4	4.71e4	8.18e4	30.43	1.001	0.74	NO	9.780	0.900	0.921	2.50	0.0510	4.11e5	761	539.5	5.56e5	1318	421.9	bb	bb
9	12378-PeCDF	2.09e5	1.39e5	3.47e5	33.28	1.000	1.50	NO	51.498	0.847	0.822	4.18	0.0548	5.23e6	1716	3050.9	3.54e6	2011	1758.6	bd	bd
10	23478-PeCDF	2.29e5	1.51e5	3.81e5	33.88	1.000	1.52	NO	50.637	0.938	0.926	2.87	0.0488	5.86e6	1716	3417.7	3.84e6	2011	1911.8	bb	bb
11	123478-HxCDF	1.68e5	1.35e5	3.04e5	35.95	1.001	1.24	NO	51.799	1.034	0.998	5.02	0.111	3.58e6	2709	1322.5	2.95e6	2823	1043.2	bd	bd
12	123678-HxCDF	1.78e5	1.49e5	3.27e5	36.04	1.000	1.19	NO	50.485	0.943	0.934	4.26	0.105	3.74e6	2709	1381.3	3.08e6	2823	1091.0	db	db
13	234678-HxCDF	1.69e5	1.37e5	3.06e5	36.51	1.000	1.24	NO	51.493	1.063	1.033	4.35	0.110	3.63e6	2709	1339.2	2.95e6	2823	1044.4	bb	bb
14	123789-HxCDF	1.41e5	1.17e5	2.58e5	37.28	1.000	1.20	NO	51.516	0.982	0.953	4.84	0.154	2.48e6	2709	916.6	2.08e6	2823	736.8	bd	bd
15	1234678-HpCDF	1.29e5	1.28e5	2.57e5	38.77	1.000	1.01	NO	51.393	1.127	1.097	3.98	0.0855	2.25e6	1610	1399.4	2.19e6	1378	1587.9	bd	bd
16	1234789-HpCDF	1.04e5	1.04e5	2.08e5	40.65	1.000	1.00	NO	52.140	1.156	1.109	6.52	0.129	1.45e6	1610	901.7	1.46e6	1378	1060.2	bd	bd
17	OCDF	1.69e5	1.88e5	3.57e5	44.49	1.007	0.90	NO	101.367	0.935	0.922	7.27	0.202	1.82e6	1313	1388.9	2.07e6	1721	1203.5	bb	bb
18	13C-2378-TCDD	3.36e5	4.33e5	7.69e5	31.18	1.017	0.78	NO	98.424	1.124	1.142	2.94	0.117	5.82e6	3131	1859.6	7.48e6	1702	4394.4	bb	bb
19	13C-12378-PeCDD	3.85e5	2.41e5	6.25e5	34.06	1.111	1.60	NO	95.021	0.914	0.962	4.38	0.0793	9.44e6	1323	7136.5	5.88e6	1447	4062.7	bb	bb
20	13C-123478-HxCDD	3.01e5	2.45e5	5.46e5	36.64	0.991	1.23	NO	99.253	1.019	1.027	0.74	0.109	6.53e6	1722	3792.3	5.30e6	2900	1827.8	bd	bd
21	13C-123678-HxCDD	3.31e5	2.73e5	6.05e5	36.72	0.993	1.21	NO	100.499	1.129	1.123	1.81	0.0997	6.39e6	1722	3708.2	5.38e6	2900	1854.1	db	db
22	13C-1234678-HpCDD	2.04e5	2.02e5	4.06e5	39.99	1.082	1.01	NO	100.737	0.759	0.753	2.07	0.109	3.11e6	1520	2046.8	2.98e6	1856	1604.8	bb	bd
23	13C-OCDD	3.50e5	4.14e5	7.64e5	44.18	1.195	0.84	NO	196.567	0.713	0.726	4.08	0.101	3.73e6	1503	2482.9	4.41e6	1524	2896.2	bb	bd
24	13C-2378-TCDF	3.90e5	5.19e5	9.08e5	30.41	0.992	0.75	NO	99.283	1.327	1.337	1.60	0.163	4.75e6	5232	908.0	6.24e6	2677	2331.3	bb	bb
25	13C-12378-PeCDF	5.11e5	3.09e5	8.20e5	33.27	1.085	1.65	NO	96.445	1.198	1.242	3.08	0.140	1.29e7	3248	3969.3	8.08e6	3076	2628.3	bd	bb
26	13C-23478-PeCDF	4.99e5	3.13e5	8.11e5	33.87	1.105	1.59	NO	96.080	1.185	1.234	4.20	0.141	1.27e7	3248	3895.5	7.88e6	3076	2563.2	bb	bb
27	13C-123478-HxCDF	1.99e5	3.88e5	5.87e5	35.93	0.972	0.51	NO	99.816	1.097	1.099	0.83	0.160	4.25e6	3142	1352.4	8.42e6	4139	2035.5	bd	bd
28	13C-123678-HxCDF	2.37e5	4.57e5	6.94e5	36.03	0.975	0.52	NO	101.931	1.296	1.272	2.46	0.139	4.82e6	3142	1535.6	9.39e6	4139	2269.6	dd	dd
29	13C-234678-HxCDF	1.96e5	3.79e5	5.75e5	36.50	0.988	0.52	NO	99.528	1.074	1.079	1.03	0.163	4.17e6	3142	1328.1	8.02e6	4139	1938.8	bb	bb
30	13C-123789-HxCDF	1.81e5	3.45e5	5.26e5	37.26	1.008	0.53	NO	99.562	0.983	0.987	1.26	0.179	3.25e6	3142	1033.2	6.32e6	4139	1527.8	bd	bb
31	13C-1234678-HpCDF	1.38e5	3.17e5	4.55e5	38.76	1.049	0.44	NO	100.073	0.850	0.849	1.50	0.0989	2.42e6	1464	1649.8	5.49e6	2004	2737.3	bb	bb
32	13C-1234789-HpCDF	1.08e5	2.52e5	3.60e5	40.64	1.099	0.43	NO	99.503	0.672	0.675	2.06	0.124	1.57e6	1464	1069.6	3.56e6	2004	1776.8	bb	bd
33	13C-1234-TCDD	3.01e5	3.84e5	6.84e5	30.65	0.000	0.78	NO	100.000	1.000	1.000	0.00	0.133	3.99e6	3131	1273.4	5.12e6	1702	3008.1	bb	bb
34	13C-123789-HxCDD	2.92e5	2.44e5	5.36e5	36.96	0.000	1.20	NO	100.000	1.000	1.000	0.00	0.112	5.63e6	1722	3266.8	4.66e6	2900	1605.8	bb	bb
35	37Cl-2378-TCDD	7.80e4		7.80e4	31.19	1.018			9.817	1.140	1.161	5.41	0.0316	1.37e6	1330	1033.5				bb	

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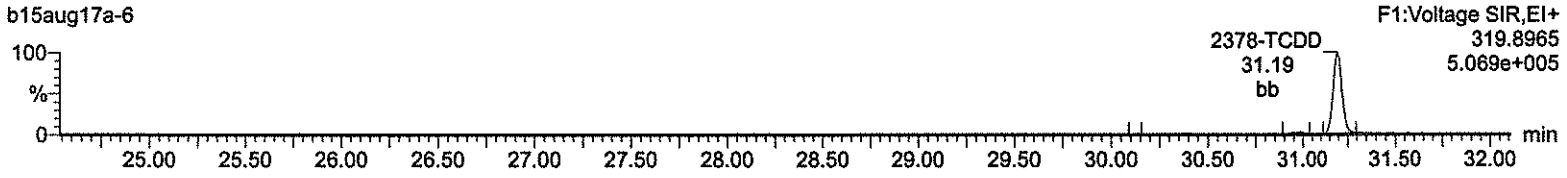
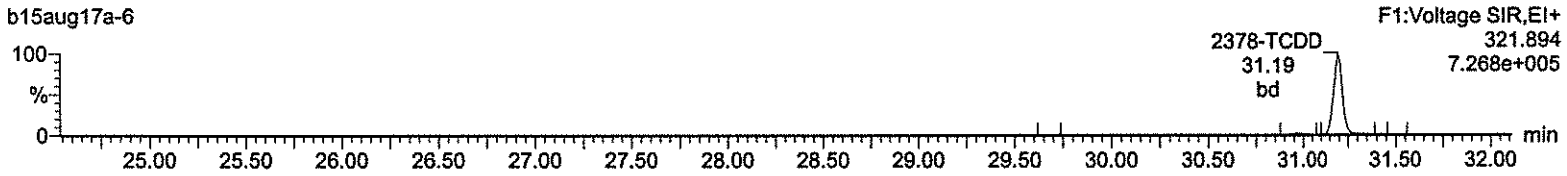
Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

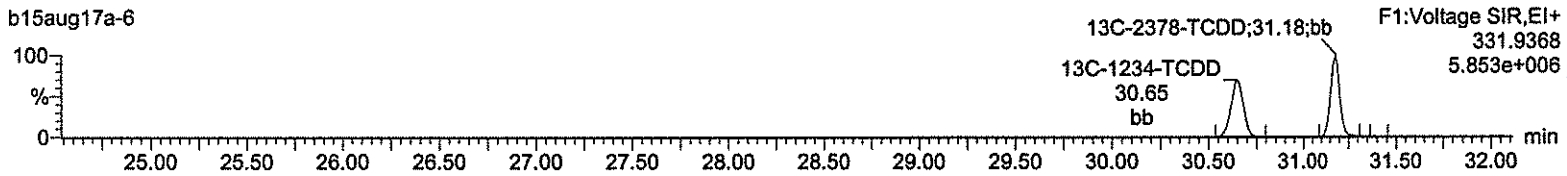
Total-tetradioxins



Total-tetradioxins



13C-2378-TCDD



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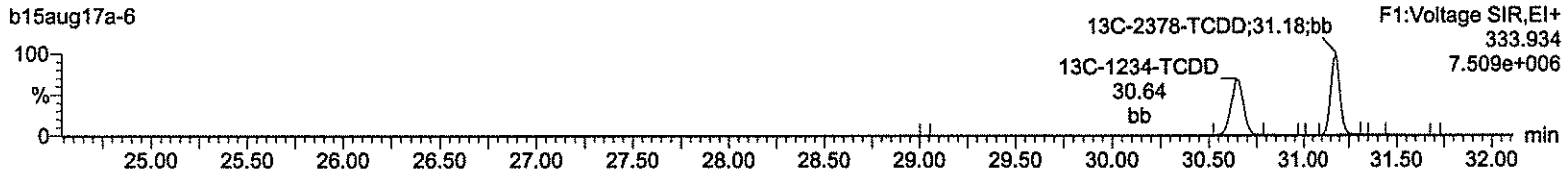
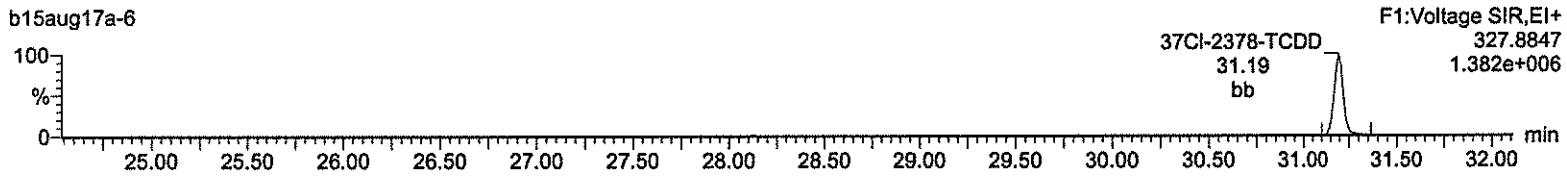
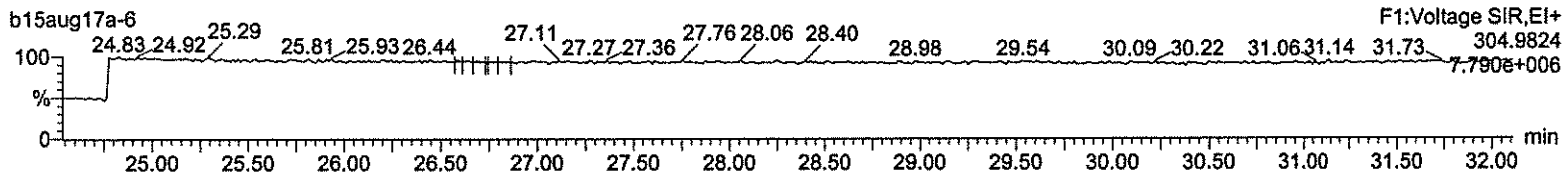


37Cl-2378-TCDD



Lock Mass F1



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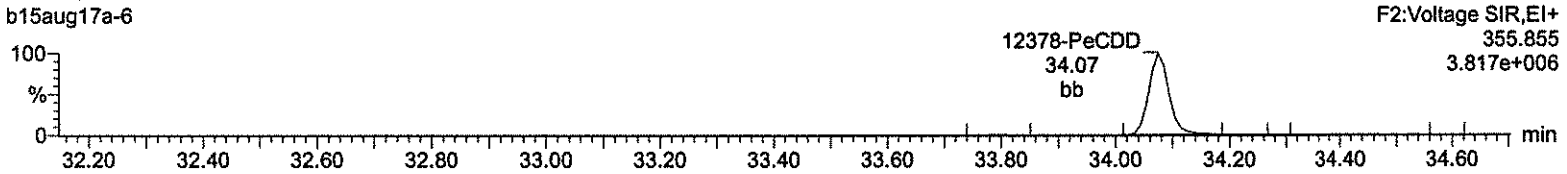
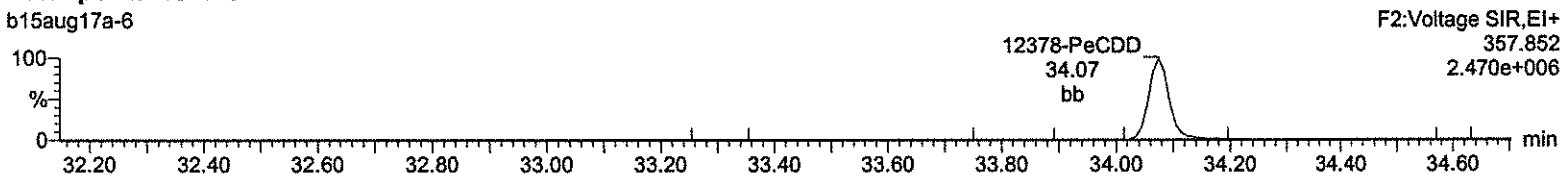
Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

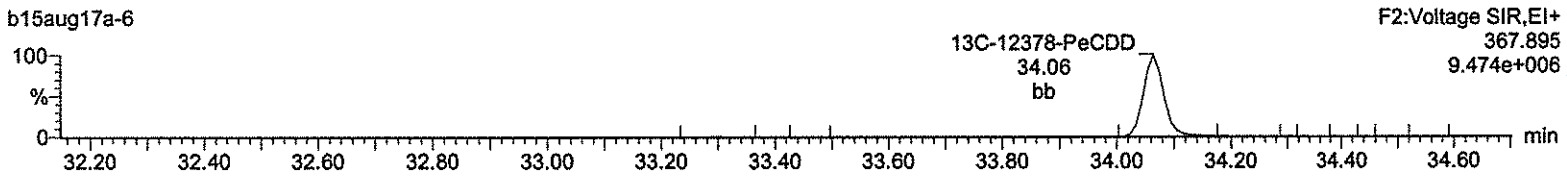
Total-pentadioxins



Total-pentadioxins



13C-12378-PeCDD



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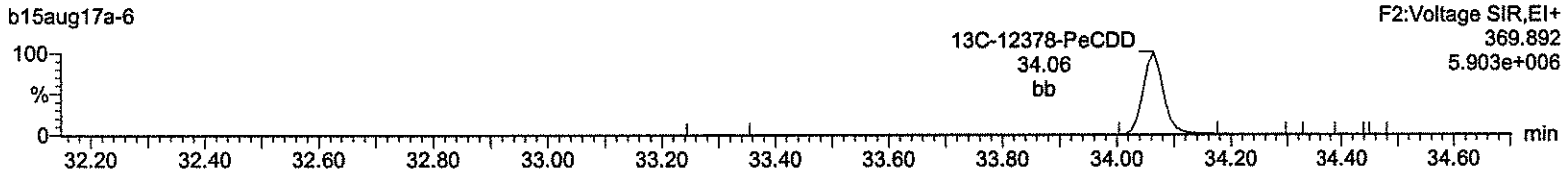
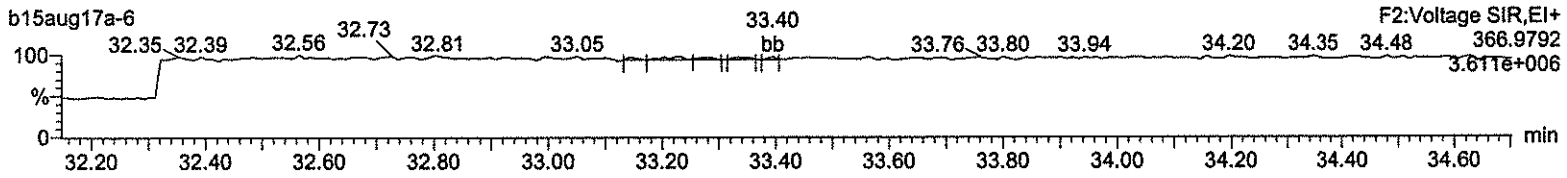


Lock Mass F2



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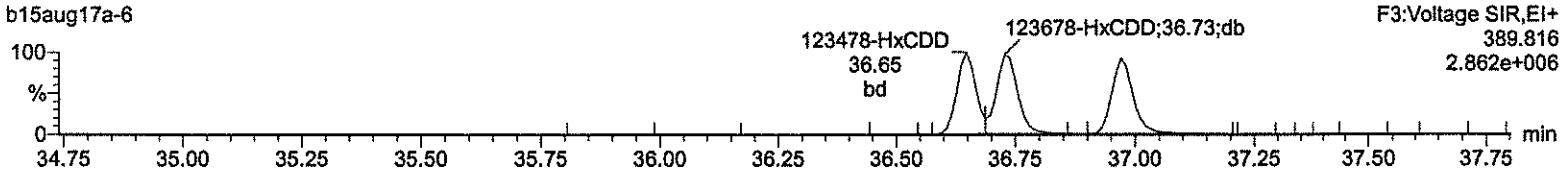
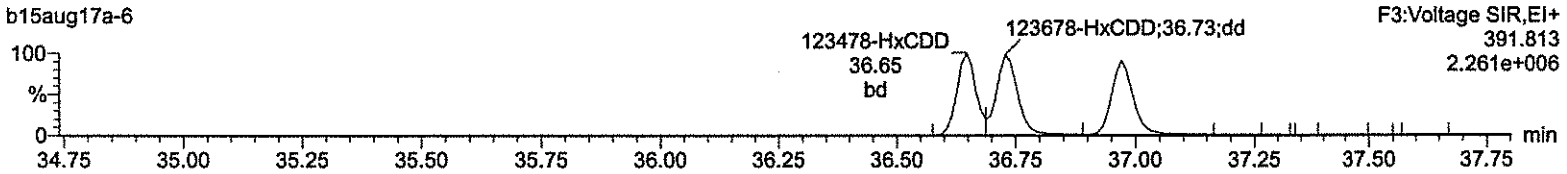
Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

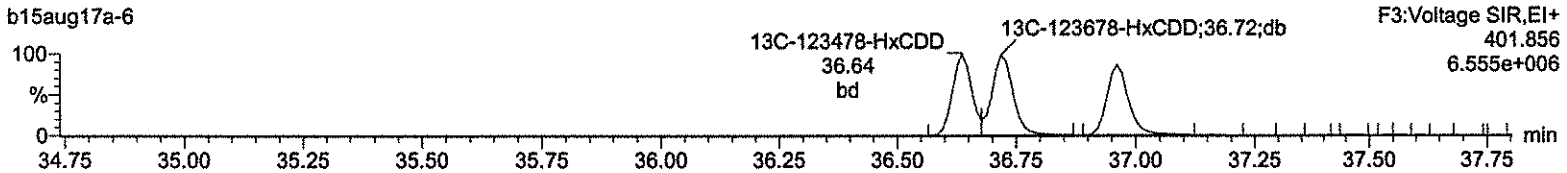
Total-hexadioxins



Total-hexadioxins



13C-123478-HxCDD



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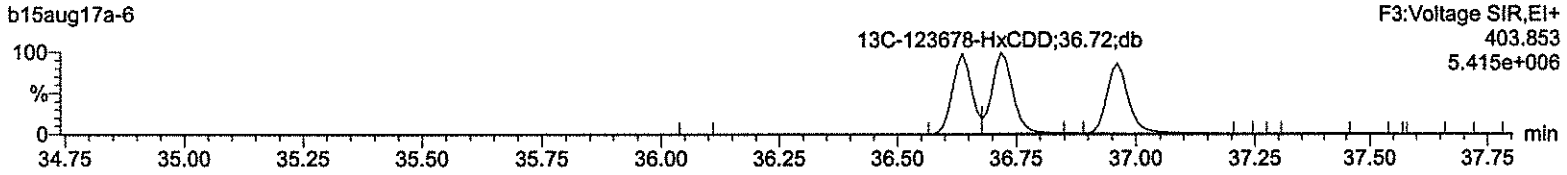
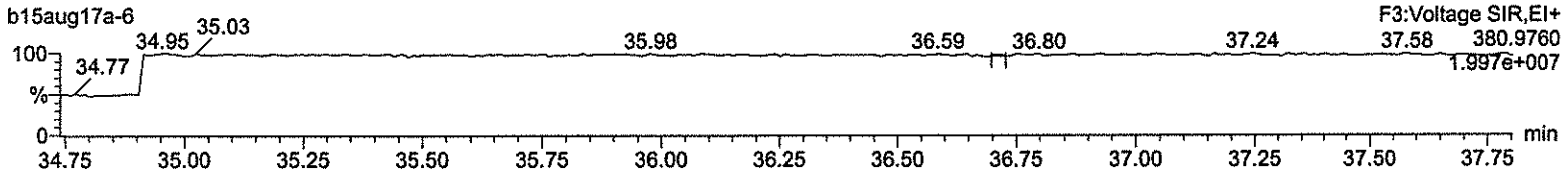


Lock Mass F3



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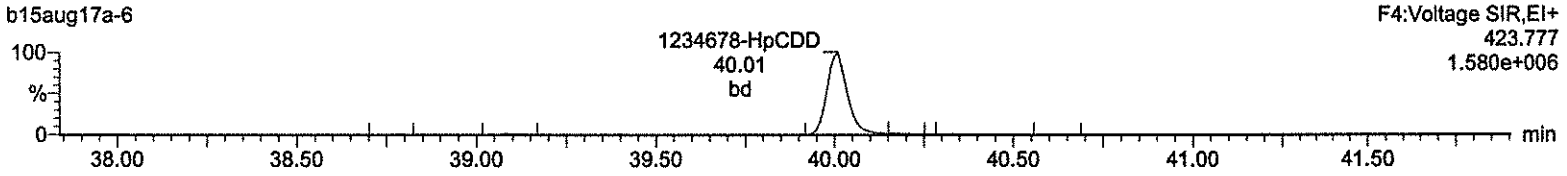
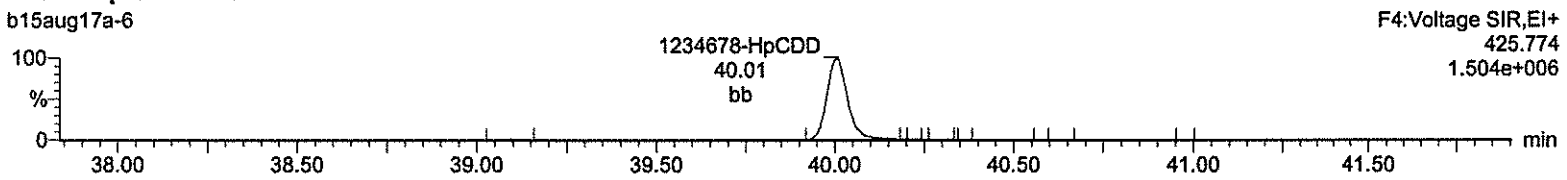
Total-heptadioxins



Total-heptadioxins



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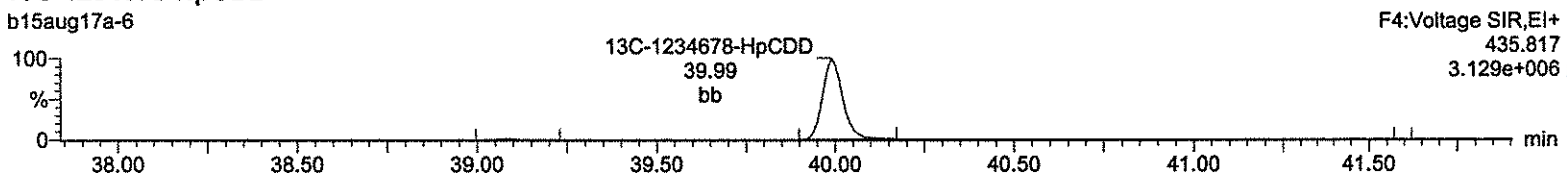

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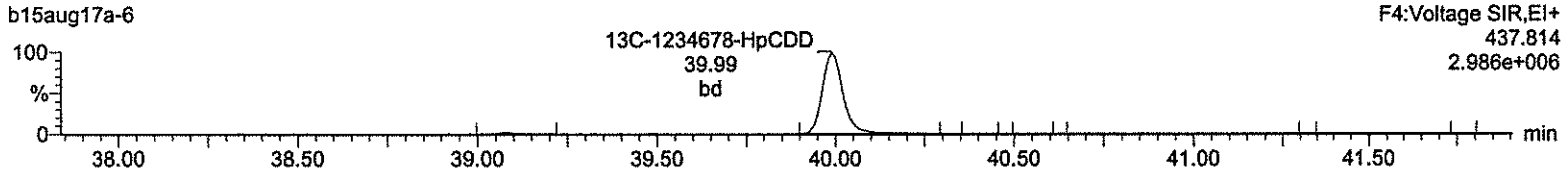
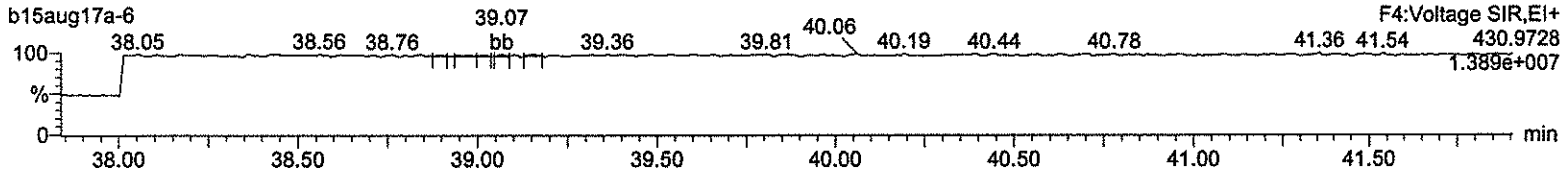


Lock Mass F4



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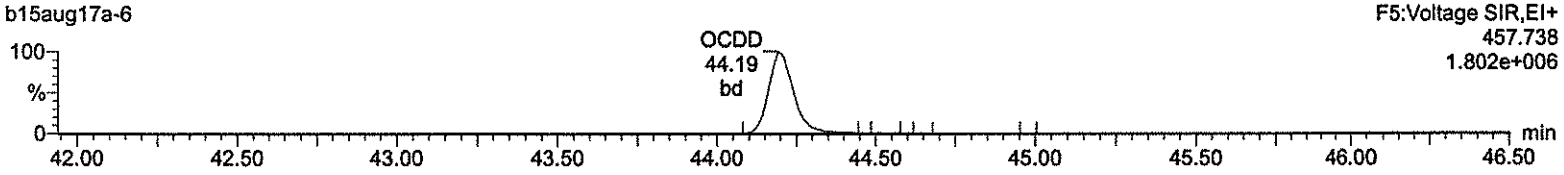
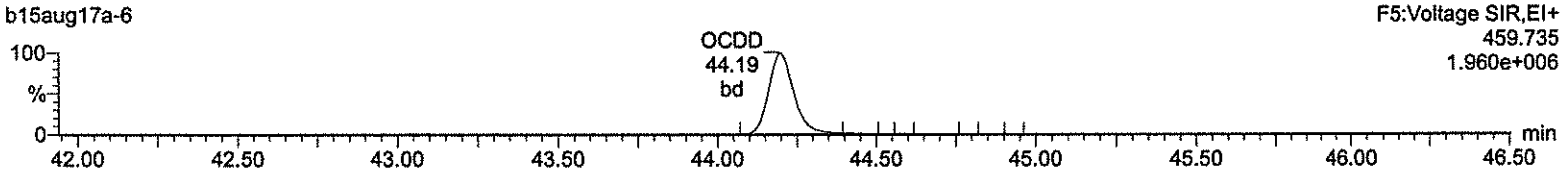
OCDD



OCDD



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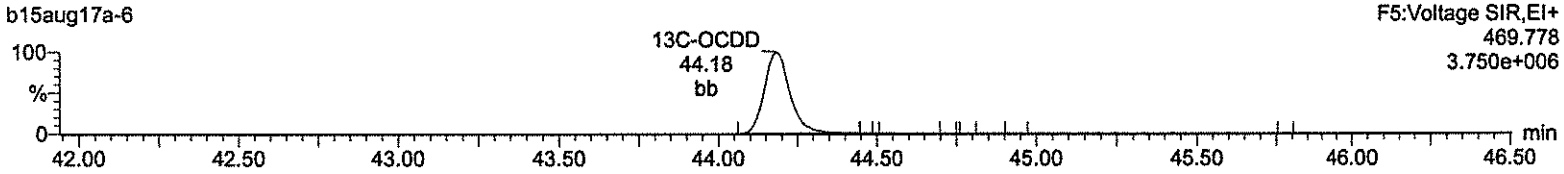

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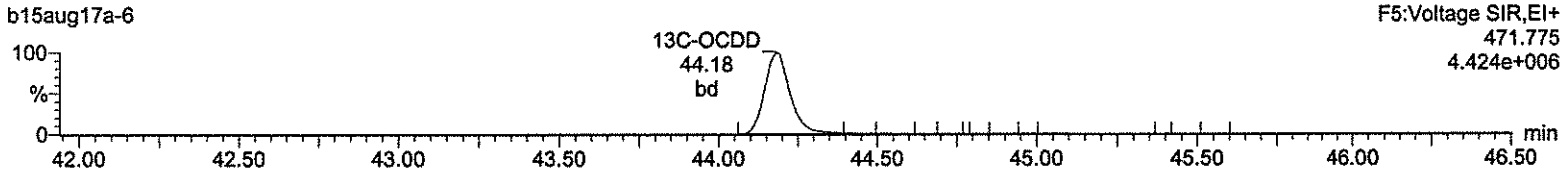
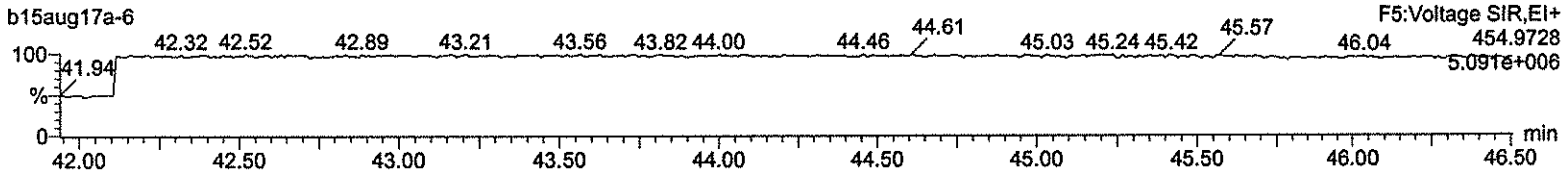


Lock Mass F5



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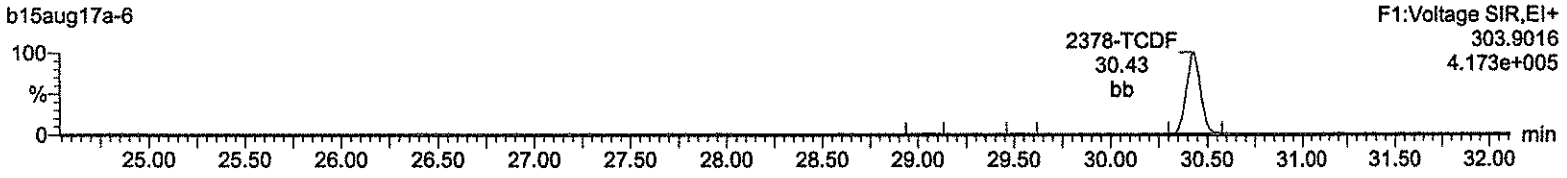
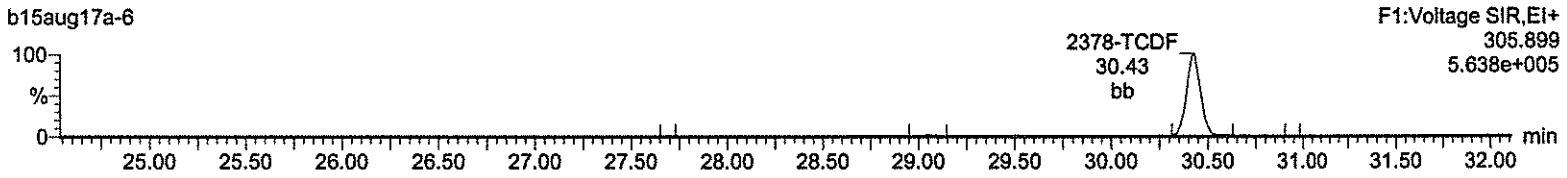
Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

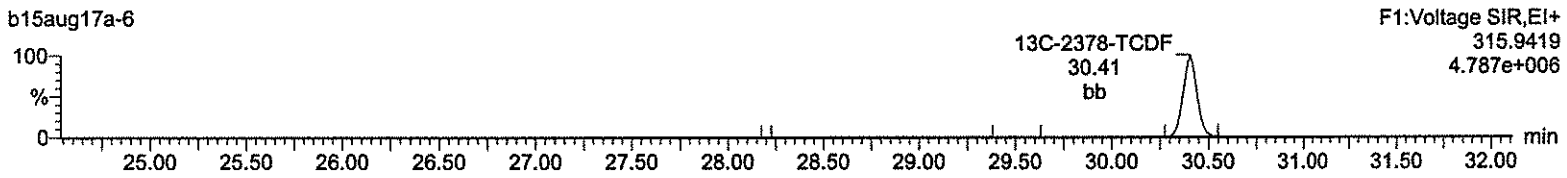
Total-tetrafurans



Total-tetrafurans



13C-2378-TCDF



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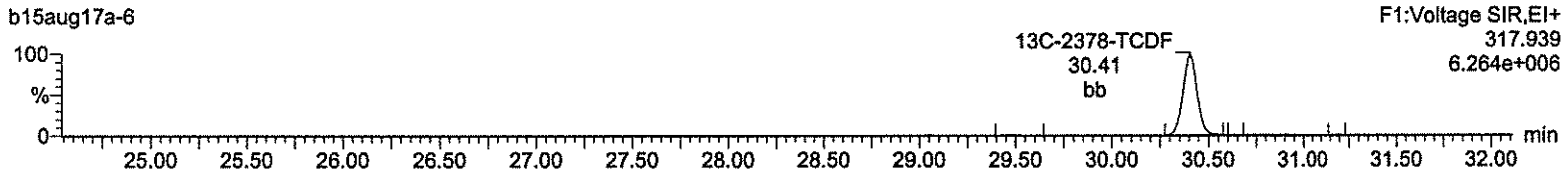
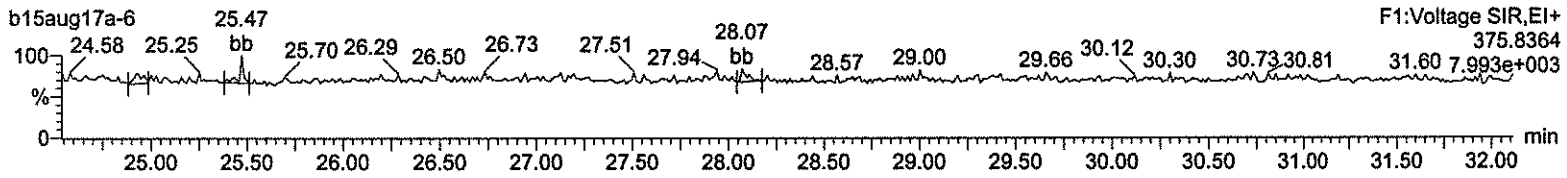
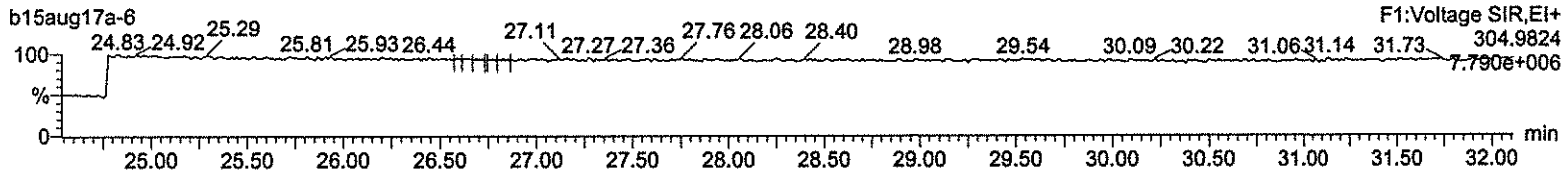


HxDPE



Lock Mass F1



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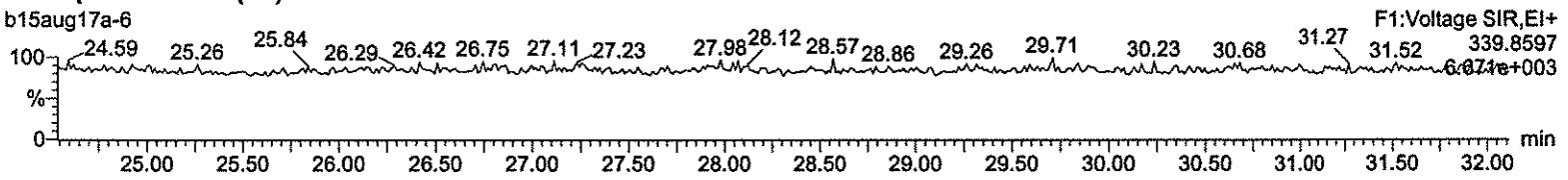
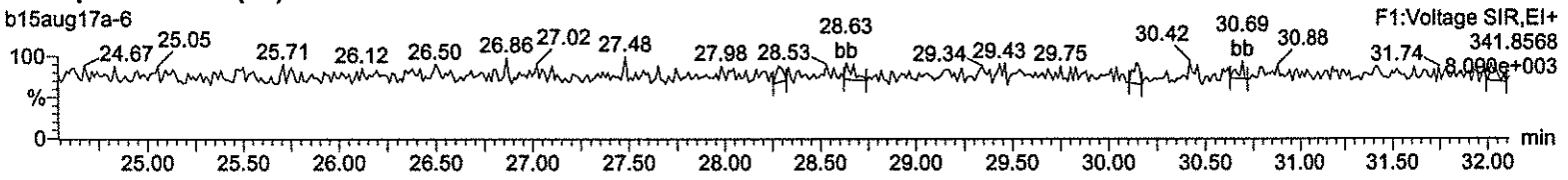
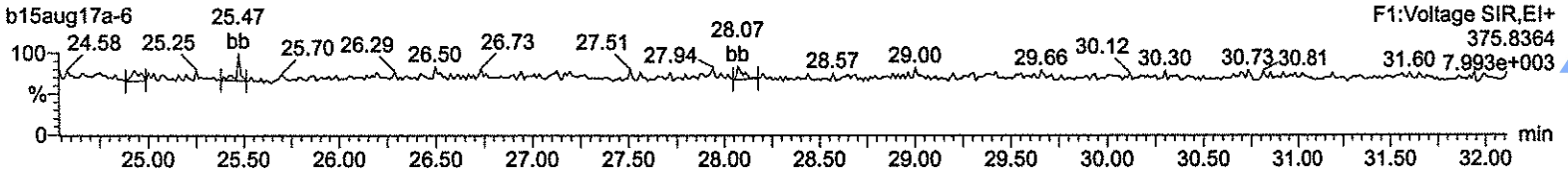
Total-pentafurans (F1)



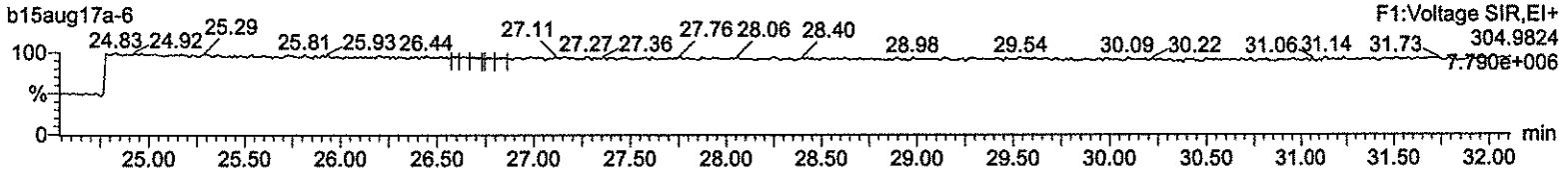
Total-pentafurans (F1)



HxDPE



Lock Mass F1



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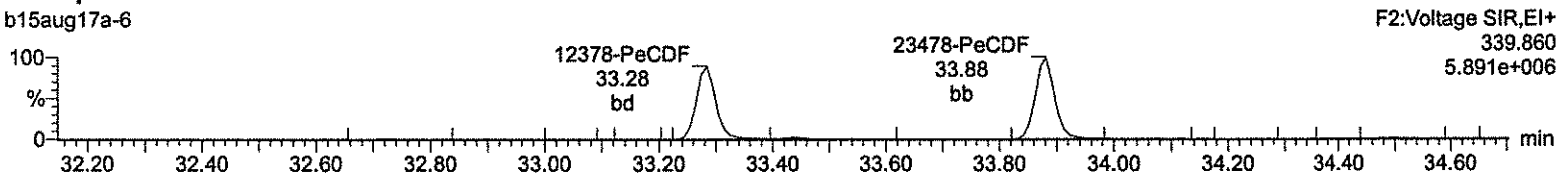
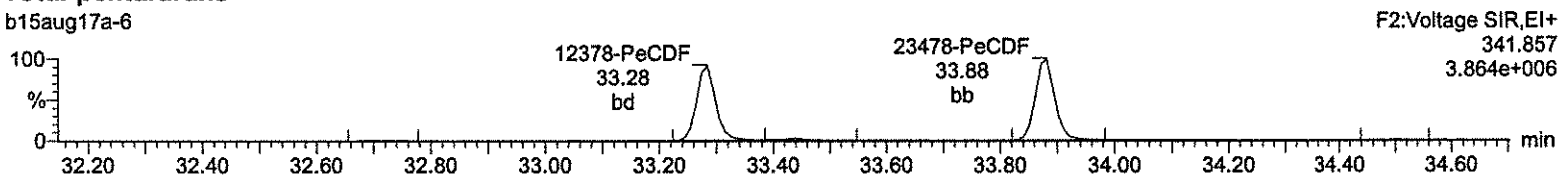
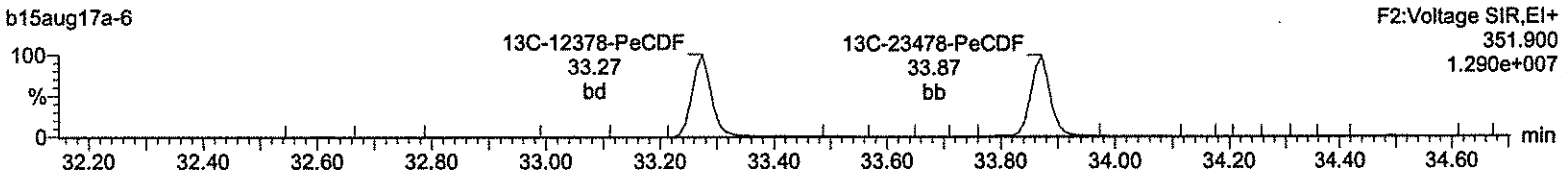
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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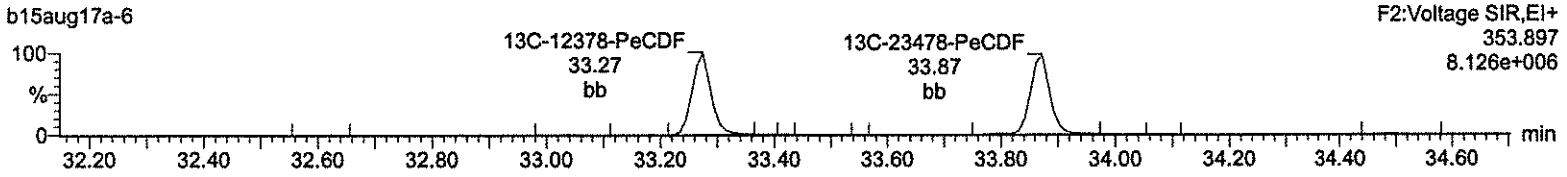

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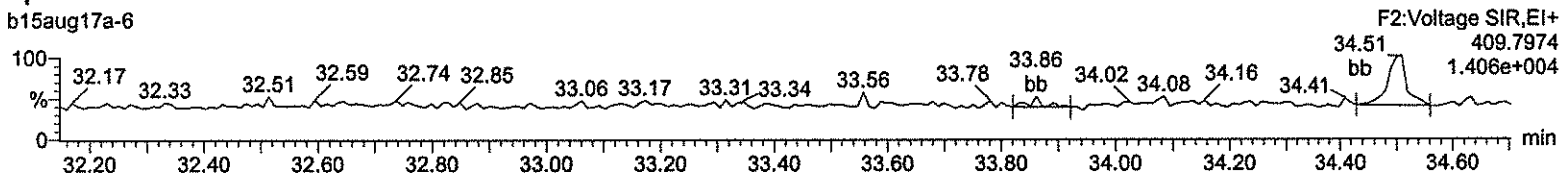
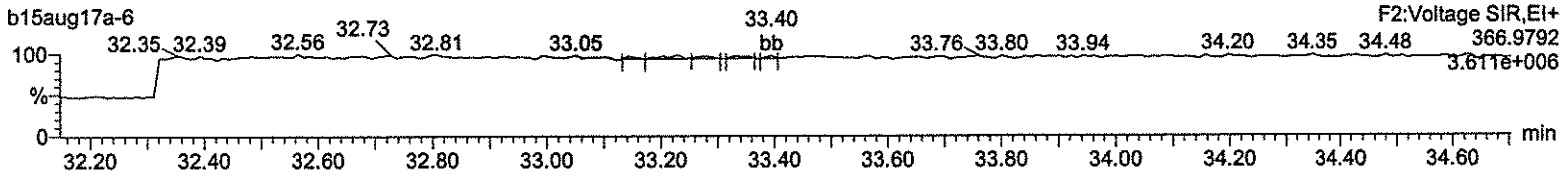


Lock Mass F2



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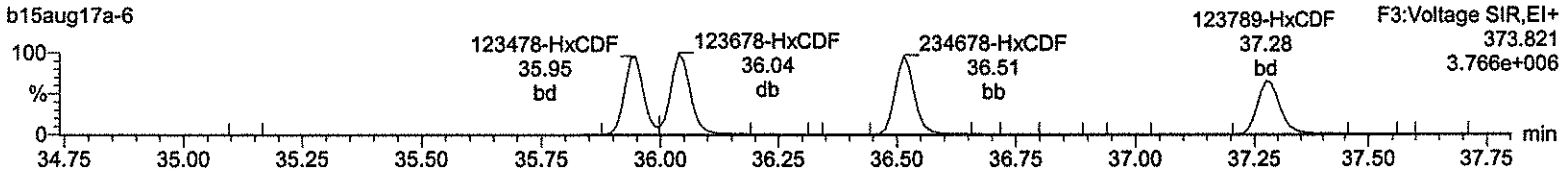
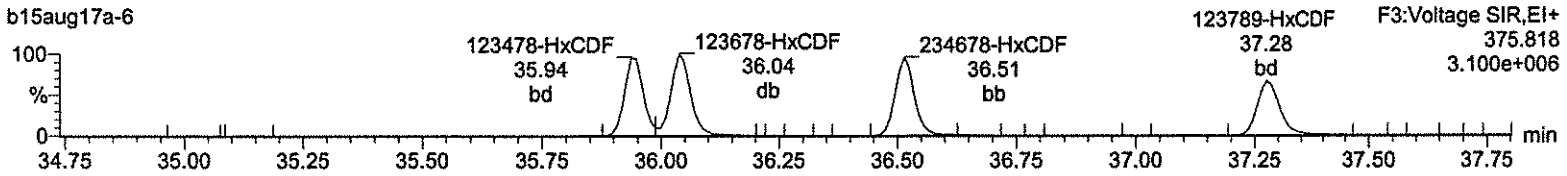
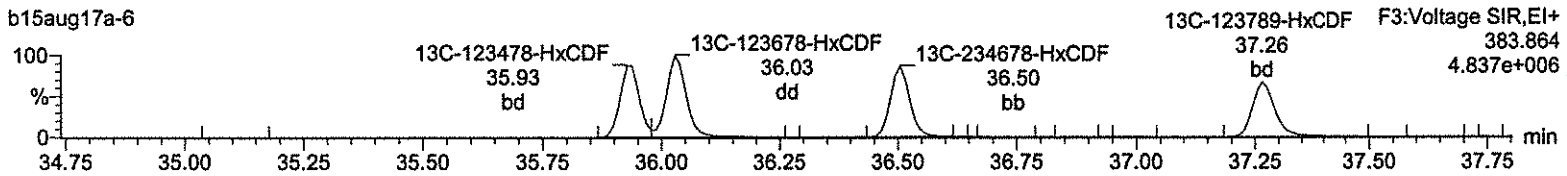
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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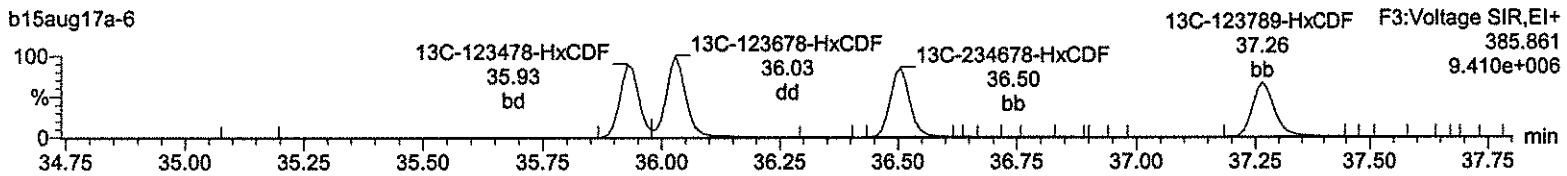

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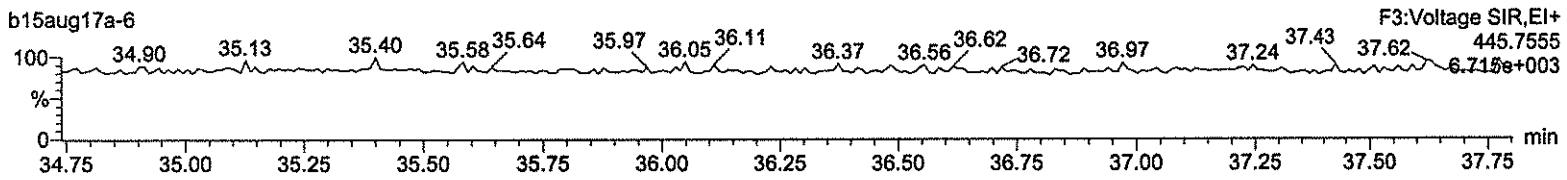

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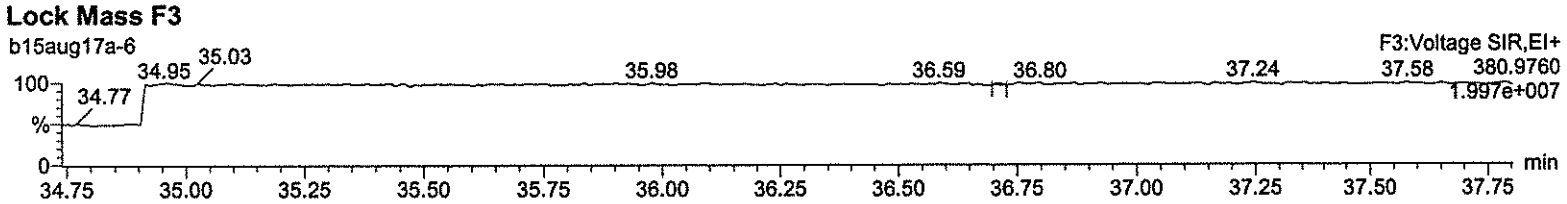

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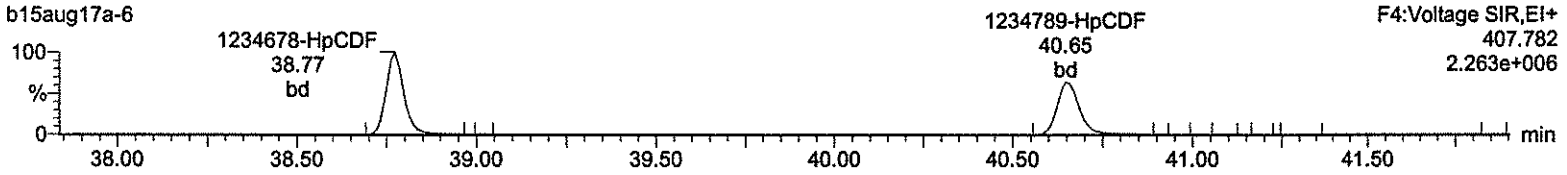
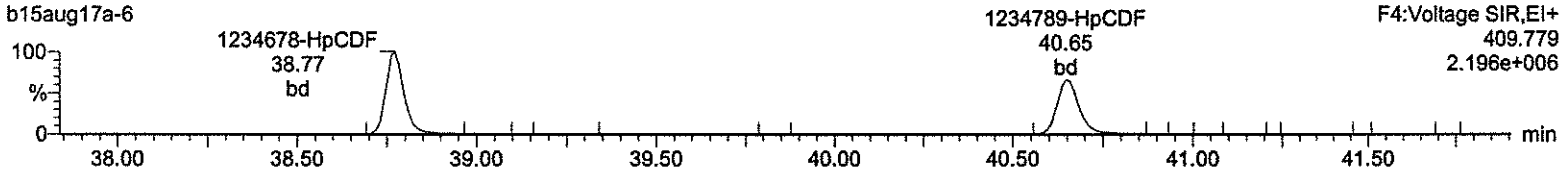
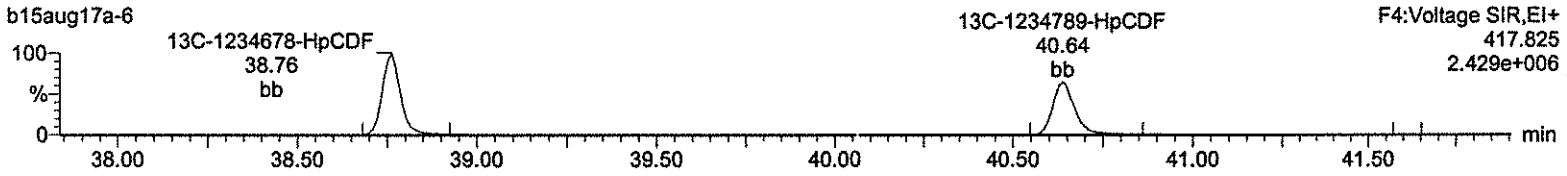
Total-heptafurans



Total-heptafurans



13C-1234678-HpCDF



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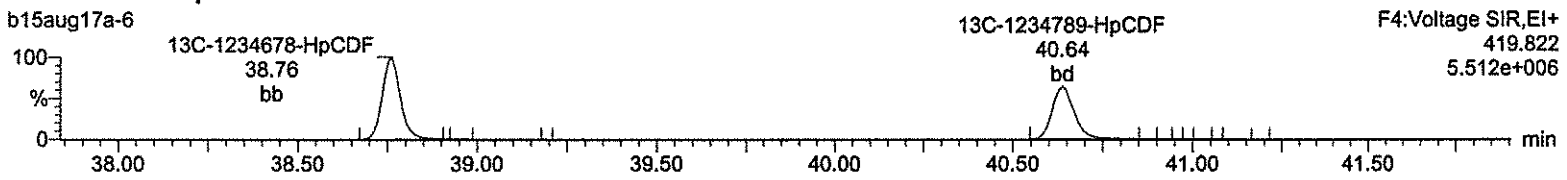

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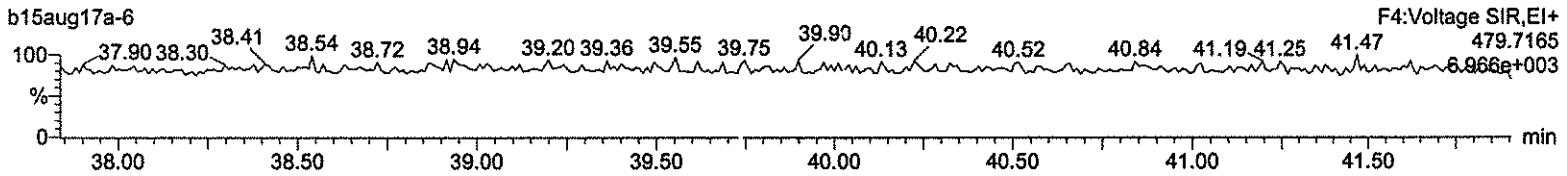

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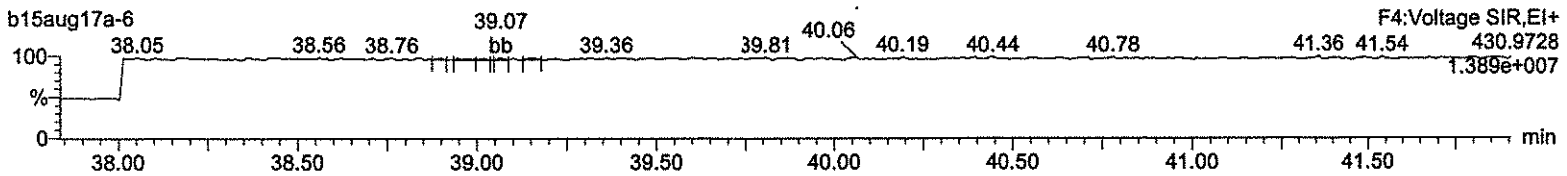

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Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

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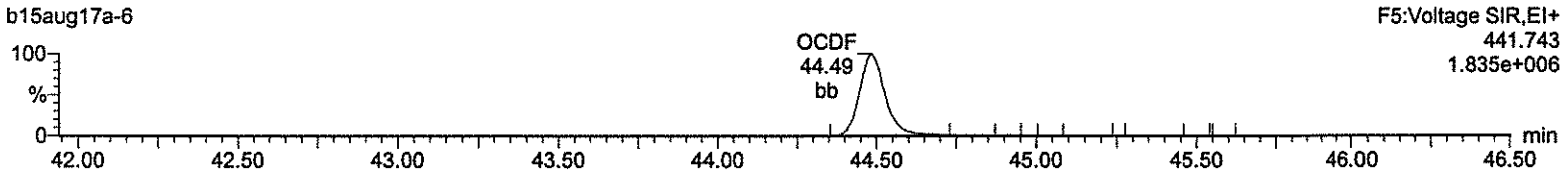

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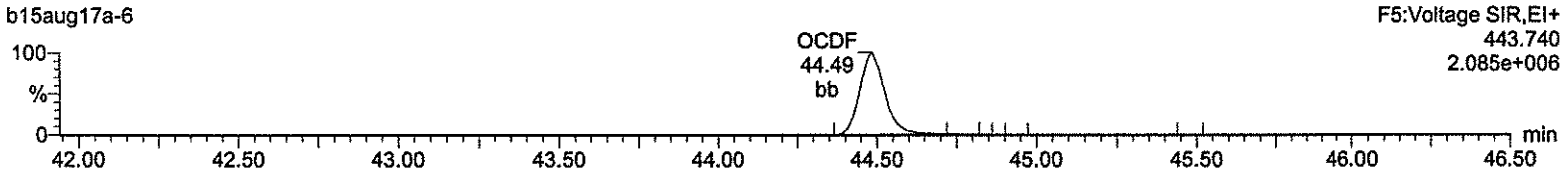

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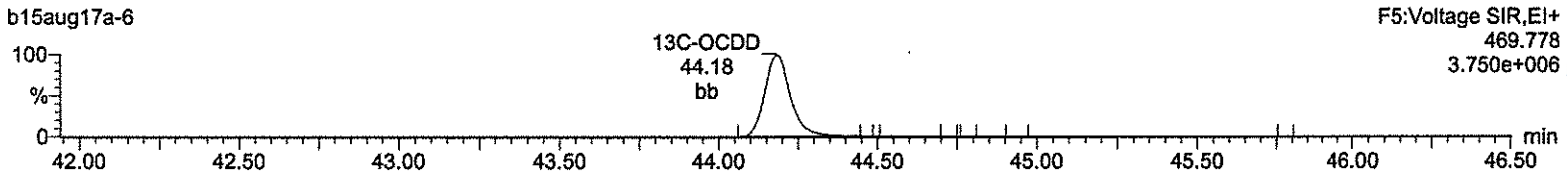

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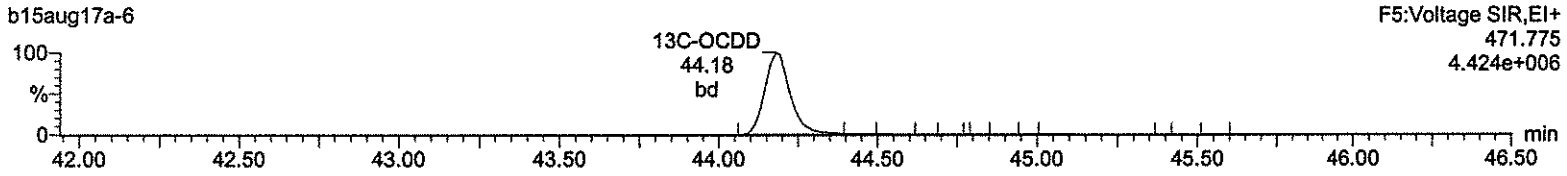

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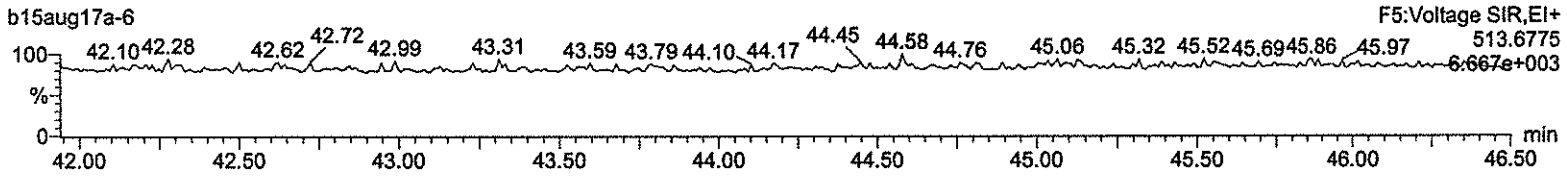

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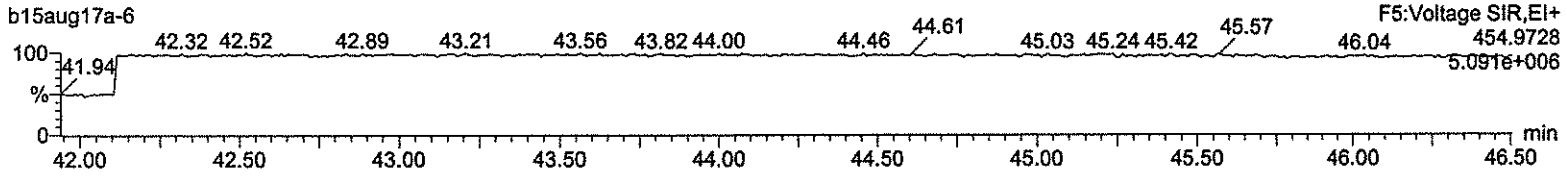

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Quantify Sample Summary Report **MassLynx 4.1**

Method 1613 ICAL Report

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Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	1.17e5	1.54e5	2.71e5	31.21	1.001	0.76	NO	40.708	0.907	0.891	4.45	0.0433	2.01e6	1275	1578.1	2.63e6	775	3389.0	bb	bb
2	12378-PeCDD	6.00e5	3.91e5	9.92e5	34.09	1.000	1.53	NO	204.989	0.809	0.789	3.38	0.118	1.49e7	2062	7207.0	9.68e6	3364	2876.6	bb	bb
3	123478-HxCDD	5.12e5	4.05e5	9.17e5	36.66	1.000	1.26	NO	209.057	0.876	0.838	4.80	0.134	1.07e7	3072	3480.6	8.43e6	1738	4850.5	bd	bd
4	123678-HxCDD	5.61e5	4.40e5	1.00e6	36.74	1.000	1.27	NO	207.824	0.873	0.840	4.71	0.124	1.13e7	3072	3673.2	8.79e6	1738	5056.0	db	db
5	123789-HxCDD	5.05e5	4.00e5	9.05e5	36.98	1.007	1.26	NO	202.674	0.825	0.814	3.19	0.133	9.74e6	3072	3169.2	7.76e6	1738	4468.7	bb	bb
6	1234678-HpCDD	3.91e5	3.78e5	7.69e5	40.01	1.000	1.03	NO	204.635	1.026	1.003	3.74	0.171	5.93e6	2030	2921.7	5.73e6	1886	3037.7	bb	bb
7	OCDD	6.11e5	6.77e5	1.29e6	44.20	1.000	0.90	NO	402.903	0.917	0.910	3.79	0.262	6.75e6	1568	4304.0	7.57e6	2094	3613.0	bb	bb
8	2378-TCDF	1.41e5	1.87e5	3.28e5	30.43	1.001	0.76	NO	40.605	0.935	0.921	2.50	0.0635	1.66e6	902	1842.0	2.20e6	1484	1480.6	bd	bb
9	12378-PeCDF	8.14e5	5.37e5	1.35e6	33.28	1.000	1.52	NO	203.423	0.836	0.822	4.18	0.0707	1.98e7	1896	10415.5	1.32e7	2566	5160.5	bd	bd
10	23478-PeCDF	8.96e5	5.94e5	1.49e6	33.88	1.000	1.51	NO	205.382	0.951	0.926	2.87	0.0643	2.26e7	1896	11892.1	1.53e7	2566	5951.7	bb	bb
11	123478-HxCDF	6.39e5	5.24e5	1.16e6	35.95	1.000	1.22	NO	207.283	1.035	0.998	5.02	0.201	1.41e7	4230	3322.3	1.15e7	5591	2064.1	bd	bd
12	123678-HxCDF	6.91e5	5.65e5	1.26e6	36.05	1.000	1.22	NO	204.437	0.955	0.934	4.26	0.195	1.45e7	4230	3431.0	1.18e7	5591	2118.8	db	db
13	234678-HxCDF	6.60e5	5.26e5	1.19e6	36.53	1.001	1.25	NO	206.772	1.068	1.033	4.35	0.209	1.33e7	4230	3136.5	1.06e7	5591	1900.6	bd	bb
14	123789-HxCDF	5.38e5	4.49e5	9.87e5	37.29	1.000	1.20	NO	209.459	0.998	0.953	4.84	0.297	9.73e6	4230	2301.2	7.97e6	5591	1425.2	bb	bd
15	1234678-HpCDF	4.85e5	4.78e5	9.63e5	38.78	1.001	1.01	NO	206.922	1.134	1.097	3.98	0.167	7.95e6	2775	2865.8	7.91e6	2394	3303.7	bb	bb
16	1234789-HpCDF	3.99e5	3.94e5	7.93e5	40.66	1.000	1.01	NO	213.285	1.183	1.109	6.52	0.249	5.60e6	2775	2018.8	5.50e6	2394	2296.8	bb	bd
17	OCDF	6.58e5	7.29e5	1.39e6	44.49	1.007	0.90	NO	428.390	0.988	0.922	7.27	0.254	7.04e6	2317	3038.6	7.85e6	1276	6157.5	bd	bb
18	13C-2378-TCDD	3.30e5	4.18e5	7.47e5	31.18	1.017	0.79	NO	99.268	1.134	1.142	2.94	0.116	5.87e6	2939	1997.3	7.43e6	1645	4514.3	bb	bb
19	13C-12378-PeCDD	3.73e5	2.40e5	6.13e5	34.08	1.112	1.56	NO	96.659	0.929	0.962	4.38	0.0916	8.89e6	1527	5820.4	5.57e6	1518	3670.4	bb	bd
20	13C-123478-HxCDD	2.88e5	2.36e5	5.24e5	36.65	0.991	1.22	NO	100.835	1.036	1.027	0.74	0.103	5.87e6	1822	3223.2	4.74e6	2345	2021.6	bd	bd
21	13C-123678-HxCDD	3.15e5	2.59e5	5.73e5	36.73	0.993	1.22	NO	100.925	1.134	1.123	1.81	0.0942	6.34e6	1822	3480.5	5.33e6	2345	2274.7	db	db
22	13C-1234678-HpCDD	1.89e5	1.86e5	3.75e5	40.00	1.082	1.02	NO	98.455	0.742	0.753	2.07	0.113	2.87e6	1885	1522.9	2.80e6	1465	1909.5	bb	bd
23	13C-OCDD	3.24e5	3.79e5	7.02e5	44.19	1.195	0.86	NO	191.414	0.694	0.726	4.08	0.114	3.54e6	1399	2530.6	4.15e6	1872	2218.2	bb	bb
24	13C-2378-TCDF	3.77e5	5.01e5	8.78e5	30.41	0.992	0.75	NO	99.615	1.331	1.337	1.60	0.159	4.38e6	4625	946.5	5.87e6	2725	2155.1	bb	bb
25	13C-12378-PeCDF	4.98e5	3.10e5	8.08e5	33.28	1.086	1.60	NO	98.604	1.225	1.242	3.08	0.128	1.18e7	3103	3810.1	7.23e6	2402	3008.3	bd	bd
26	13C-23478-PeCDF	4.82e5	3.01e5	7.83e5	33.87	1.105	1.60	NO	96.249	1.187	1.234	4.20	0.129	1.15e7	3103	3711.6	7.45e6	2402	3099.3	bb	bb
27	13C-123478-HxCDF	1.90e5	3.72e5	5.62e5	35.94	0.972	0.51	NO	101.187	1.112	1.099	0.83	0.118	4.14e6	2992	1382.9	8.08e6	2131	3793.1	bd	bd
28	13C-123678-HxCDF	2.25e5	4.33e5	6.58e5	36.04	0.975	0.52	NO	102.282	1.301	1.272	2.46	0.102	4.60e6	2992	1538.7	8.74e6	2131	4100.8	dd	dd
29	13C-234678-HxCDF	1.85e5	3.70e5	5.55e5	36.51	0.987	0.50	NO	101.740	1.098	1.079	1.03	0.121	3.81e6	2992	1272.5	7.50e6	2131	3519.4	bb	bd
30	13C-123789-HxCDF	1.71e5	3.23e5	4.94e5	37.28	1.008	0.53	NO	99.016	0.977	0.987	1.26	0.132	3.00e6	2992	1001.8	5.76e6	2131	2705.1	bd	bb
31	13C-1234678-HpCDF	1.30e5	2.94e5	4.24e5	38.76	1.048	0.44	NO	98.803	0.839	0.849	1.50	0.118	2.16e6	1230	1755.9	4.89e6	2708	1804.8	bb	bb
32	13C-1234789-HpCDF	1.00e5	2.35e5	3.35e5	40.65	1.099	0.43	NO	98.248	0.663	0.675	2.06	0.148	1.40e6	1230	1138.5	3.22e6	2708	1189.5	bb	bd
33	13C-1234-TCDD	2.92e5	3.67e5	6.59e5	30.66	0.000	0.79	NO	100.000	1.000	1.000	0.00	0.133	3.83e6	2939	1301.9	4.91e6	1645	2982.4	bb	bb
34	13C-123789-HxCDD	2.74e5	2.32e5	5.06e5	36.97	0.000	1.18	NO	100.000	1.000	1.000	0.00	0.106	5.33e6	1822	2926.5	4.36e6	2345	1858.3	bb	bd
35	37Cl-2378-TCDD	3.07e5		3.07e5	31.21	1.018			40.095	1.164	1.161	5.41	0.0306	5.21e6	1226	4253.7				bb	

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Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

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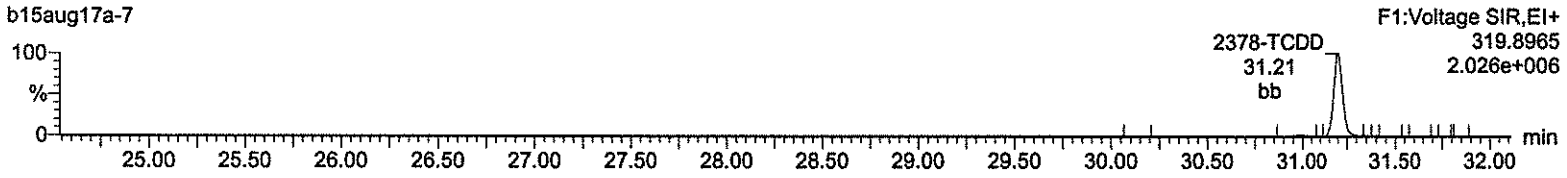

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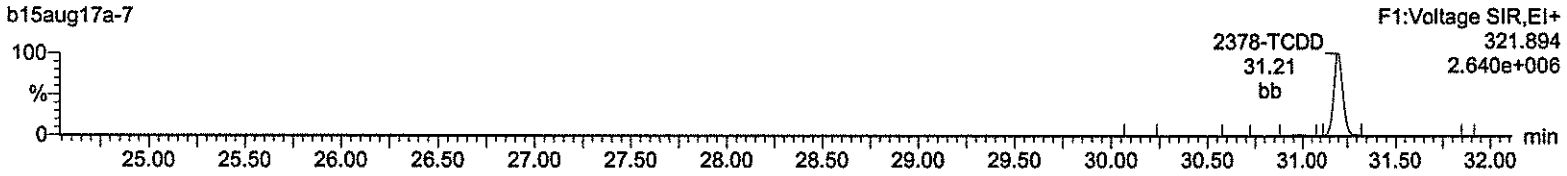

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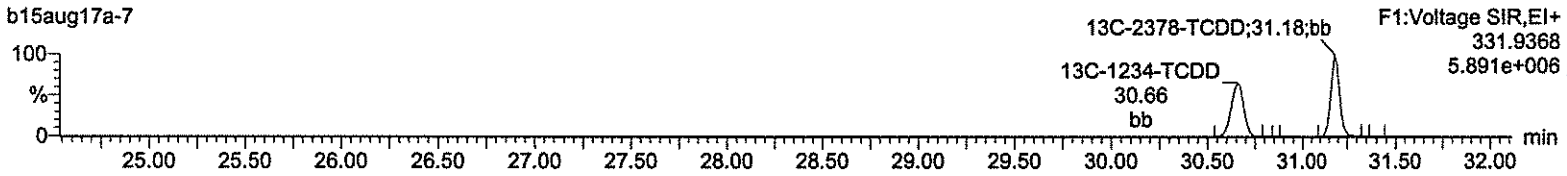

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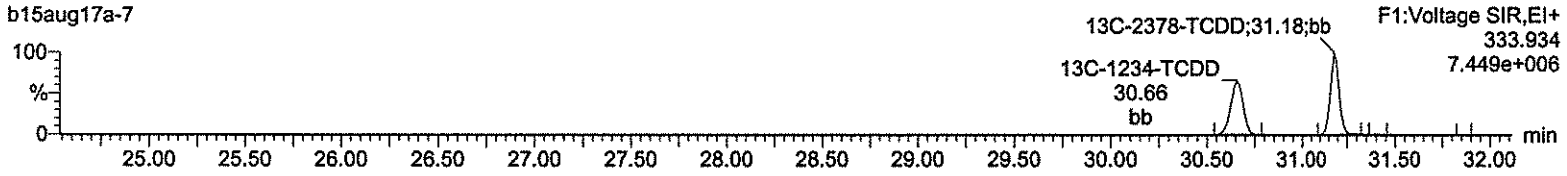

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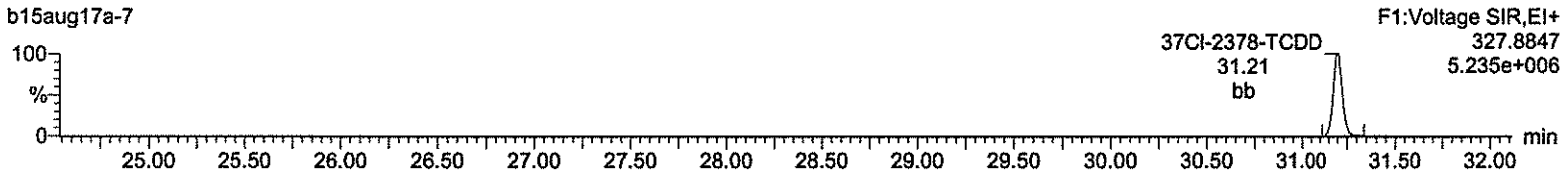

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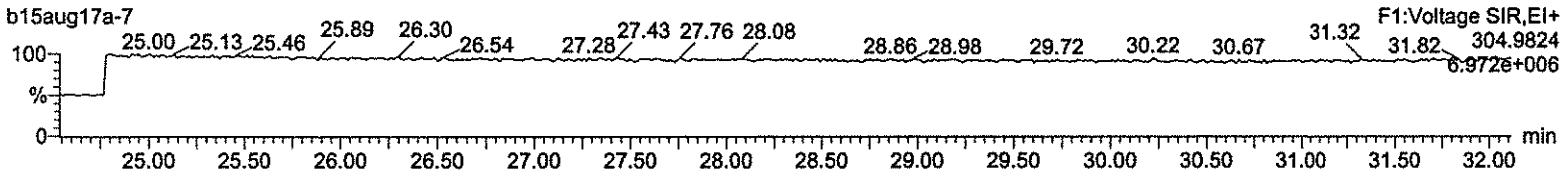

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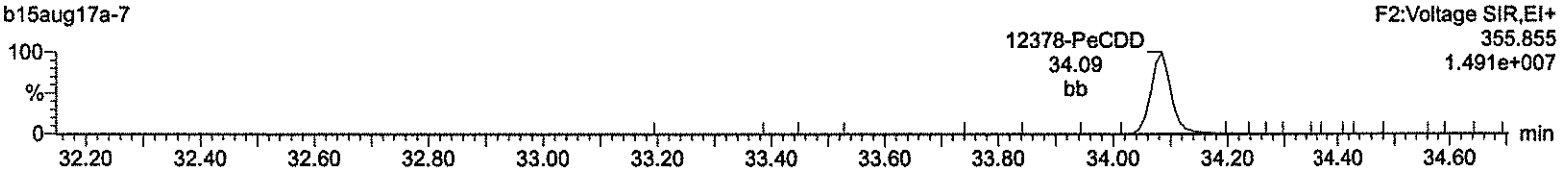
Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

Total-pentadioxins



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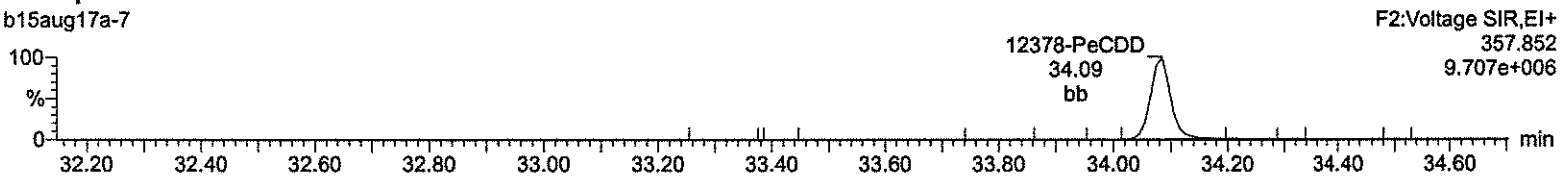

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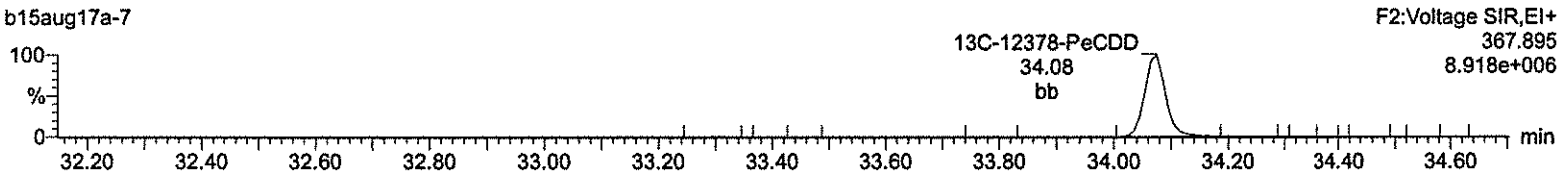

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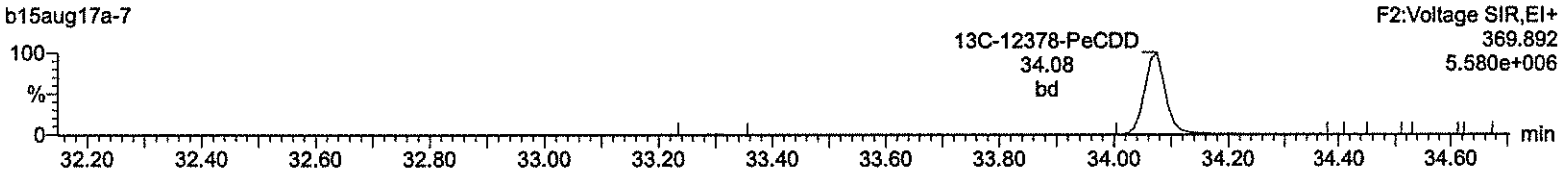

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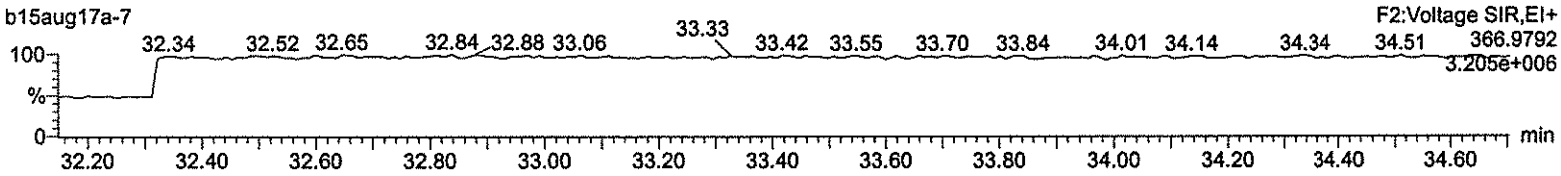

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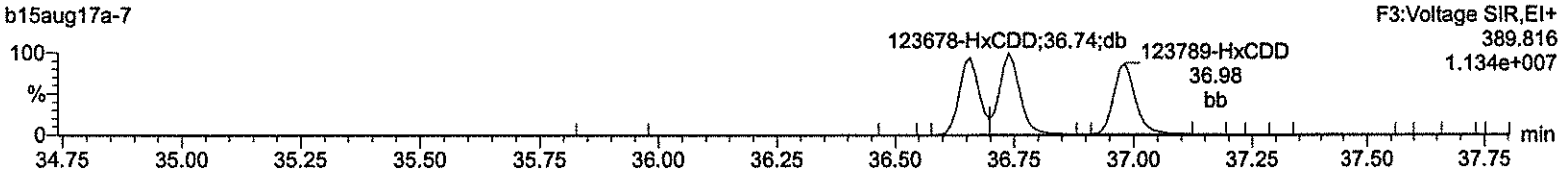
Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

Total-hexadioxins



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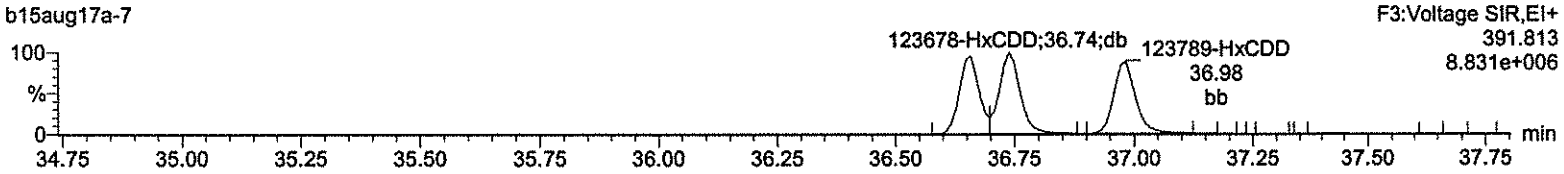

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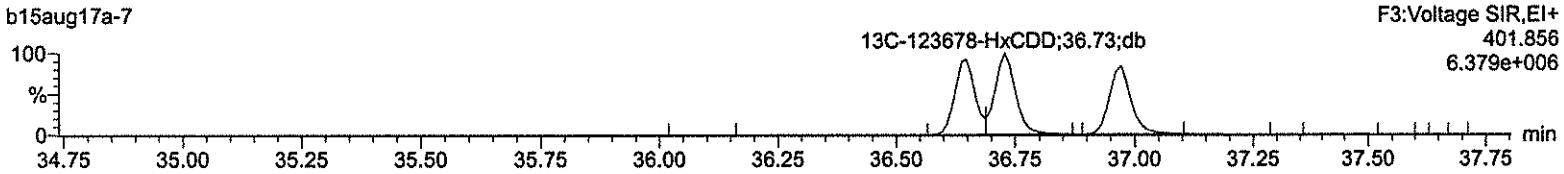

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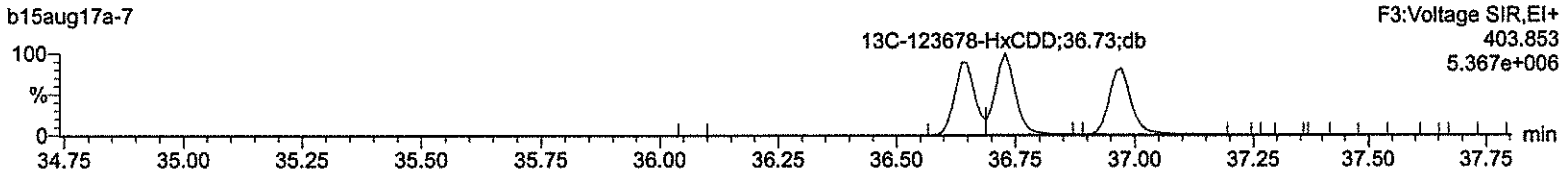

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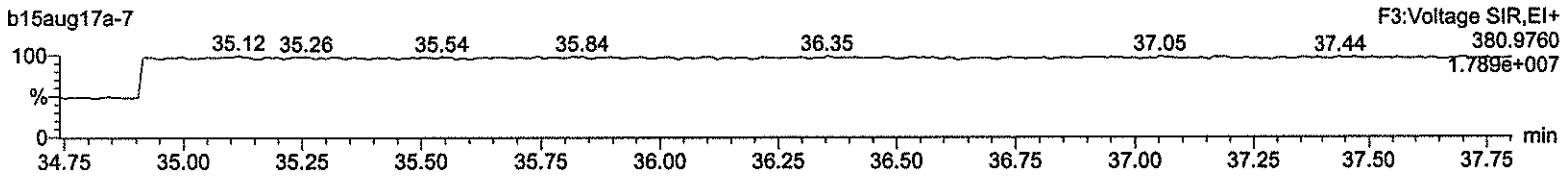

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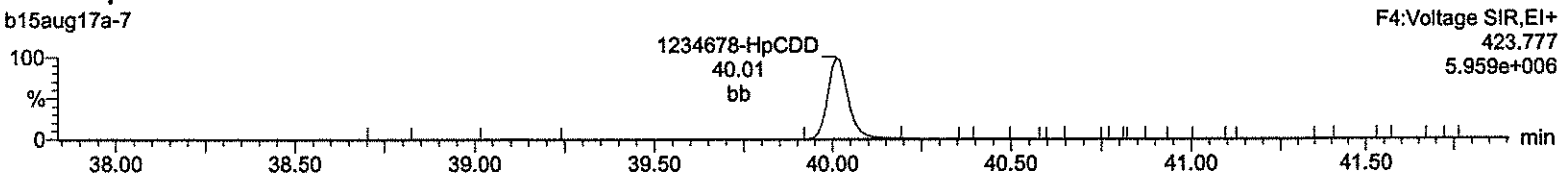
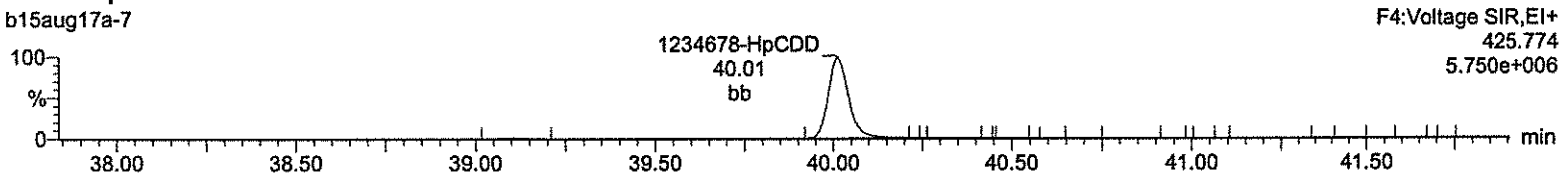
Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

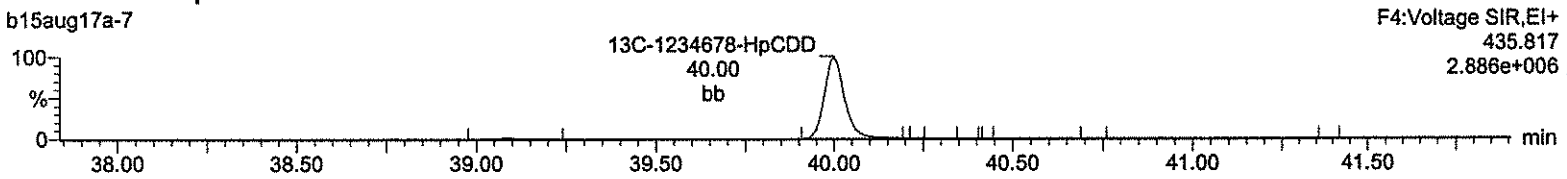
Total-heptadioxins



Total-heptadioxins



13C-1234678-HpCDD



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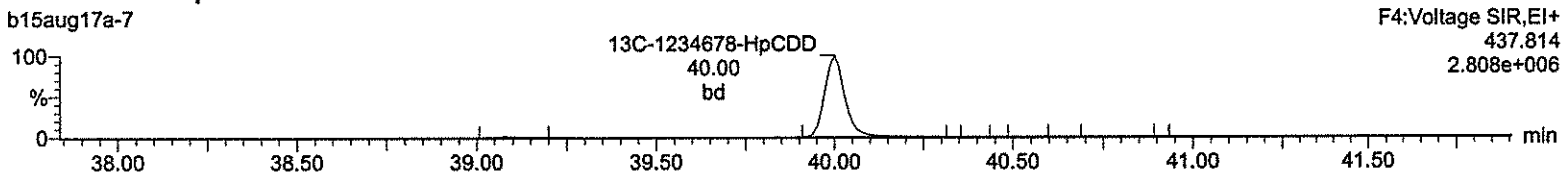
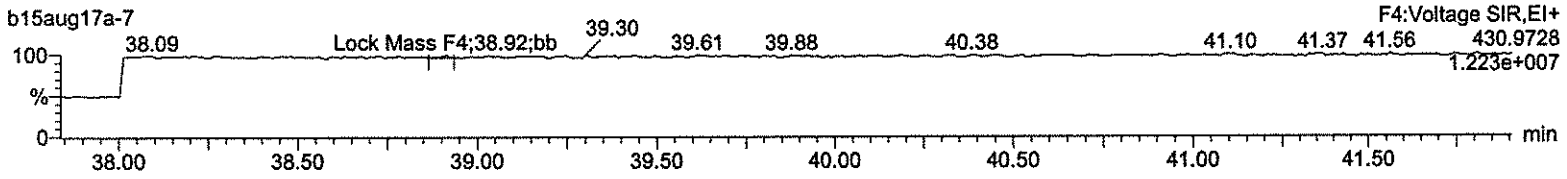


Lock Mass F4



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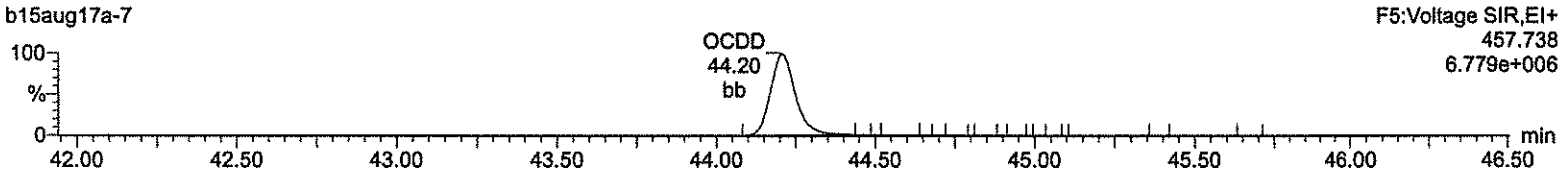
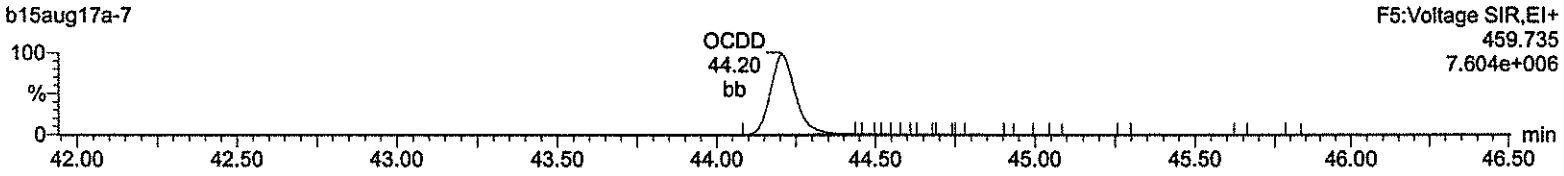
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

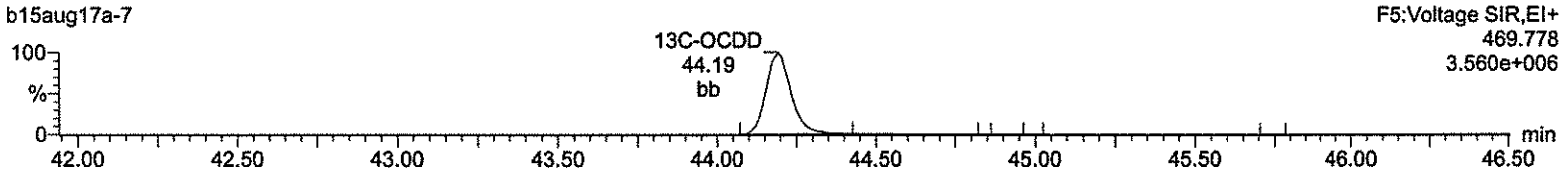
OCDD



OCDD



13C-OCDD



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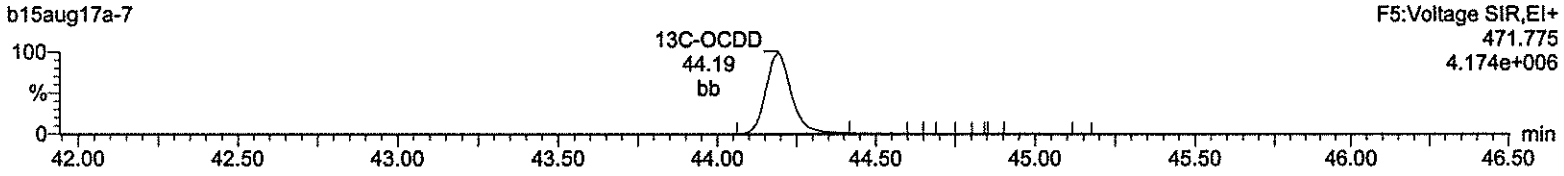
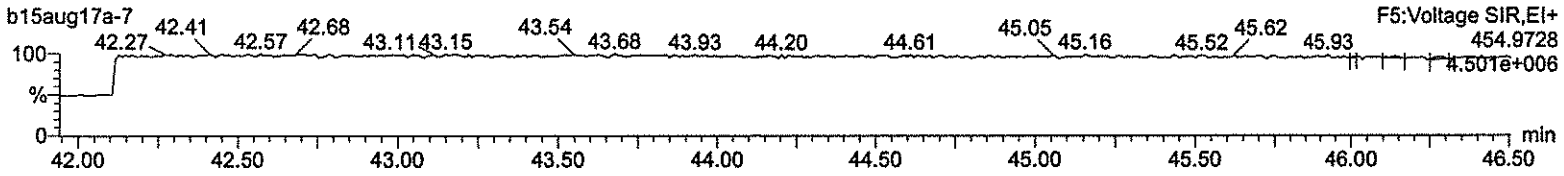


Lock Mass F5



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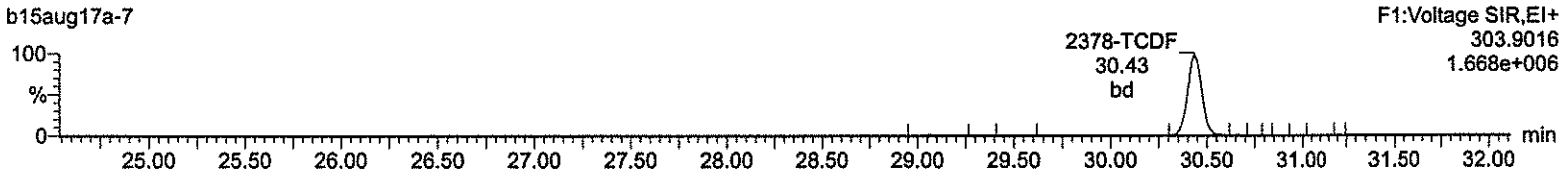
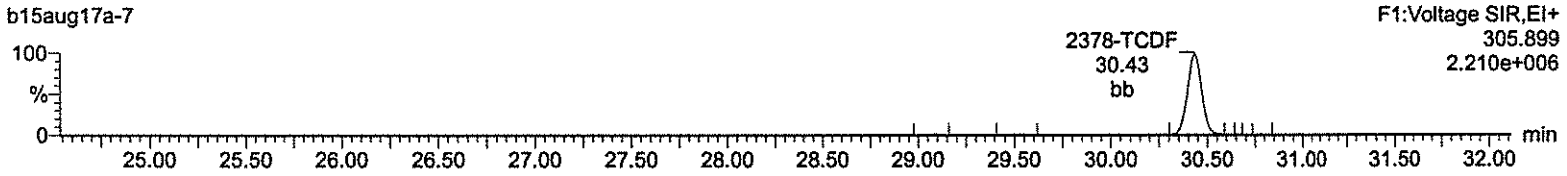
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

Total-tetrafurans



Total-tetrafurans



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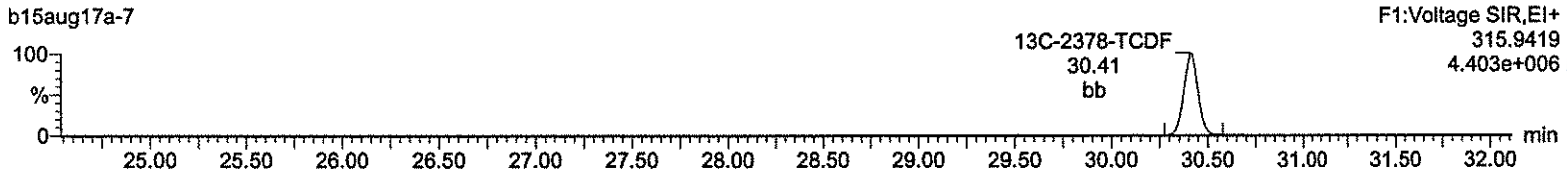

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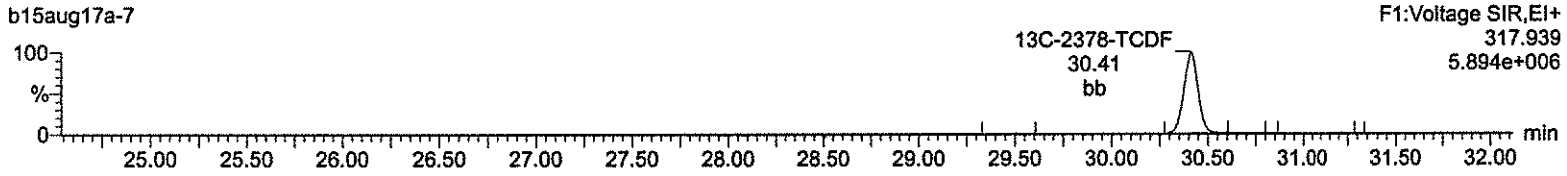
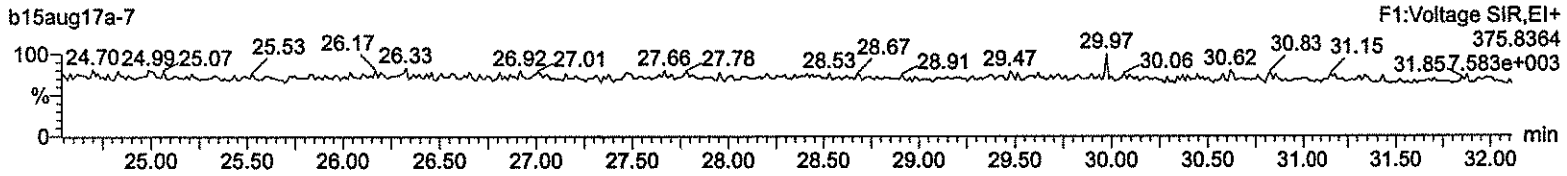
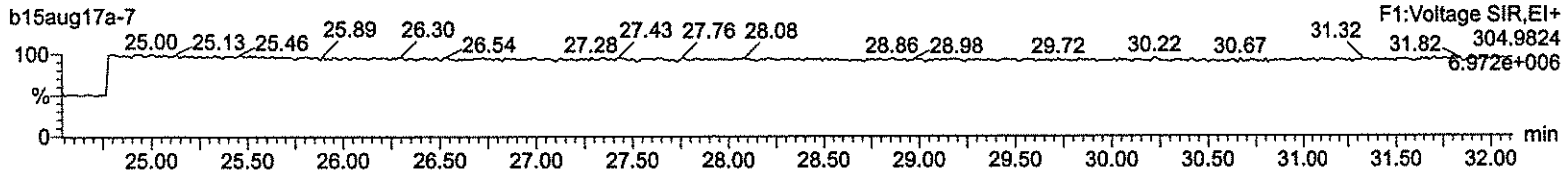


HxDPE



Lock Mass F1



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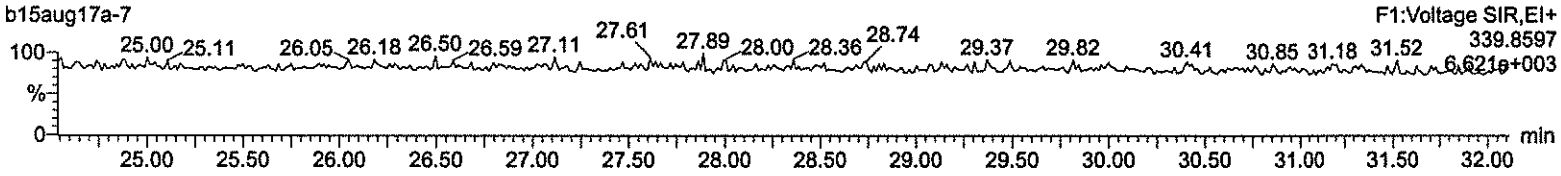
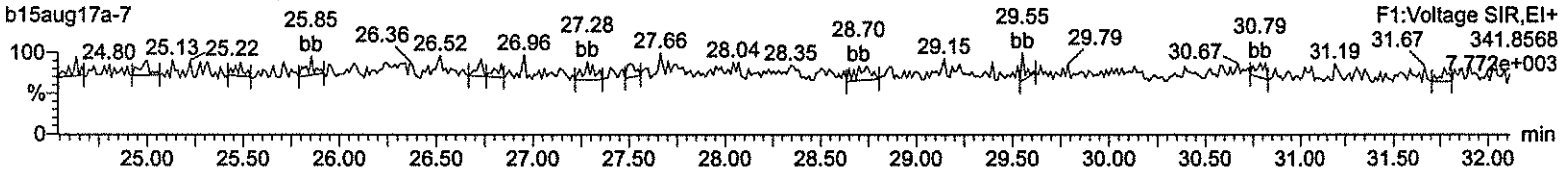
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

Total-pentafurans (F1)



Total-pentafurans (F1)



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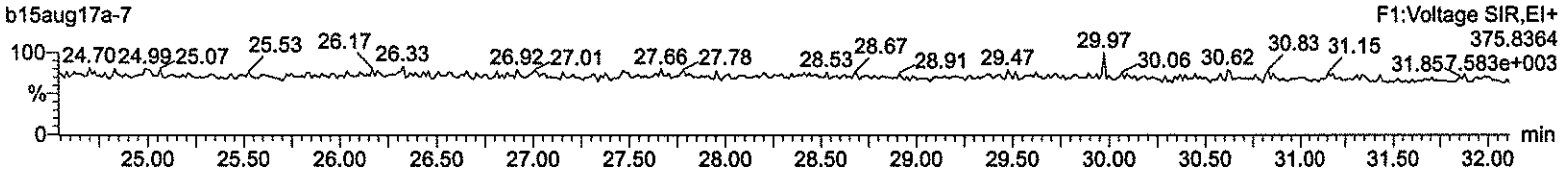
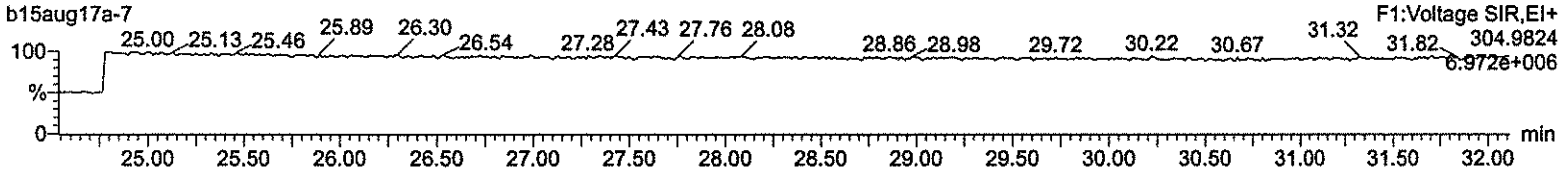


Lock Mass F1



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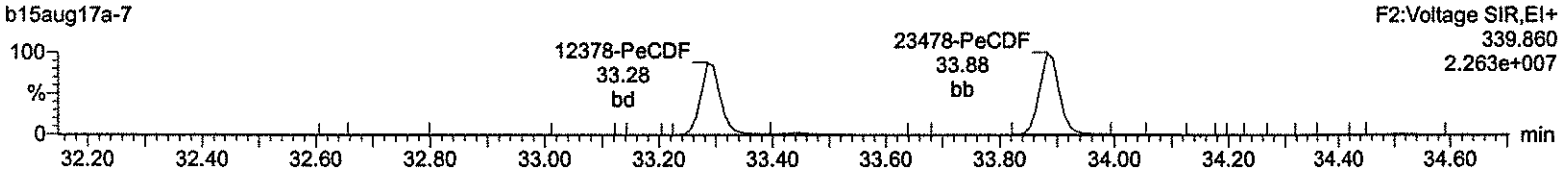
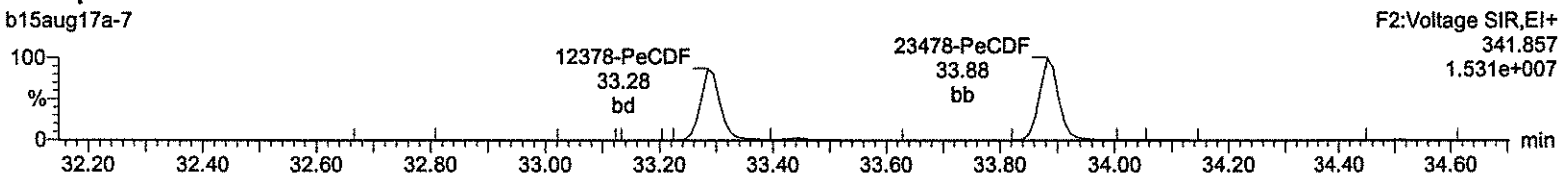
Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

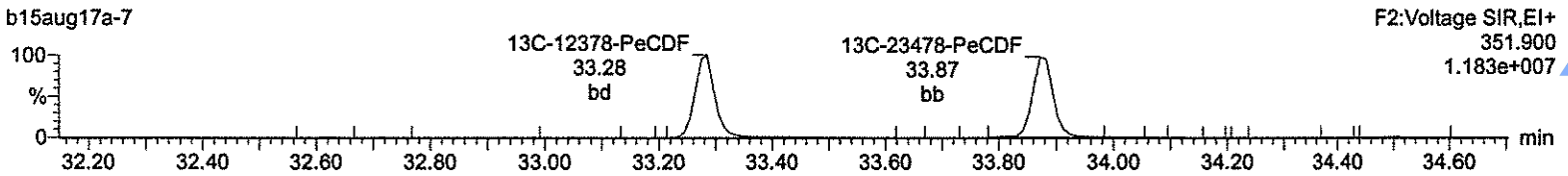
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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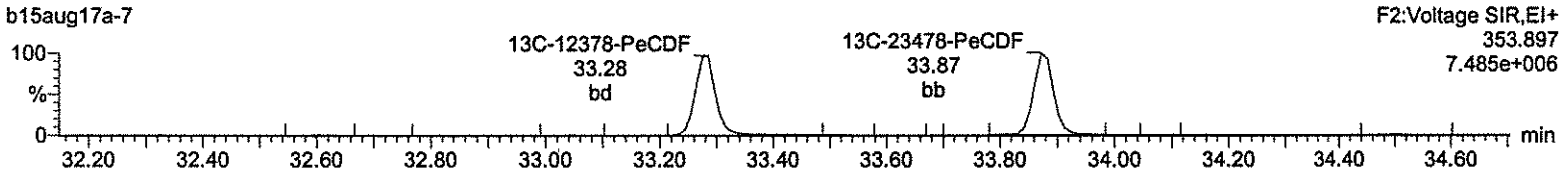
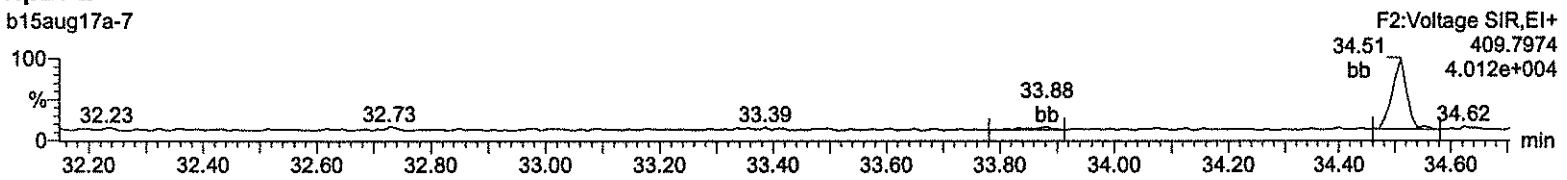
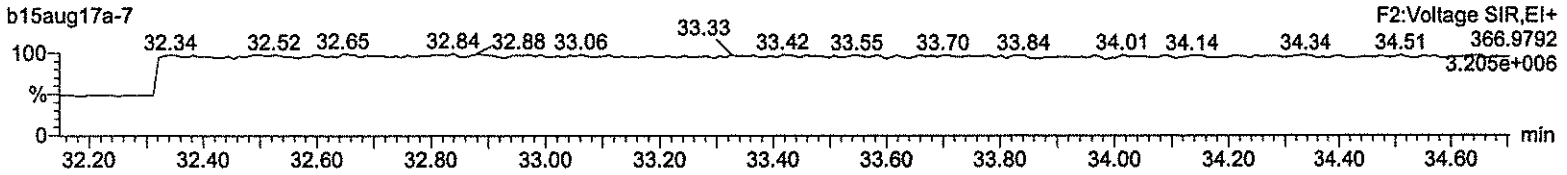


HpDPE



Lock Mass F2



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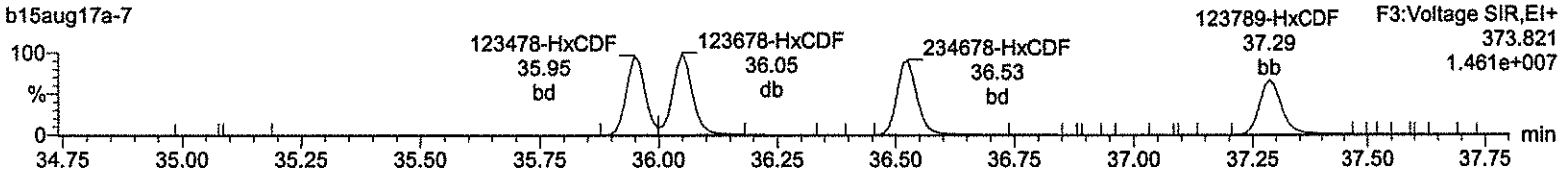
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

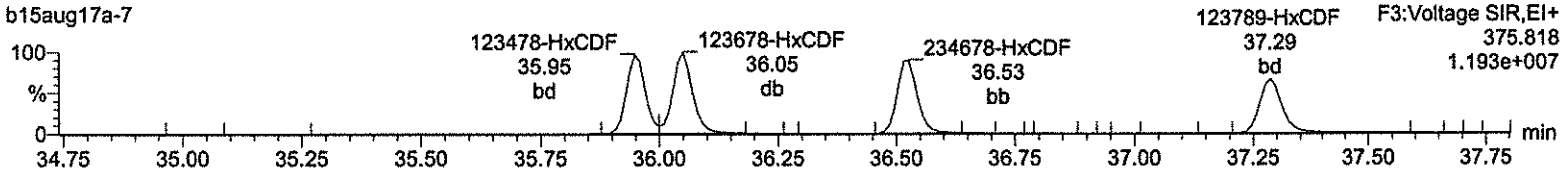
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

Total-hexafurans



Total-hexafurans



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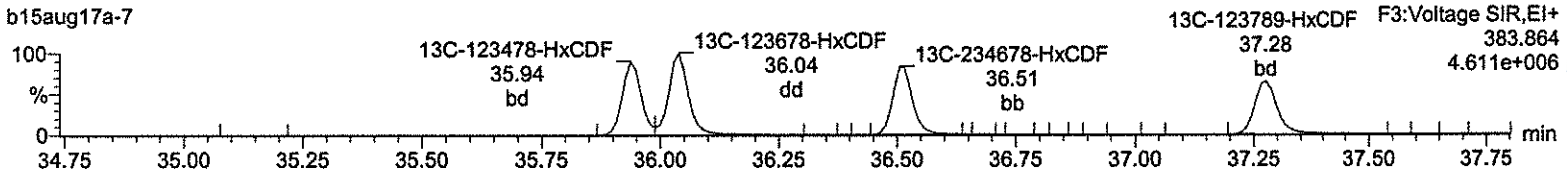

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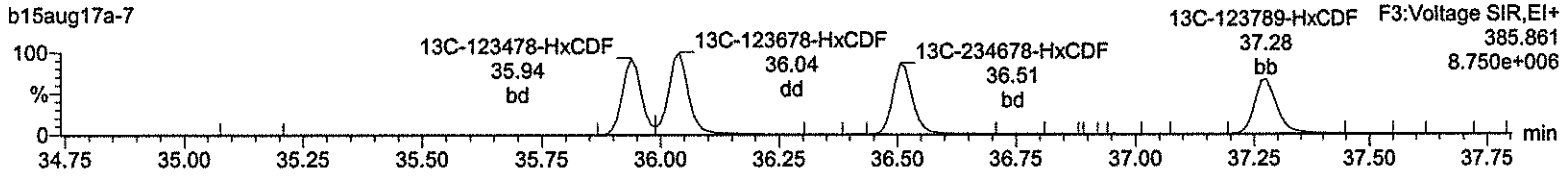
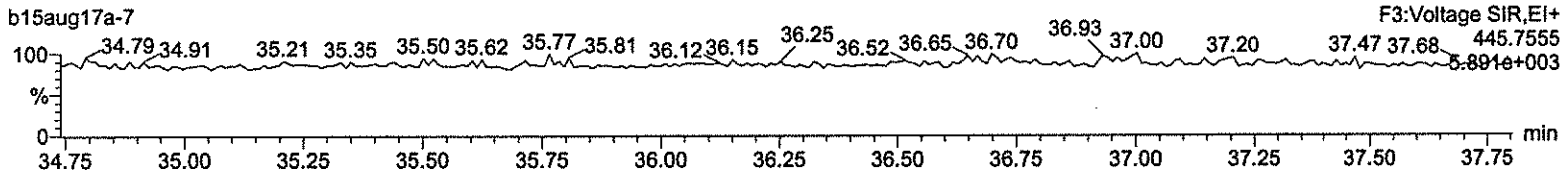


OcDPE



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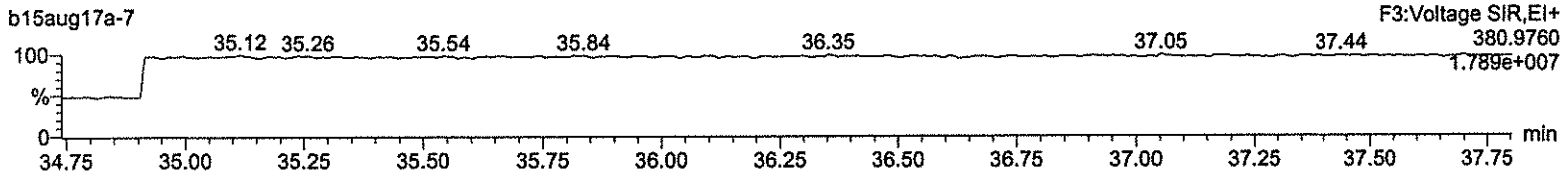

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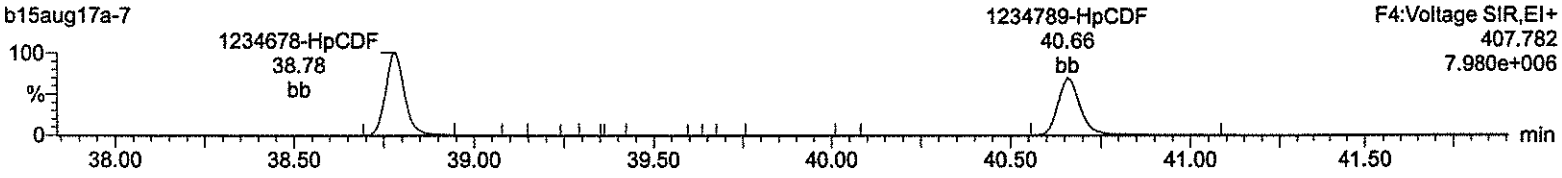
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

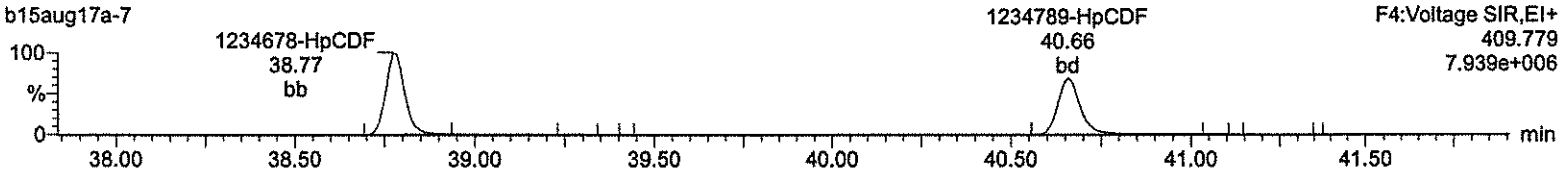
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

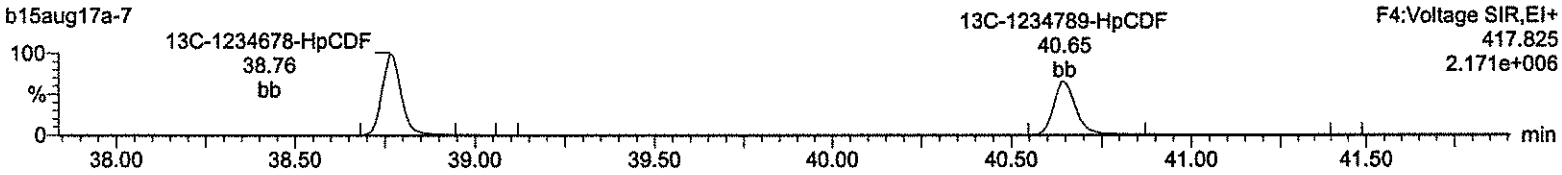
Total-heptafurans



Total-heptafurans



13C-1234678-HpCDF



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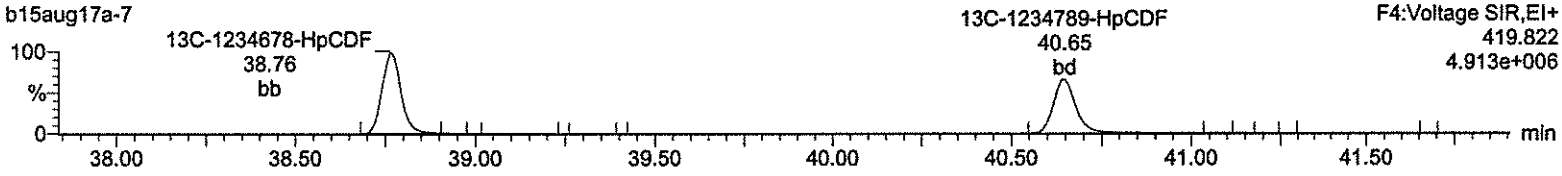

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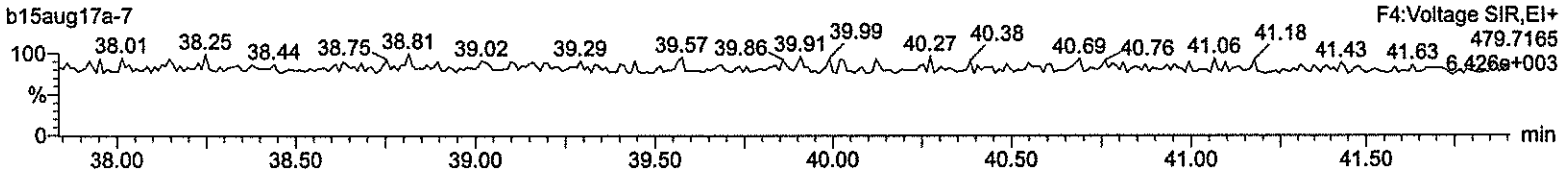
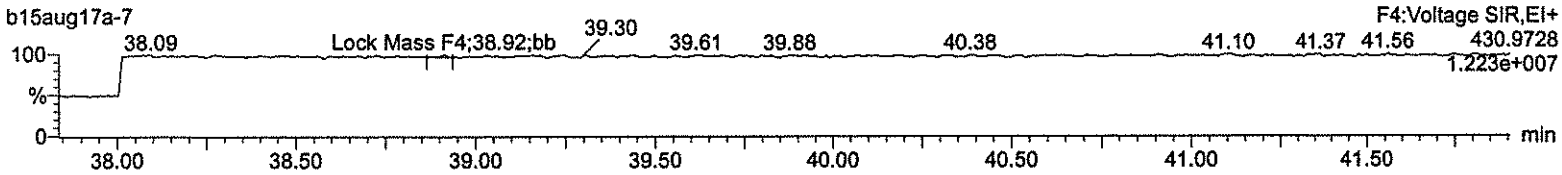


Lock Mass F4



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Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

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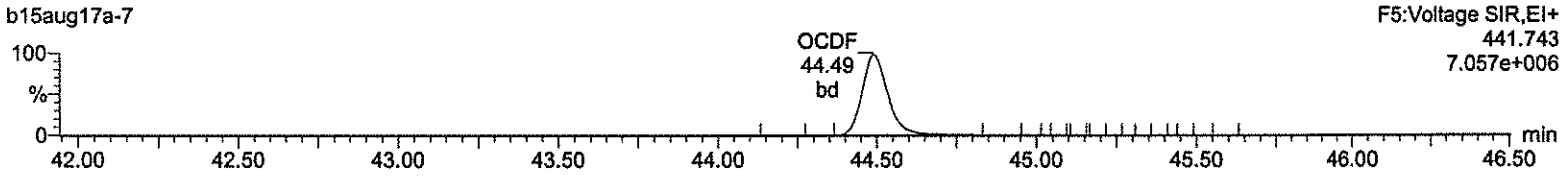
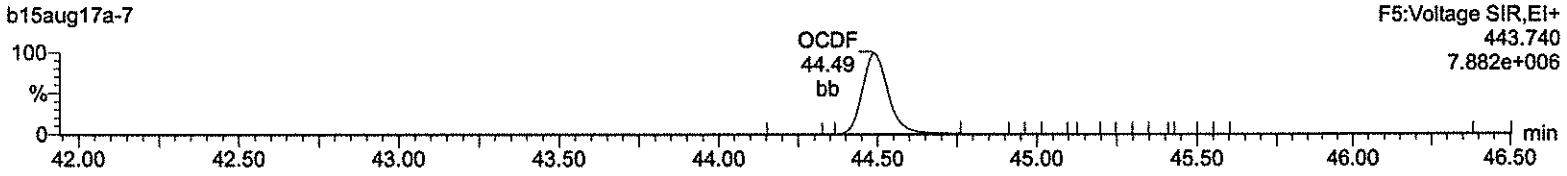
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

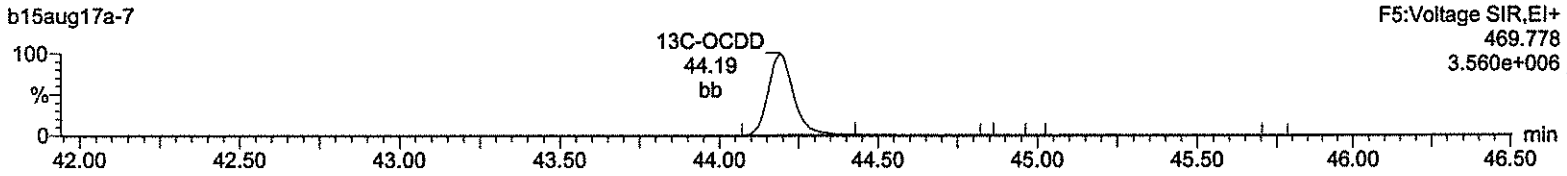
OCDF



OCDF



13C-OCDD



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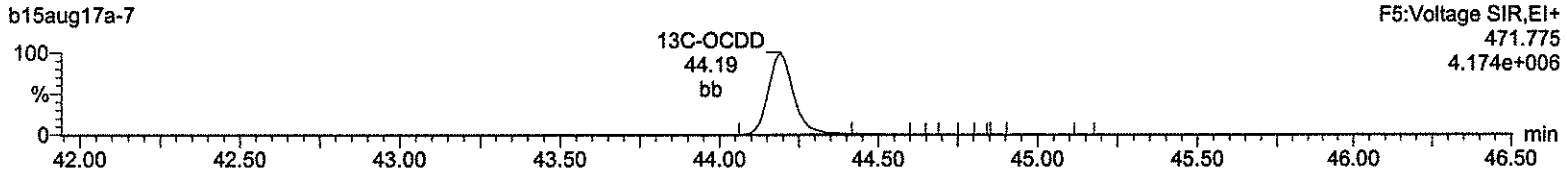

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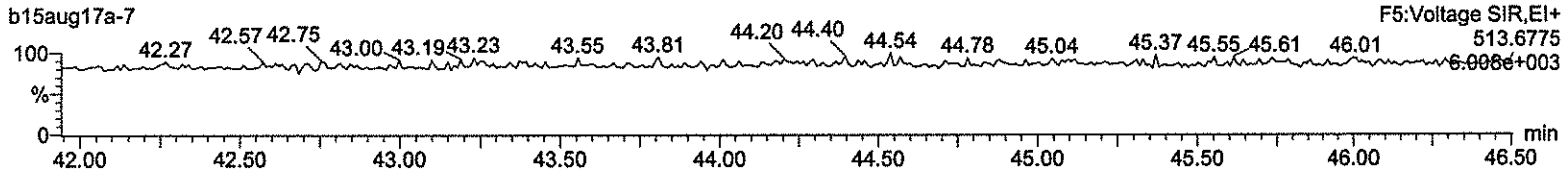
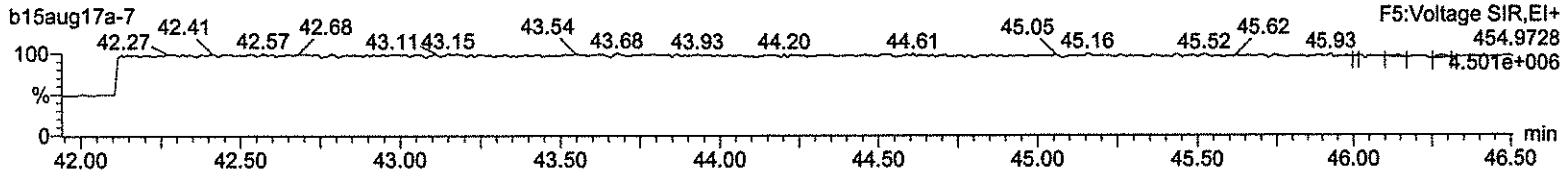


Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

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Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	6.50e5	8.74e5	1.52e6	31.19	1.000	0.74	NO	210.527	0.938	0.891	4.45	0.0558	1.14e7	1452	7848.5	1.54e7	1287	11954.3	bb	bb
2	12378-PeCDD	3.42e6	2.24e6	5.66e6	34.07	1.000	1.53	NO	1035.886	0.818	0.789	3.38	0.0875	8.65e7	3501	24716.0	5.63e7	1308	43020.3	bb	bb
3	123478-HxCDD	2.95e6	2.33e6	5.28e6	36.65	1.000	1.27	NO	1054.483	0.883	0.838	4.80	0.128	6.36e7	2471	25734.0	4.98e7	3022	16484.7	bd	bd
4	123678-HxCDD	3.30e6	2.62e6	5.92e6	36.73	1.000	1.26	NO	1050.151	0.882	0.840	4.71	0.125	6.52e7	2471	26403.7	5.24e7	3022	17348.6	db	db
5	123789-HxCDD	3.00e6	2.37e6	5.38e6	36.97	1.007	1.27	NO	1040.620	0.847	0.814	3.19	0.130	5.98e7	2471	24213.8	4.70e7	3022	15556.3	bb	bb
6	1234678-HpCDD	2.35e6	2.27e6	4.63e6	40.00	1.000	1.04	NO	1047.702	1.050	1.003	3.74	0.281	3.54e7	3390	10445.3	3.48e7	4270	8144.0	bb	bb
7	OCDD	3.97e6	4.54e6	8.51e6	44.20	1.000	0.87	NO	2064.408	0.940	0.910	3.79	0.386	4.49e7	3539	12688.4	5.01e7	3445	14535.0	bb	bd
8	2378-TCDF	7.56e5	1.01e6	1.76e6	30.42	1.001	0.75	NO	207.429	0.955	0.921	2.50	0.0913	8.84e6	2083	4242.9	1.20e7	1591	7534.1	bb	bb
9	12378-PeCDF	4.53e6	3.06e6	7.60e6	33.28	1.000	1.48	NO	1049.725	0.863	0.822	4.18	0.104	1.15e8	4175	27485.2	7.56e7	3459	21852.7	bb	bd
10	23478-PeCDF	5.12e6	3.42e6	8.54e6	33.88	1.000	1.50	NO	1034.538	0.958	0.926	2.87	0.0947	1.28e8	4175	30569.5	8.41e7	3459	24315.1	bb	bb
11	123478-HxCDF	3.65e6	3.00e6	6.65e6	35.94	1.000	1.21	NO	1046.830	1.045	0.998	5.02	0.197	7.83e7	6641	11788.0	6.54e7	4257	15370.4	bd	bd
12	123678-HxCDF	4.05e6	3.32e6	7.37e6	36.04	1.000	1.22	NO	1043.881	0.975	0.934	4.26	0.192	8.39e7	6641	12634.2	7.00e7	4257	16448.9	db	db
13	234678-HxCDF	3.80e6	3.02e6	6.82e6	36.51	1.000	1.26	NO	1041.922	1.076	1.033	4.35	0.203	7.89e7	6641	11887.9	6.44e7	4257	15127.5	bd	bb
14	123789-HxCDF	3.20e6	2.61e6	5.81e6	37.28	1.000	1.23	NO	1042.807	0.994	0.953	4.84	0.273	5.82e7	6641	8769.8	4.80e7	4257	11270.3	bb	bb
15	1234678-HpCDF	2.88e6	2.83e6	5.71e6	38.77	1.000	1.02	NO	1044.921	1.146	1.097	3.98	0.280	4.93e7	4709	10464.7	4.84e7	5591	8650.7	bb	bb
16	1234789-HpCDF	2.38e6	2.32e6	4.71e6	40.65	1.000	1.03	NO	1065.114	1.181	1.109	6.52	0.409	3.38e7	4709	7181.6	3.30e7	5591	5904.4	bb	bb
17	OCDF	4.30e6	4.85e6	9.15e6	44.49	1.007	0.89	NO	2191.726	1.011	0.922	7.27	0.398	4.76e7	3742	12718.3	5.35e7	3546	15078.8	bb	bb
18	13C-2378-TCDD	3.56e5	4.56e5	8.13e5	31.18	1.018	0.78	NO	105.948	1.210	1.142	2.94	0.114	6.04e6	2991	2019.2	7.70e6	1641	4691.6	bb	bb
19	13C-12378-PeCDD	4.27e5	2.66e5	6.93e5	34.06	1.112	1.61	NO	107.200	1.031	0.962	4.38	0.0905	1.07e7	1452	7387.0	6.54e6	1640	3986.6	bb	bb
20	13C-123478-HxCDD	3.29e5	2.69e5	5.98e5	36.64	0.991	1.22	NO	99.529	1.022	1.027	0.74	0.0713	7.06e6	2007	3517.1	5.76e6	1378	4182.0	bd	bd
21	13C-123678-HxCDD	3.68e5	3.03e5	6.71e5	36.72	0.993	1.21	NO	102.086	1.147	1.123	1.81	0.0652	7.17e6	2007	3575.5	5.97e6	1378	4333.6	db	db
22	13C-1234678-HpCDD	2.24e5	2.17e5	4.41e5	39.99	1.082	1.03	NO	100.015	0.753	0.753	2.07	0.0779	3.46e6	1344	2572.2	3.40e6	1366	2486.6	bb	bb
23	13C-OCDD	4.20e5	4.85e5	9.05e5	44.19	1.196	0.87	NO	213.290	0.774	0.726	4.08	0.108	4.61e6	1910	2414.6	5.34e6	1696	3150.7	bb	bb
24	13C-2378-TCDF	3.98e5	5.25e5	9.23e5	30.39	0.992	0.76	NO	102.813	1.374	1.337	1.60	0.150	4.71e6	4459	1057.0	6.25e6	2672	2337.1	bb	bb
25	13C-12378-PeCDF	5.41e5	3.39e5	8.80e5	33.27	1.086	1.60	NO	105.467	1.310	1.242	3.08	0.105	1.37e7	2567	5334.3	8.34e6	2063	4044.4	bb	bb
26	13C-23478-PeCDF	5.48e5	3.43e5	8.91e5	33.87	1.105	1.60	NO	107.456	1.326	1.234	4.20	0.106	1.34e7	2567	5210.8	8.26e6	2063	4005.7	bb	bb
27	13C-123478-HxCDF	2.17e5	4.20e5	6.36e5	35.93	0.972	0.52	NO	98.995	1.088	1.099	0.83	0.118	4.73e6	2624	1801.4	9.08e6	3366	2698.3	bd	bd
28	13C-123678-HxCDF	2.57e5	4.99e5	7.56e5	36.03	0.975	0.51	NO	101.638	1.293	1.272	2.46	0.102	5.17e6	2624	1969.6	1.02e7	3366	3019.7	dd	dd
29	13C-234678-HxCDF	2.15e5	4.19e5	6.34e5	36.51	0.988	0.51	NO	100.448	1.084	1.079	1.03	0.120	4.40e6	2624	1675.6	8.56e6	3366	2542.2	bd	bd
30	13C-123789-HxCDF	2.01e5	3.84e5	5.85e5	37.26	1.008	0.52	NO	101.257	0.999	0.987	1.26	0.131	3.60e6	2624	1369.9	6.94e6	3366	2061.2	bd	bb
31	13C-1234678-HpCDF	1.51e5	3.47e5	4.98e5	38.76	1.049	0.44	NO	100.205	0.851	0.849	1.50	0.0929	2.55e6	1388	1839.7	5.82e6	2259	2574.8	bb	bb
32	13C-1234789-HpCDF	1.20e5	2.79e5	3.99e5	40.64	1.099	0.43	NO	100.913	0.681	0.675	2.06	0.117	1.71e6	1388	1229.0	3.96e6	2259	1752.1	bb	bb
33	13C-1234-TCDD	2.96e5	3.76e5	6.72e5	30.64	0.000	0.79	NO	100.000	1.000	1.000	0.00	0.130	3.91e6	2991	1308.7	4.99e6	1641	3041.0	bb	bb
34	13C-123789-HxCDD	3.20e5	2.65e5	5.85e5	36.96	0.000	1.21	NO	100.000	1.000	1.000	0.00	0.0733	6.32e6	2007	3150.1	5.25e6	1378	3811.2	bb	bb
35	37Cl-2378-TCDD	1.70e6		1.70e6	31.19	1.018			217.622	1.263	1.161	5.41	0.0420	3.01e7	1730	17413.5				bb	

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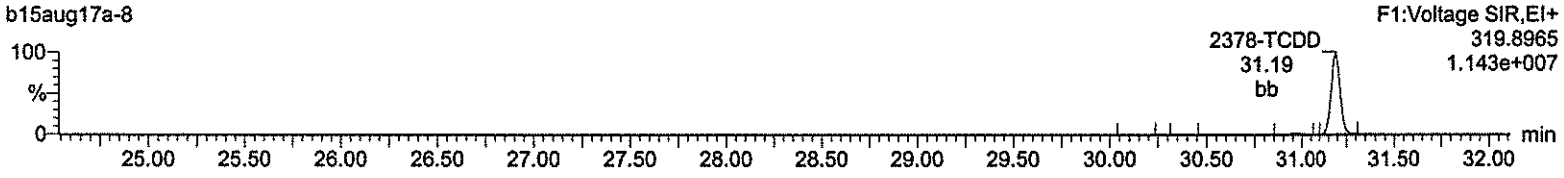
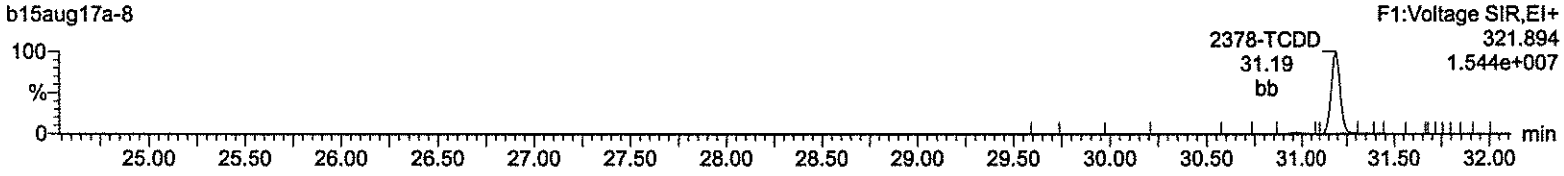
Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

Total-tetradioxins



Total-tetradioxins



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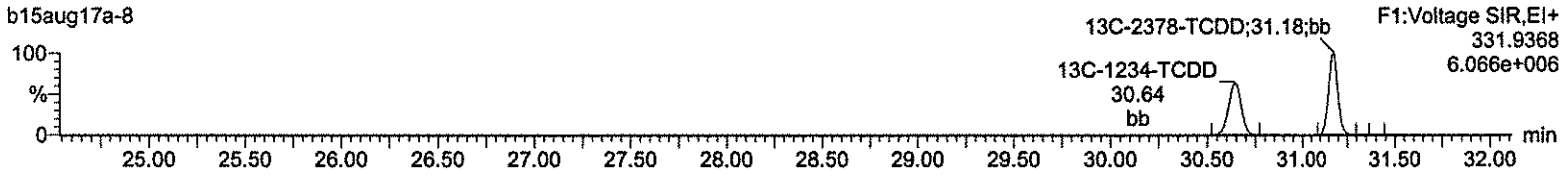

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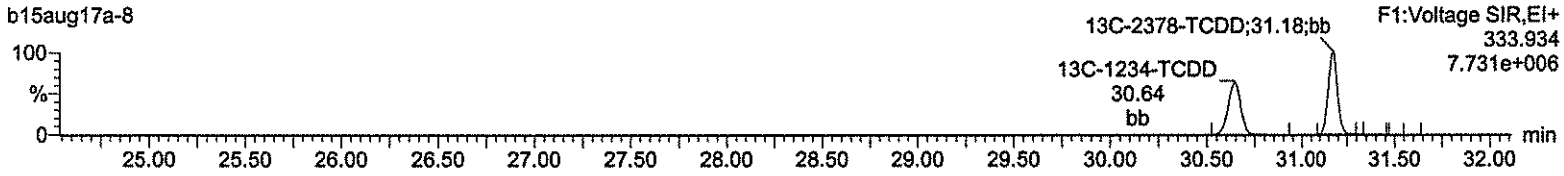

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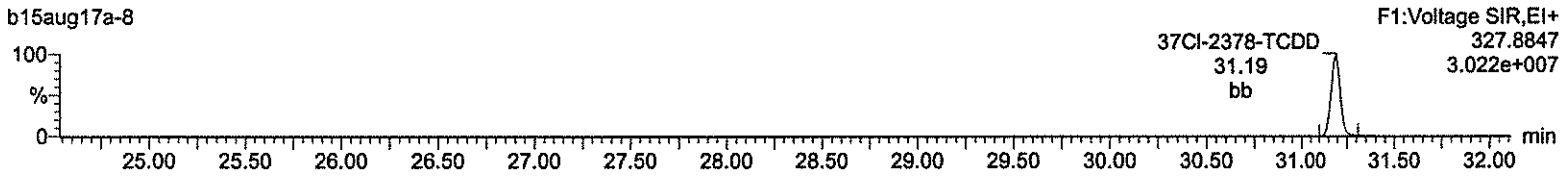
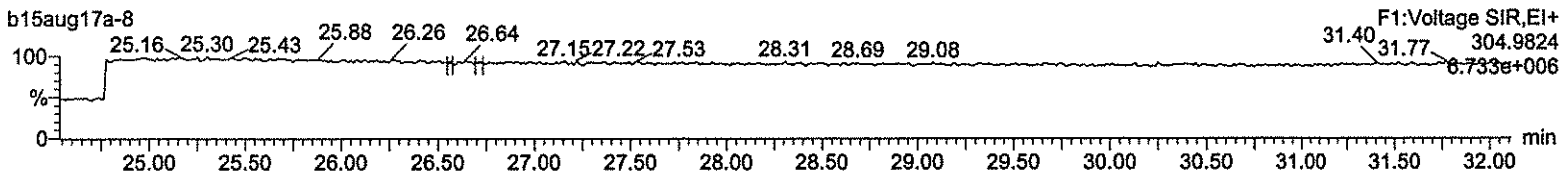


Lock Mass F1



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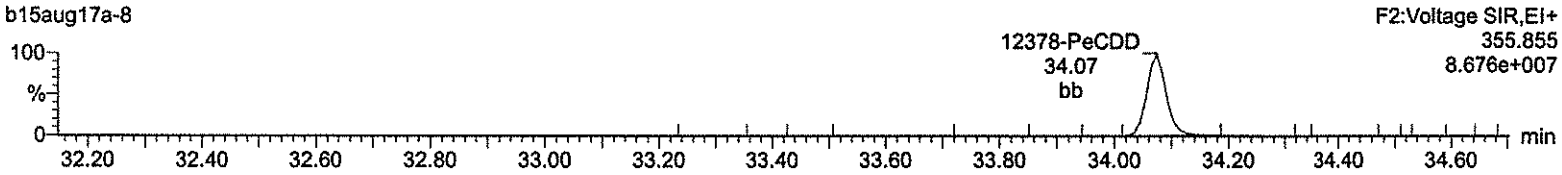
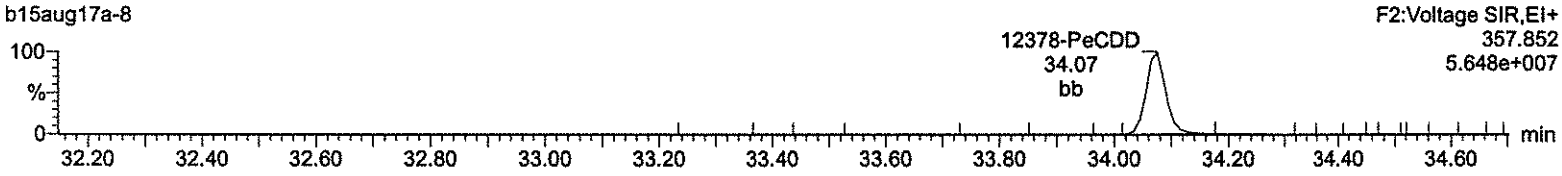
Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

Total-pentadioxins



Total-pentadioxins



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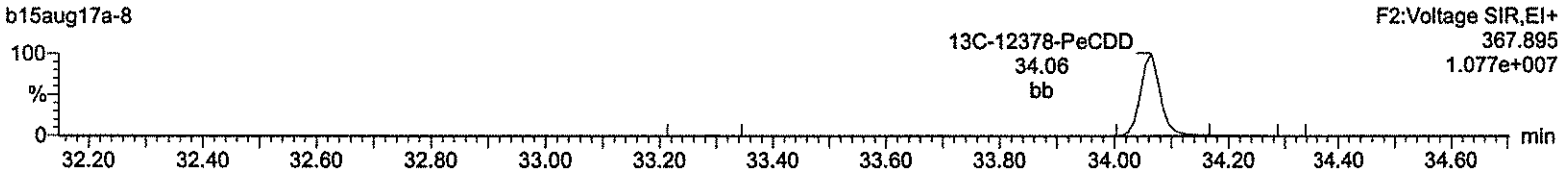

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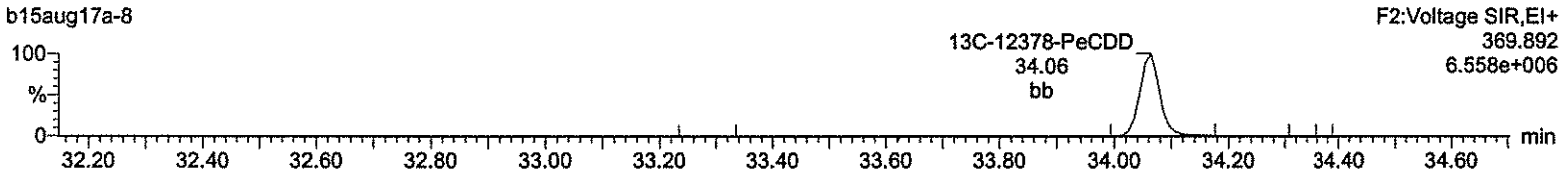

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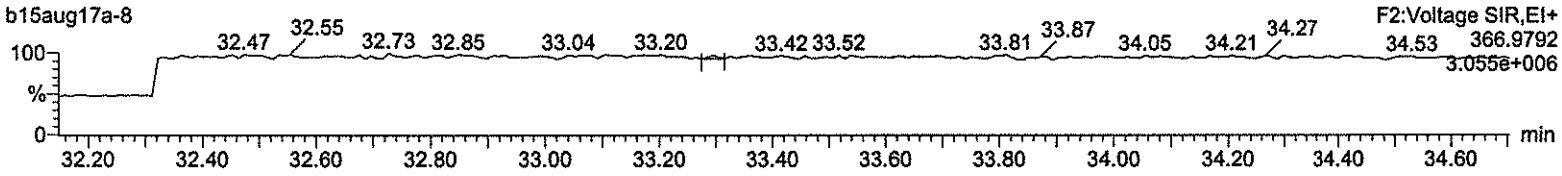

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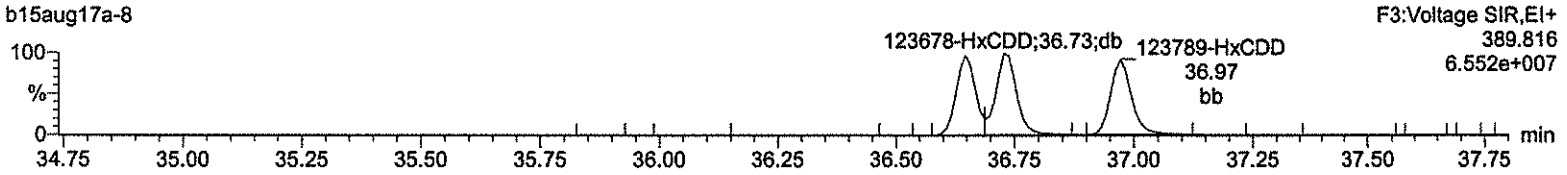
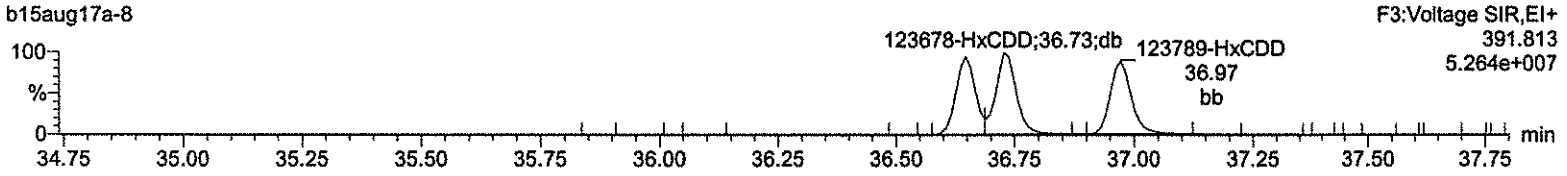
Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

Total-hexadioxins



Total-hexadioxins



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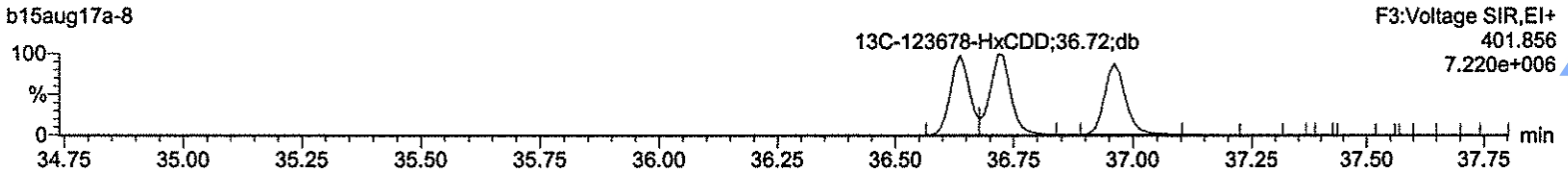

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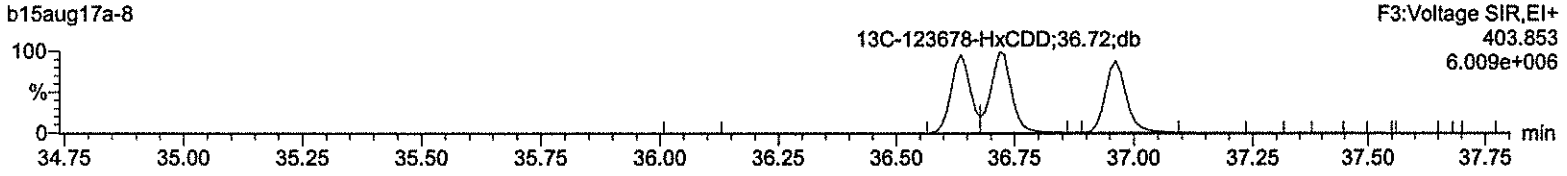
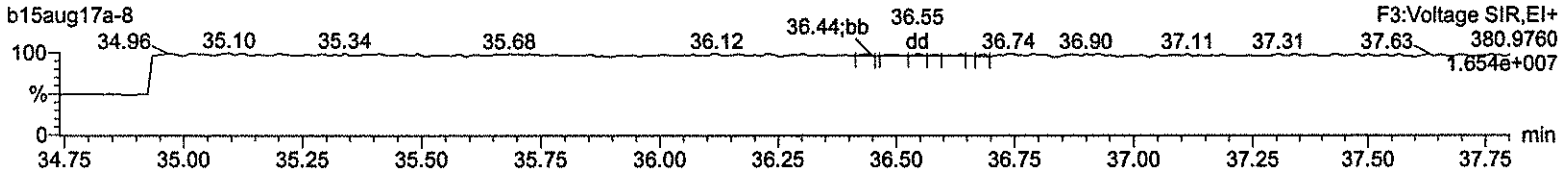


Lock Mass F3



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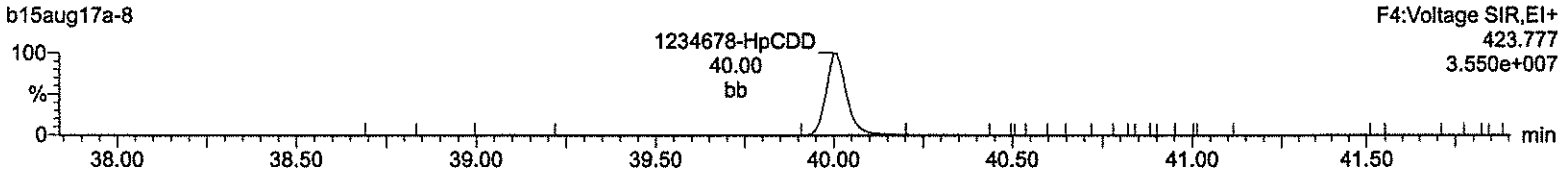
Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

Total-heptadioxins



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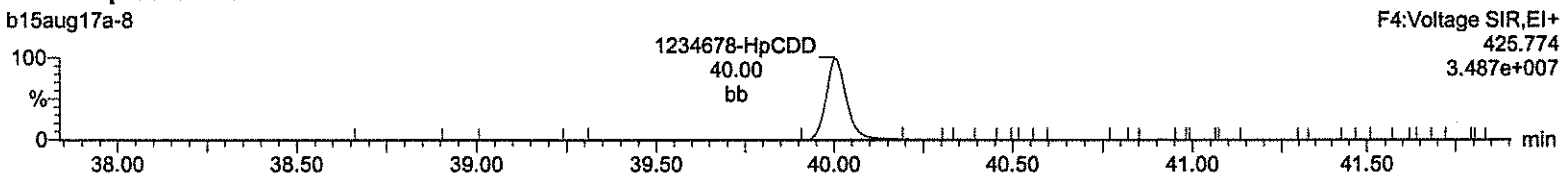

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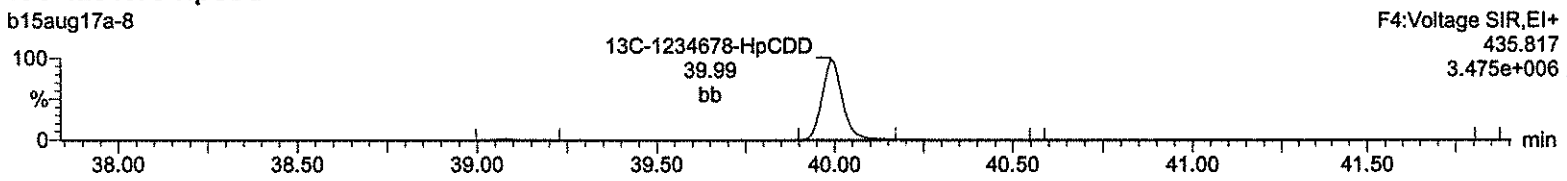

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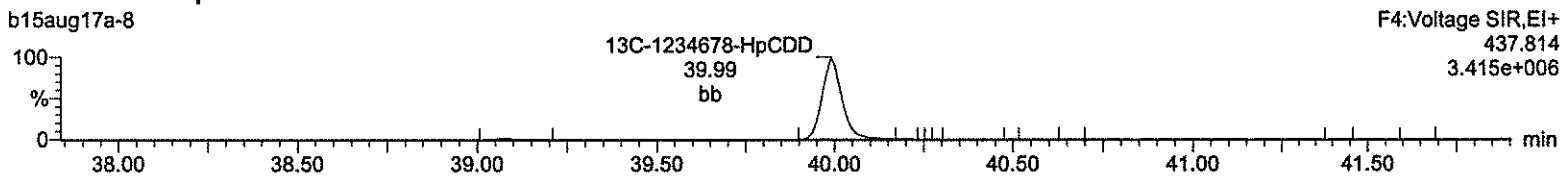

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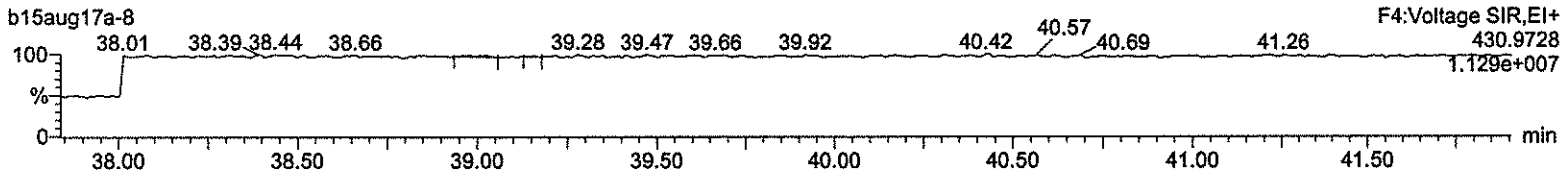

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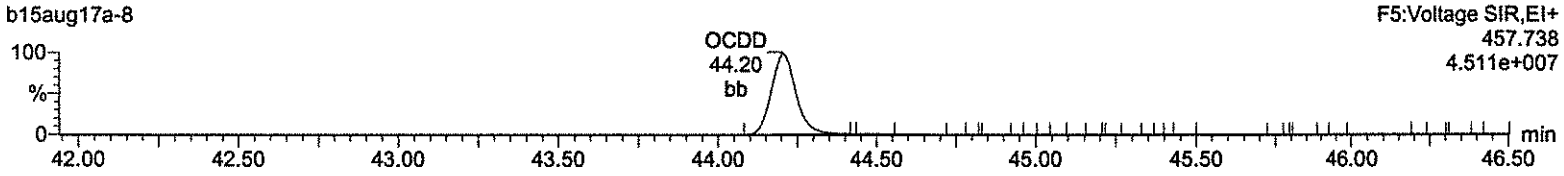

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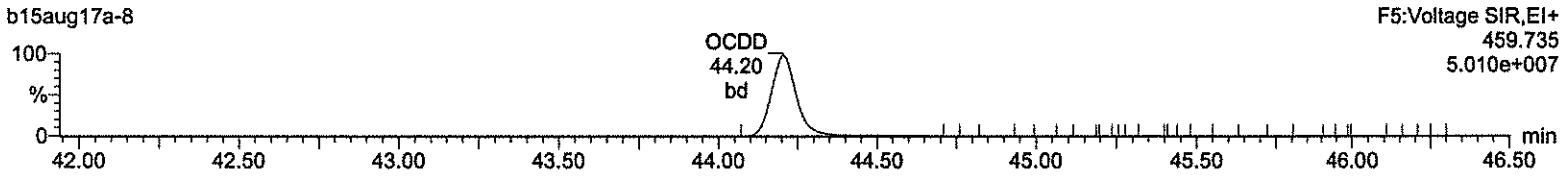

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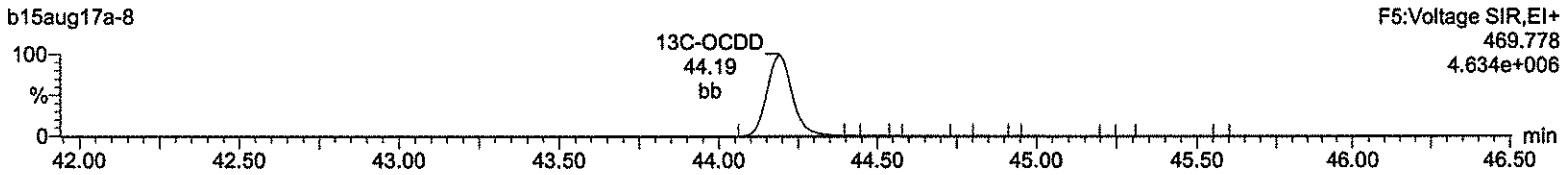

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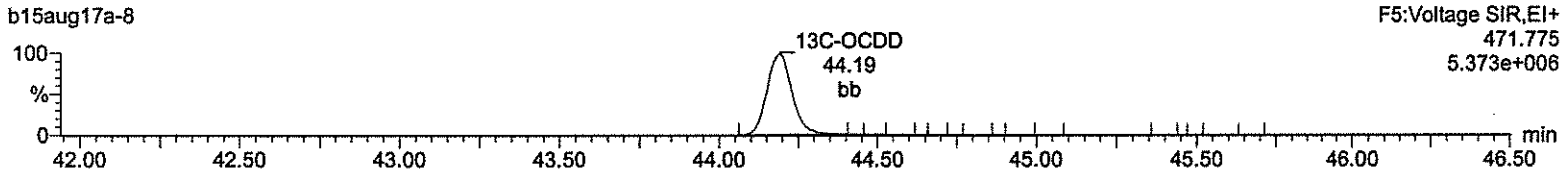
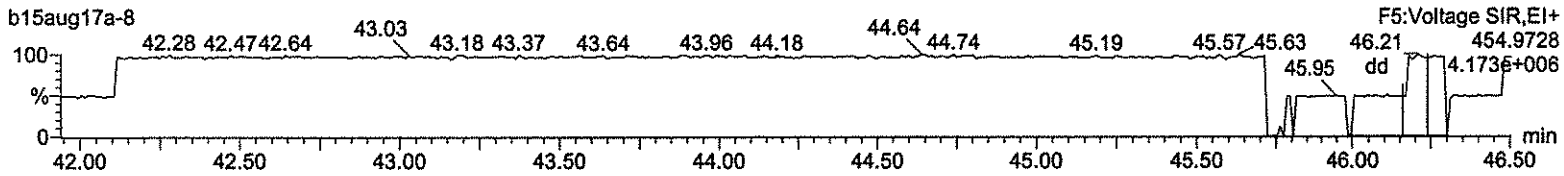


Lock Mass F5



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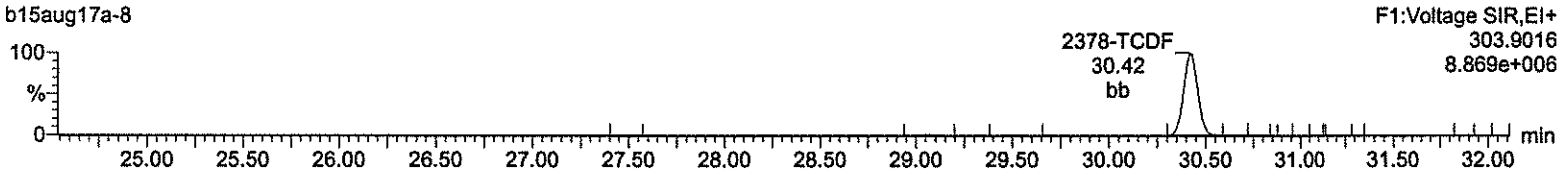
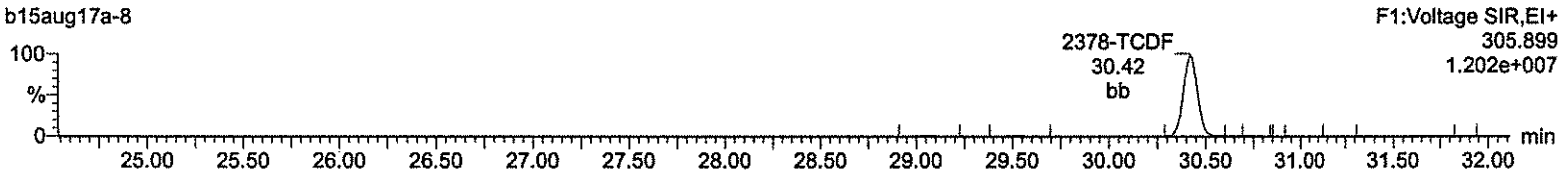
Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

Total-tetrafurans



Total-tetrafurans



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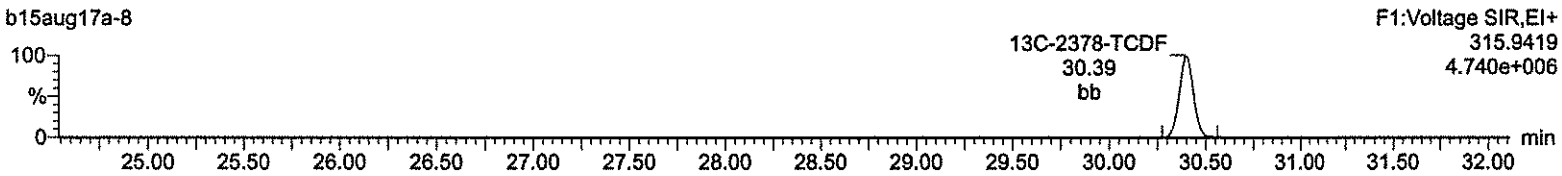

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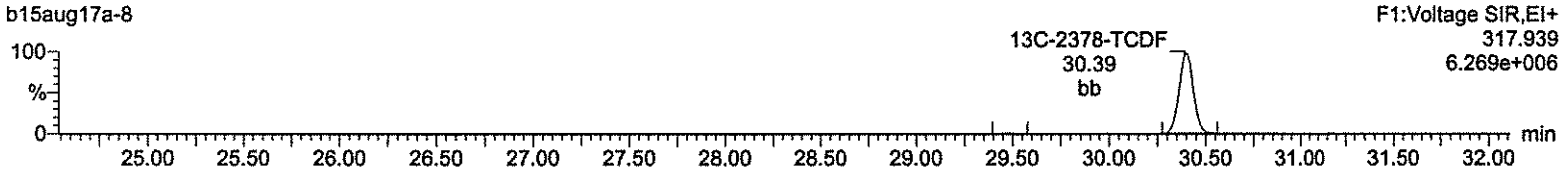
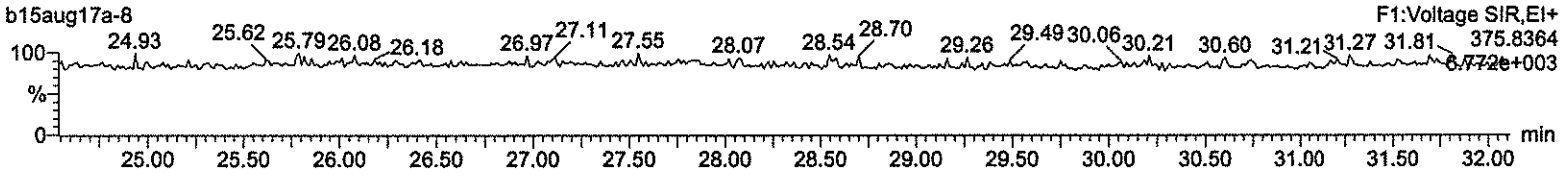
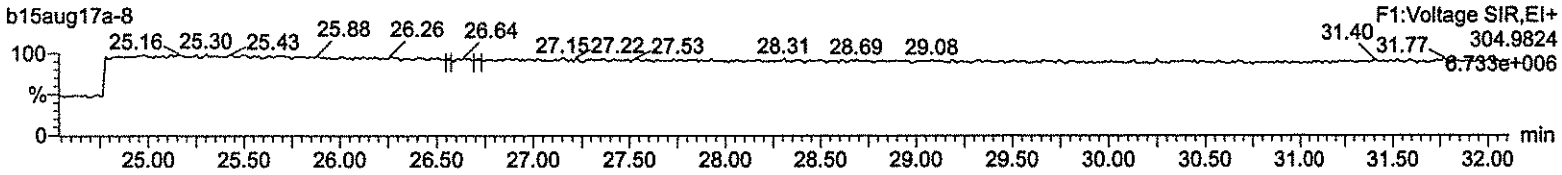


HxDPE



Lock Mass F1



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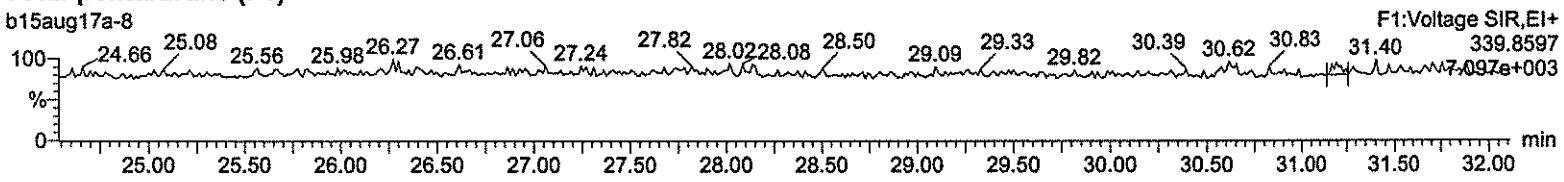
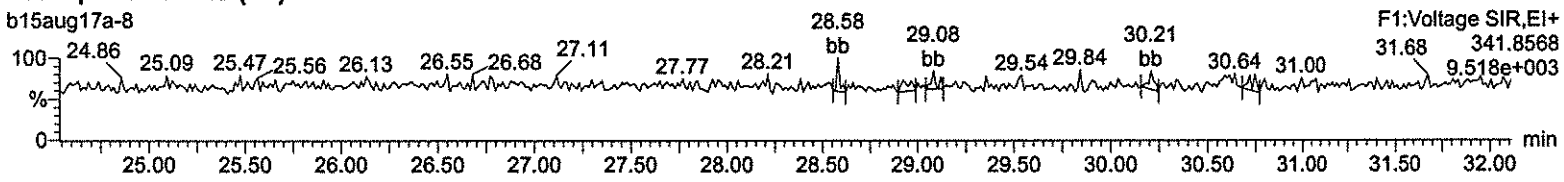
Total-pentafurans (F1)



Total-pentafurans (F1)



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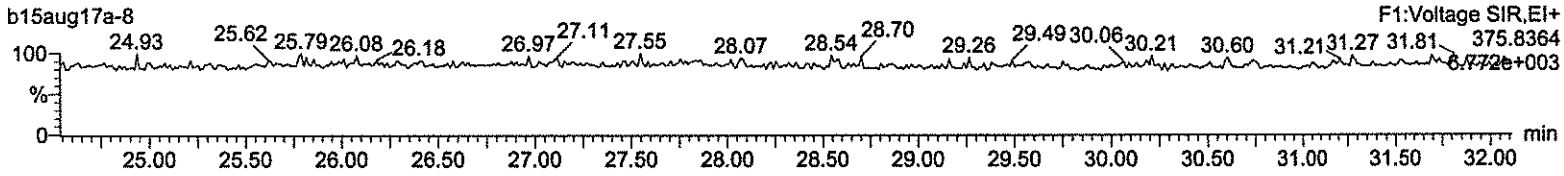
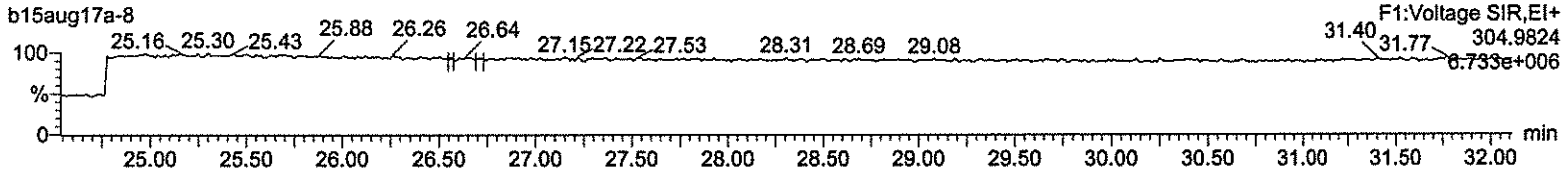


Lock Mass F1



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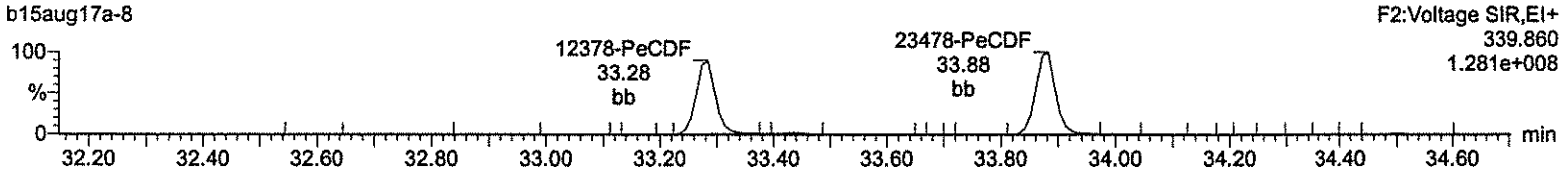
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

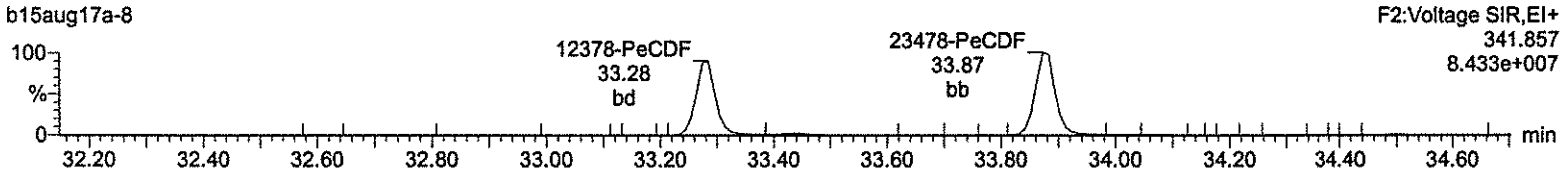
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

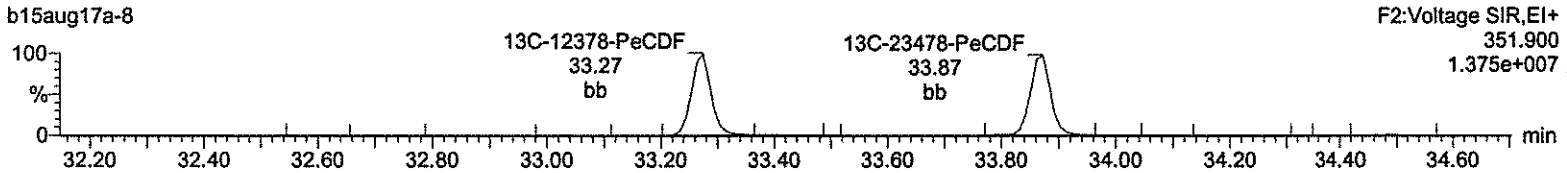
Total-pentafurans



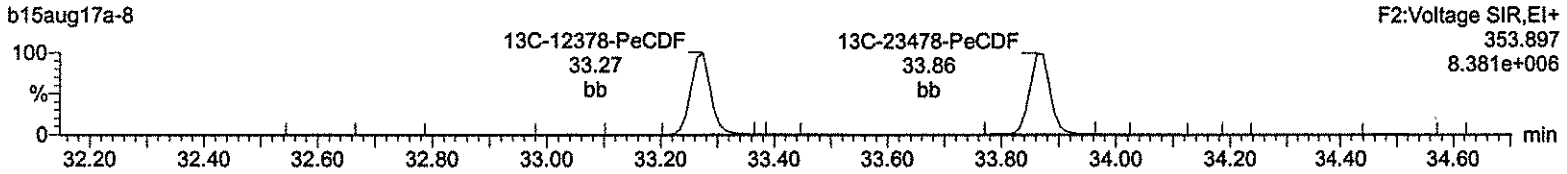
Total-pentafurans



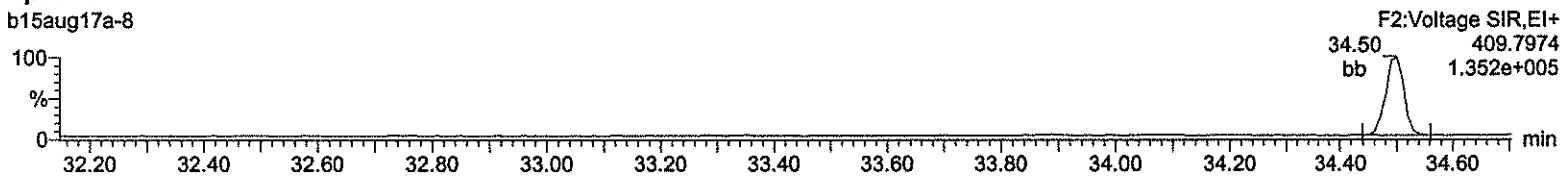
13C-12378-PeCDF



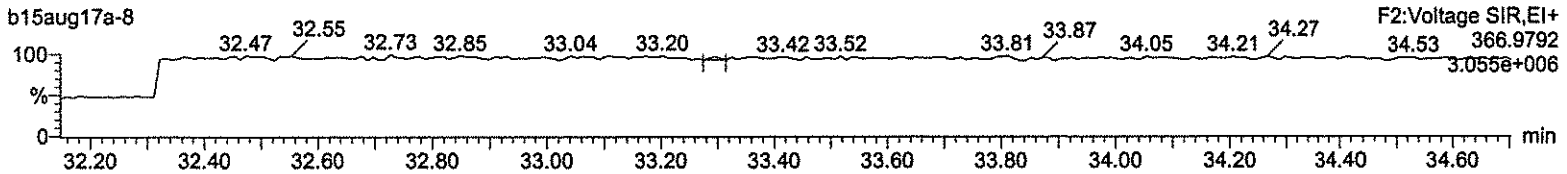
13C-12378-PeCDF



HpDPE



Lock Mass F2



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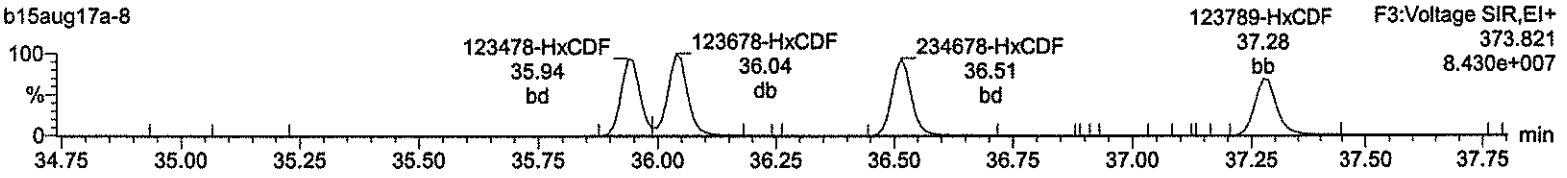
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

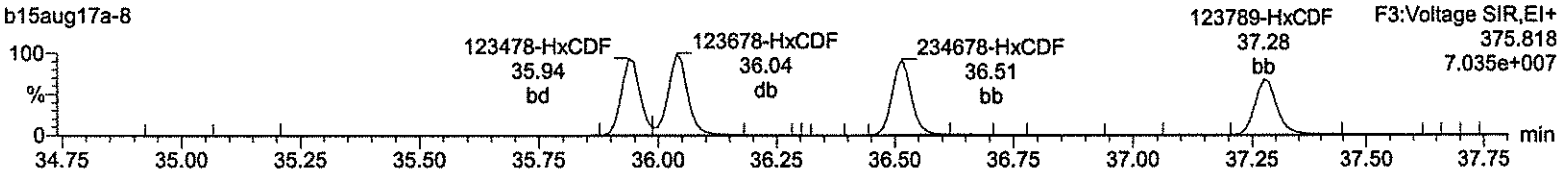
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

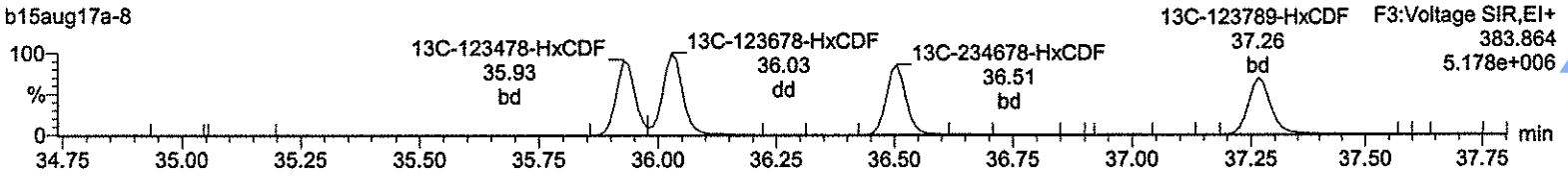
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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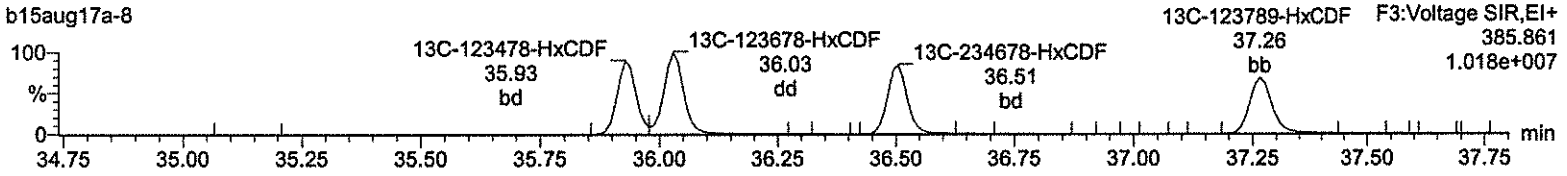
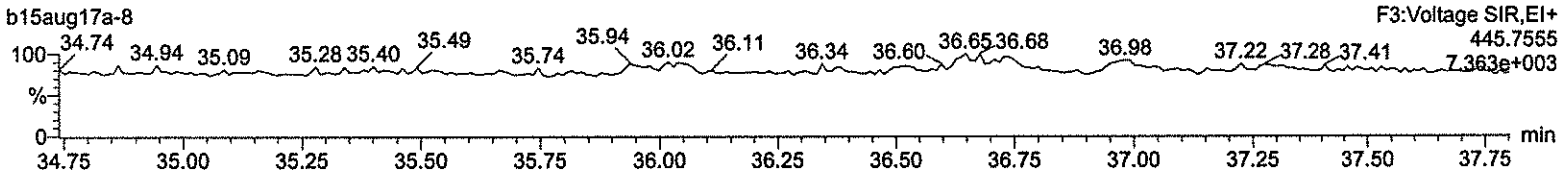
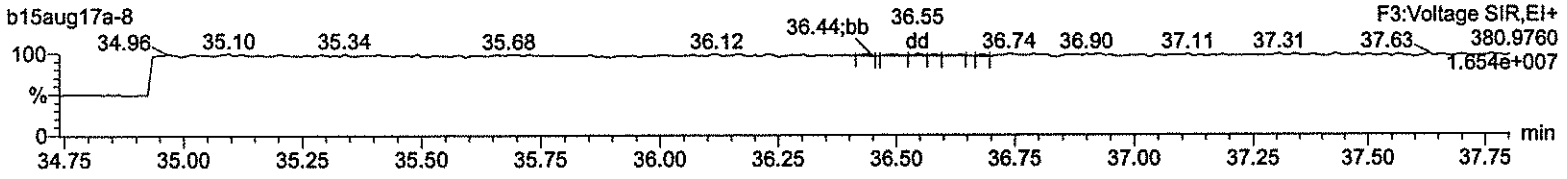


OcDPE



Lock Mass F3



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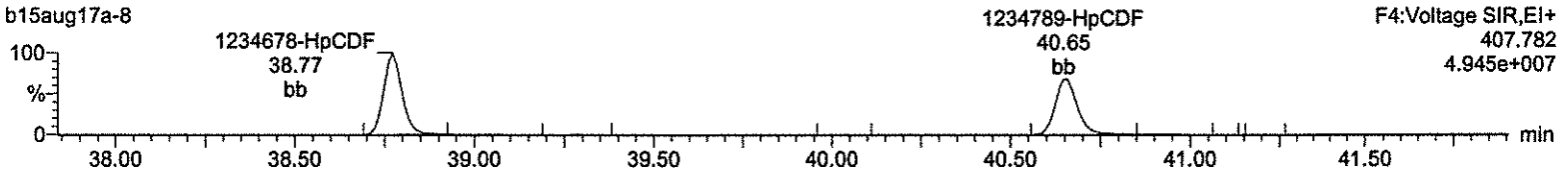
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

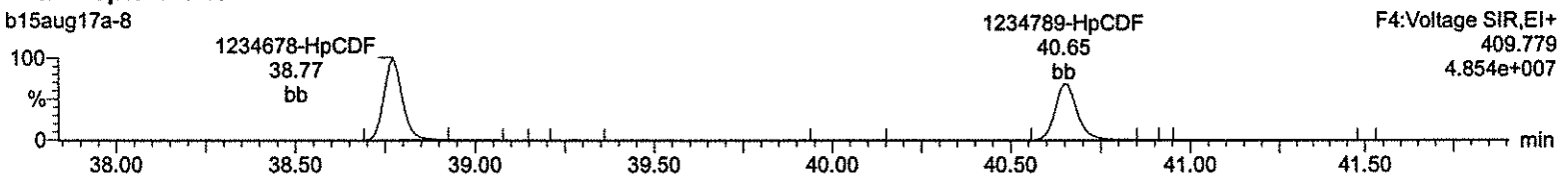
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

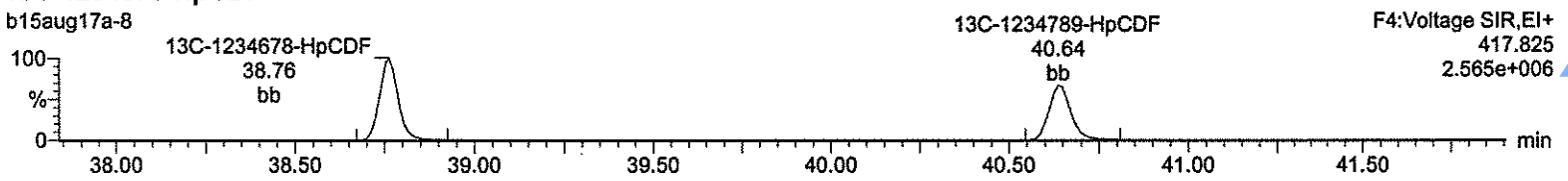
Total-heptafurans



Total-heptafurans



13C-1234678-HpCDF



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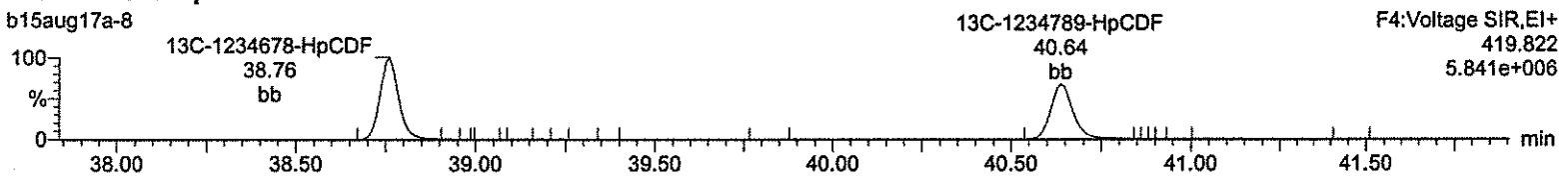
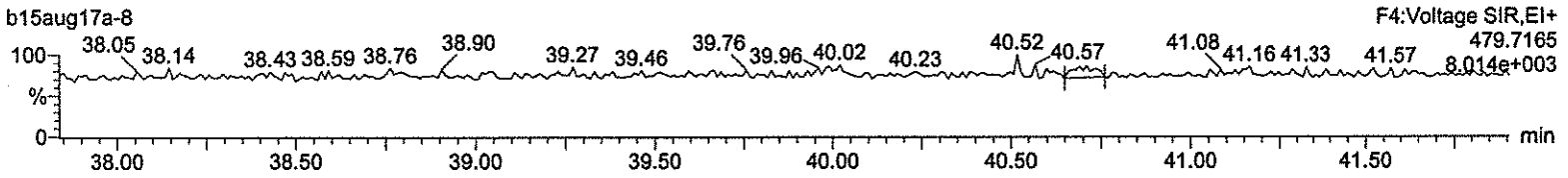
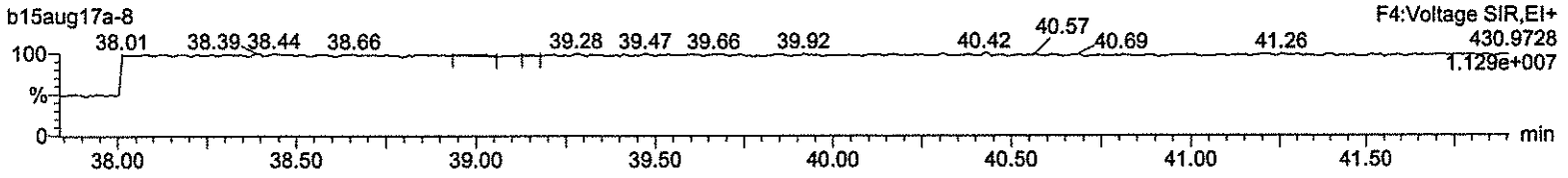


NoDPE



Lock Mass F4



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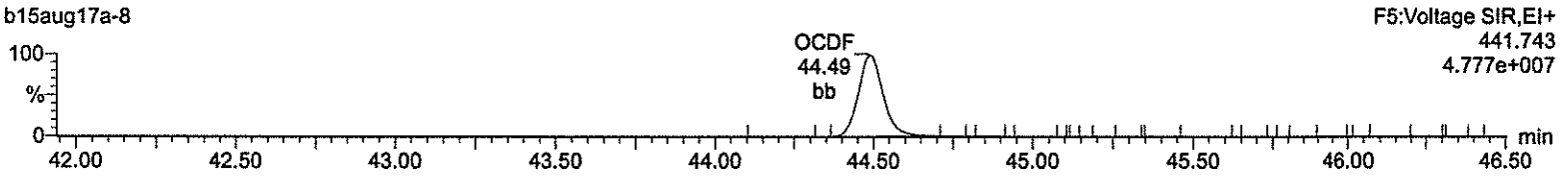
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

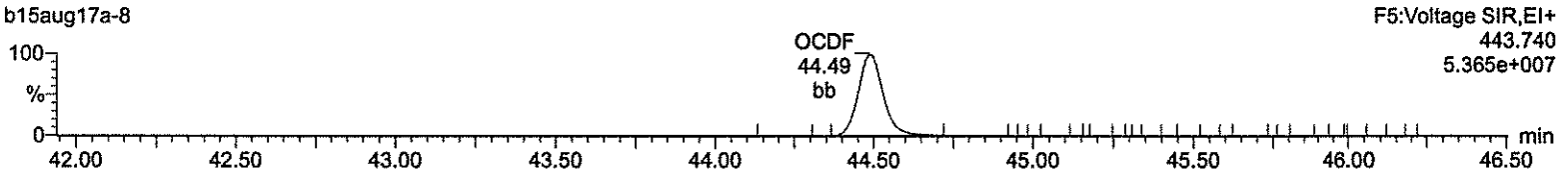
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

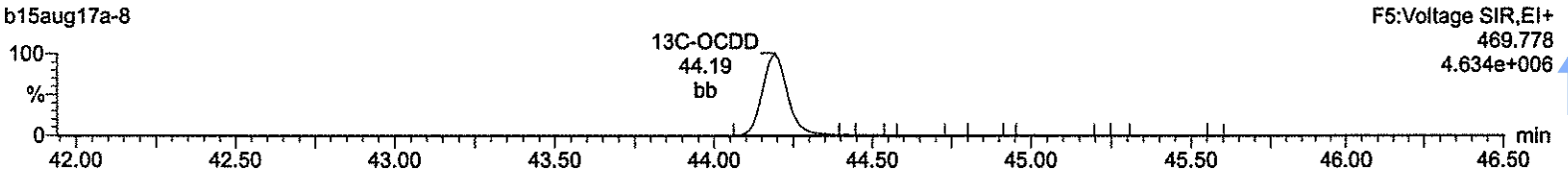
OCDF



OCDF



13C-OCDD



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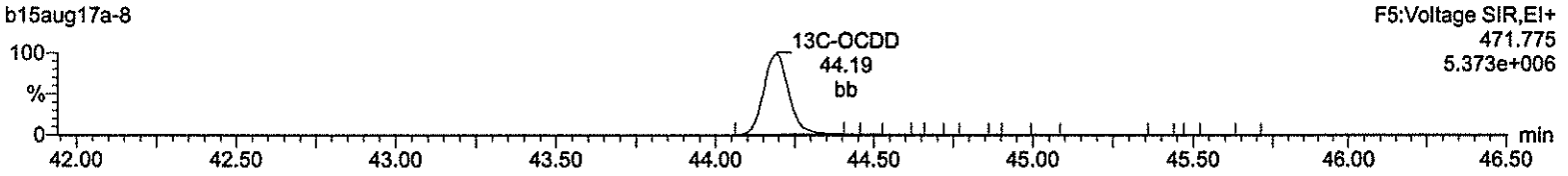
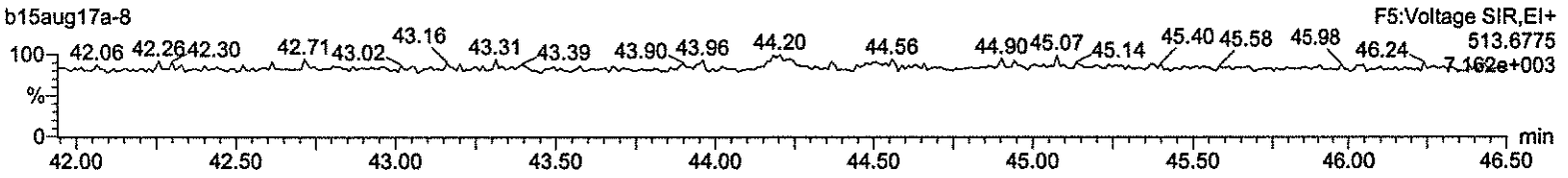
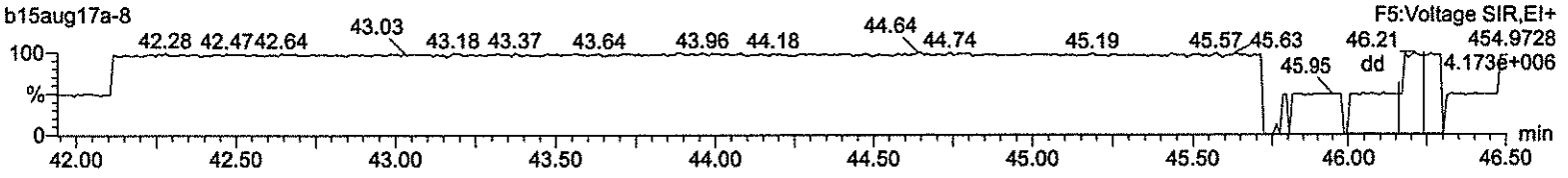


DeDPE



Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

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Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Method: C:\MassLynx\DEFAULT.PRO\MethDB\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: C:\MassLynx\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	2.89e4	4.02e4	6.91e4	31.21	1.000	0.72	NO	10.176	0.0514	0.907	0.891	1.8	5.20e5	1277	407.5	7.08e5	1055	671.6	db	db
2	12378-PeCDD	1.61e5	1.05e5	2.66e5	34.08	1.000	1.53	NO	51.618	0.0666	0.815	0.789	3.2	3.89e6	2031	1915.1	2.50e6	1273	1965.0	bb	bb
3	123478-HxCDD	1.33e5	1.07e5	2.40e5	36.66	1.000	1.25	NO	51.585	0.113	0.864	0.838	3.2	2.93e6	2631	1111.8	2.34e6	1856	1259.1	bd	bd
4	123678-HxCDD	1.52e5	1.21e5	2.73e5	36.75	1.000	1.26	NO	51.114	0.110	0.859	0.840	2.2	2.88e6	2631	1094.9	2.30e6	1856	1240.2	db	db
5	123789-HxCDD	1.40e5	1.11e5	2.51e5	36.98	1.007	1.27	NO	51.825	0.115	0.844	0.814	3.7	2.68e6	2631	1017.3	2.07e6	1856	1113.6	bd	bd
6	1234678-HpCDD	1.06e5	1.02e5	2.07e5	40.02	1.001	1.04	NO	51.145	0.130	1.025	1.003	2.3	1.56e6	1386	1128.2	1.52e6	1747	871.9	bd	bd
7	OCDD	1.62e5	1.79e5	3.41e5	44.21	1.000	0.91	NO	100.373	0.187	0.914	0.910	0.4	1.67e6	1233	1354.0	1.87e6	1453	1284.2	bd	bd
8	2378-TCDF	3.55e4	4.66e4	8.21e4	30.43	1.000	0.76	NO	10.016	0.0614	0.922	0.921	0.2	4.22e5	998	422.7	5.33e5	1315	405.5	bb	bb
9	12378-PeCDF	2.18e5	1.42e5	3.61e5	33.29	1.000	1.53	NO	50.870	0.0879	0.836	0.822	1.7	5.52e6	3028	1822.4	3.62e6	2973	1216.6	bd	bd
10	23478-PeCDF	2.38e5	1.57e5	3.95e5	33.89	1.000	1.52	NO	50.821	0.0794	0.942	0.926	1.6	6.12e6	3028	2022.4	3.98e6	2973	1339.2	bb	bb
11	123478-HxCDF	1.74e5	1.42e5	3.16e5	35.96	1.000	1.23	NO	52.518	0.115	1.049	0.998	5.0	3.78e6	3458	1094.6	3.06e6	2466	1240.9	bd	bd
12	123678-HxCDF	1.83e5	1.51e5	3.34e5	36.06	1.001	1.22	NO	50.194	0.114	0.938	0.934	0.4	3.70e6	3458	1070.4	2.99e6	2466	1214.4	db	db
13	234678-HxCDF	1.75e5	1.45e5	3.20e5	36.53	1.000	1.21	NO	51.650	0.117	1.067	1.033	3.3	3.66e6	3458	1058.2	3.00e6	2466	1218.5	bb	bb
14	123789-HxCDF	1.48e5	1.20e5	2.68e5	37.30	1.001	1.23	NO	50.379	0.159	0.960	0.953	0.8	2.62e6	3458	757.7	2.11e6	2466	856.0	bb	bb
15	1234678-HpCDF	1.32e5	1.28e5	2.60e5	38.78	1.000	1.03	NO	50.767	0.107	1.113	1.097	1.5	2.21e6	2057	1076.5	2.15e6	1633	1317.0	bb	bb
16	1234789-HpCDF	1.06e5	1.01e5	2.07e5	40.67	1.001	1.04	NO	52.136	0.166	1.156	1.109	4.3	1.51e6	2057	735.5	1.40e6	1633	855.7	bd	bd
17	OCDF	1.64e5	1.86e5	3.51e5	44.50	1.007	0.88	NO	101.914	0.174	0.940	0.922	1.9	1.75e6	1152	1517.4	1.94e6	1388	1395.6	bb	bb
18	13C-2378-TCDD	3.35e5	4.28e5	7.63e5	31.19	1.018	0.78	NO	98.731	0.114	1.127	1.142	-1.3	5.59e6	3063	1824.7	7.31e6	1582	4622.1	bb	bb
19	13C-12378-PeCDD	4.04e5	2.50e5	6.53e5	34.07	1.112	1.62	NO	100.465	0.0747	0.966	0.962	0.5	9.71e6	1295	7499.0	6.01e6	1263	4761.0	bb	bb
20	13C-123478-HxCDD	3.06e5	2.50e5	5.56e5	36.65	0.991	1.22	NO	98.255	0.103	1.009	1.027	-1.7	6.55e6	2047	3197.9	5.35e6	2373	2256.6	bd	bd
21	13C-123678-HxCDD	3.46e5	2.90e5	6.36e5	36.74	0.994	1.19	NO	102.623	0.0940	1.153	1.123	2.6	6.59e6	2047	3218.8	5.42e6	2373	2282.3	db	db
22	13C-1234678-HpCDD	2.05e5	2.00e5	4.05e5	40.00	1.082	1.02	NO	97.422	0.0911	0.734	0.753	-2.6	3.04e6	1231	2467.9	2.93e6	1642	1786.3	bb	bd
23	13C-OCDD	3.44e5	4.03e5	7.47e5	44.19	1.195	0.85	NO	186.632	0.157	0.677	0.726	-6.7	3.64e6	2600	1400.4	4.18e6	2157	1936.1	bd	bd
24	13C-2378-TCDF	3.85e5	5.06e5	8.90e5	30.42	0.992	0.76	NO	98.481	0.134	1.316	1.337	-1.5	4.42e6	4097	1078.6	5.88e6	2274	2584.9	bb	bb
25	13C-12378-PeCDF	5.30e5	3.32e5	8.62e5	33.28	1.086	1.59	NO	102.584	0.0953	1.274	1.242	2.6	1.28e7	2140	5960.5	7.99e6	2073	3853.6	bd	bd
26	13C-23478-PeCDF	5.16e5	3.23e5	8.39e5	33.88	1.105	1.60	NO	100.491	0.0959	1.240	1.234	0.5	1.25e7	2140	5861.7	7.89e6	2073	3807.8	bb	bb
27	13C-123478-HxCDF	2.08e5	3.95e5	6.03e5	35.95	0.972	0.53	NO	99.552	0.147	1.094	1.099	-0.4	4.45e6	4008	1110.2	8.56e6	2755	3106.9	bd	bd
28	13C-123678-HxCDF	2.40e5	4.73e5	7.12e5	36.04	0.975	0.51	NO	101.581	0.127	1.292	1.272	1.6	4.67e6	4008	1166.2	9.04e6	2755	3281.6	dd	dd
29	13C-234678-HxCDF	2.09e5	3.91e5	6.00e5	36.51	0.988	0.53	NO	100.858	0.150	1.088	1.079	0.9	4.28e6	4008	1067.0	8.19e6	2755	2973.3	bd	bb
30	13C-123789-HxCDF	1.90e5	3.68e5	5.58e5	37.28	1.008	0.52	NO	102.621	0.164	1.013	0.987	2.6	3.32e6	4008	827.8	6.52e6	2755	2364.9	bd	bd
31	13C-1234678-HpCDF	1.39e5	3.28e5	4.67e5	38.77	1.049	0.43	NO	99.767	0.116	0.847	0.849	-0.2	2.34e6	1490	1570.4	5.27e6	2634	1999.6	bb	bd

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	1.07e5	2.51e5	3.58e5	40.65	1.099	0.43	NO	96.176	0.146	0.649	0.675	-3.8	1.49e6	1490	1000.2	3.46e6	2634	1315.2	bb	bd
33	13C-1234-TCDD	2.98e5	3.78e5	6.76e5	30.65	0.000	0.79	NO	100.000	0.130	1.000	1.000	0.0	3.92e6	3063	1281.1	5.06e6	1582	3201.9	bb	bb
34	13C-123789-HxCDD	3.00e5	2.51e5	5.51e5	36.97	0.000	1.20	NO	100.000	0.106	1.000	1.000	0.0	5.70e6	2047	2782.2	4.74e6	2373	1997.8	bb	bd
35	37Cl-2378-TCDD	7.67e4		7.67e4	31.21	1.018			9.767	0.0325	1.134	1.161	-2.3	1.38e6	1345	1023.9				bb	

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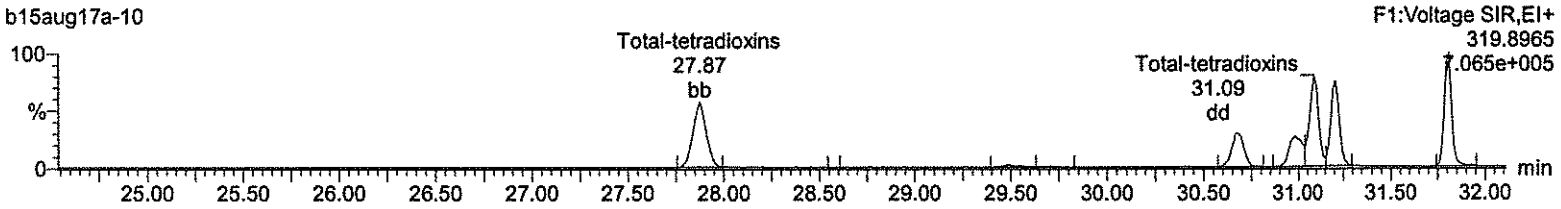
Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

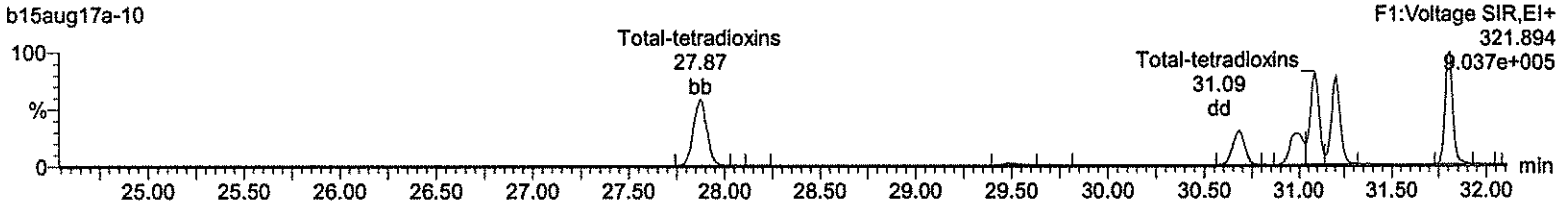
Method: C:\MassLynx\DEFAULT.PRO\MethDB\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: C:\MassLynx\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

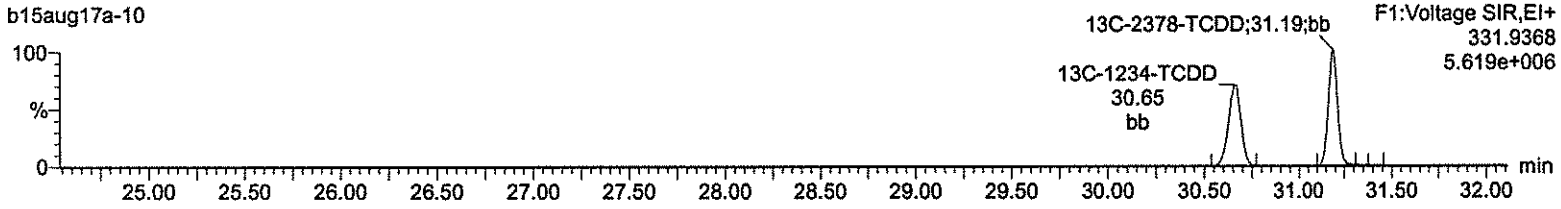
Total-tetradioxins



Total-tetradioxins



13C-2378-TCDD



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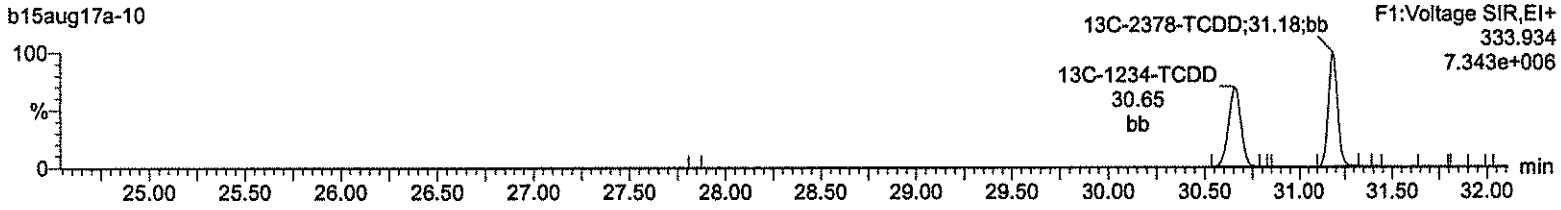
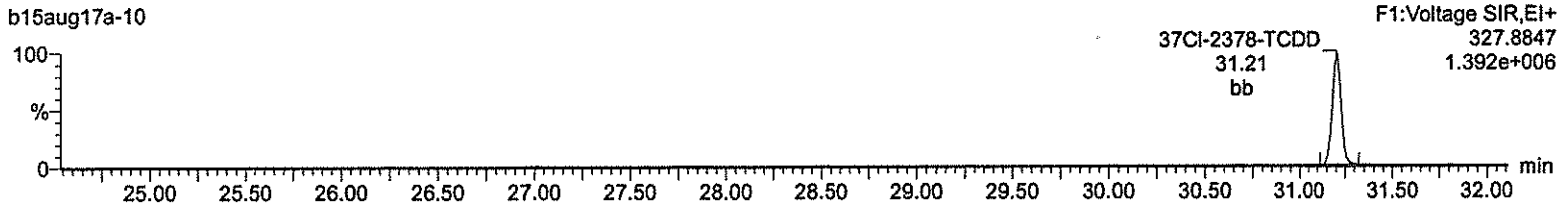
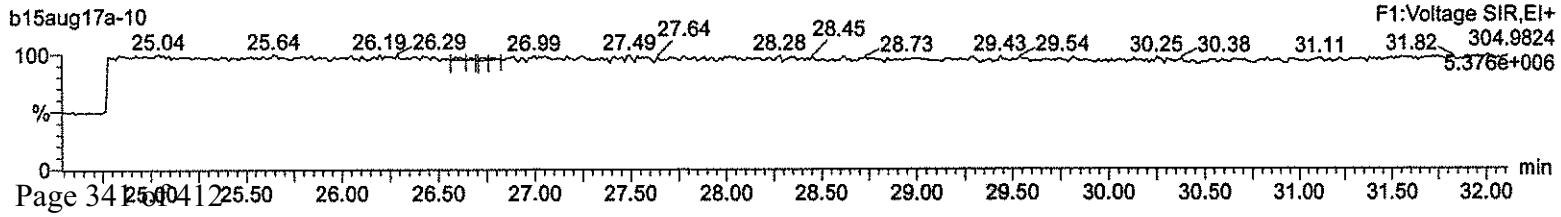


37Cl-2378-TCDD



Lock Mass F1

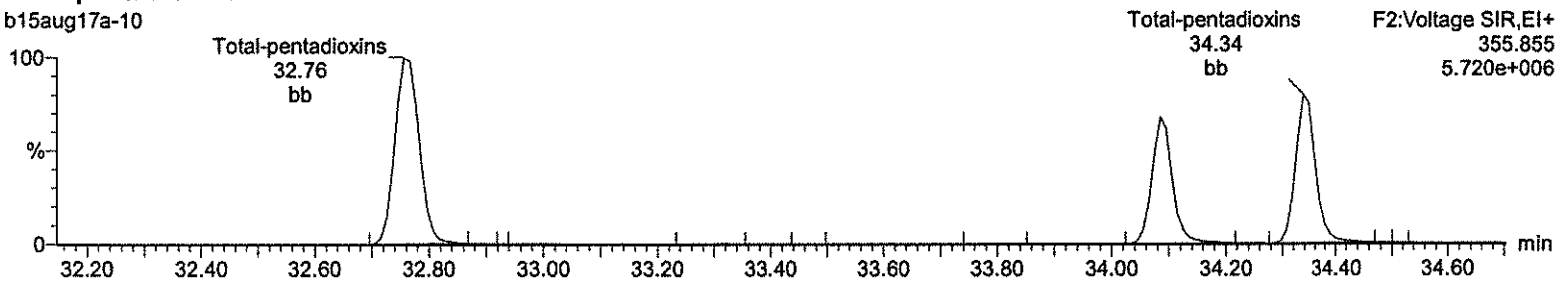


Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

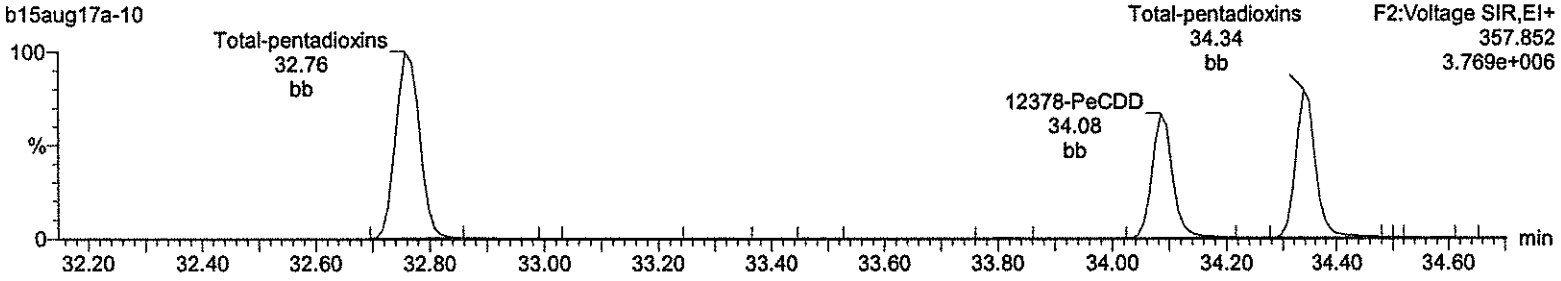
Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

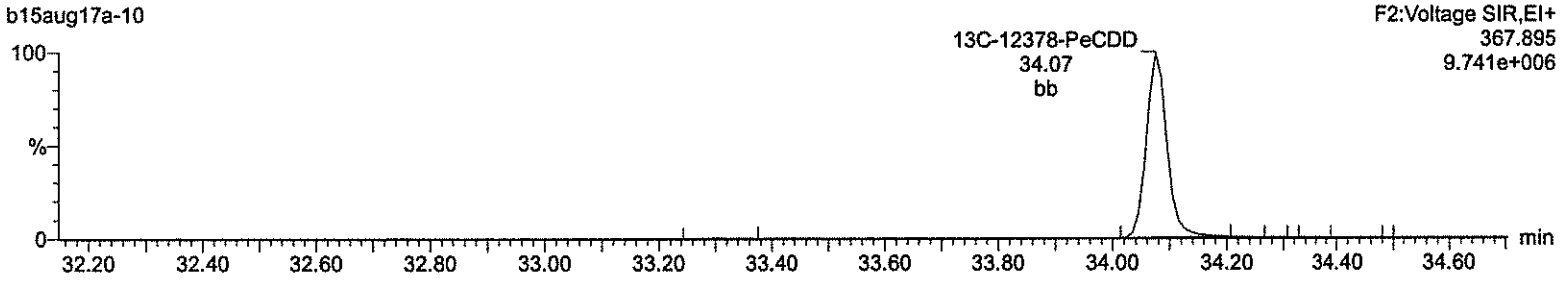
Total-pentadioxins



Total-pentadioxins



13C-12378-PeCDD



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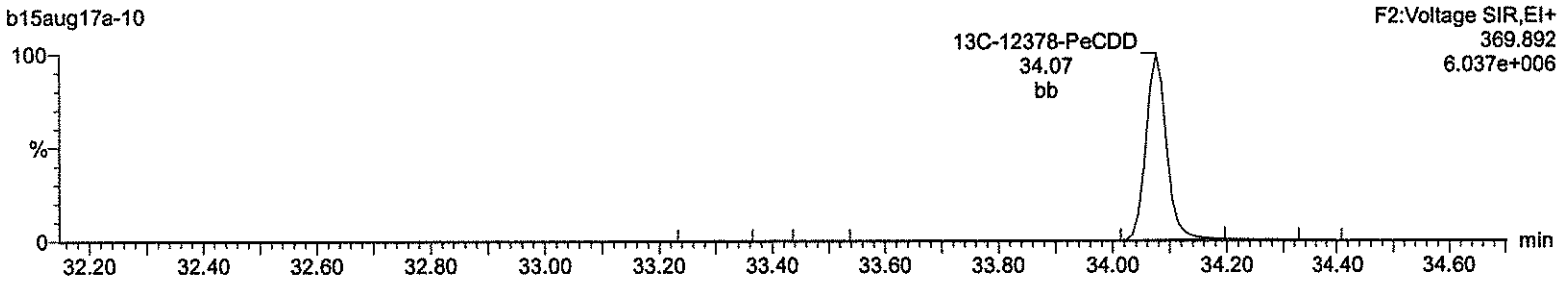
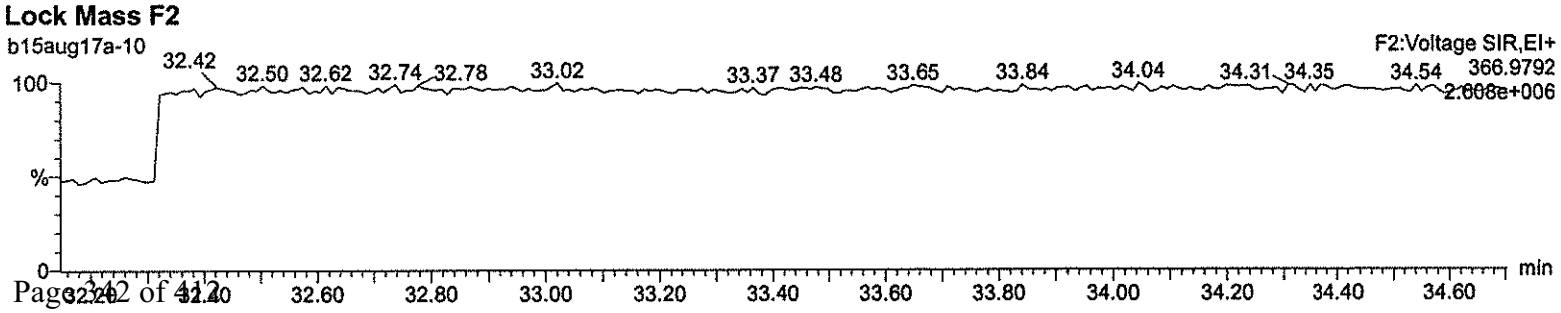


Lock Mass F2



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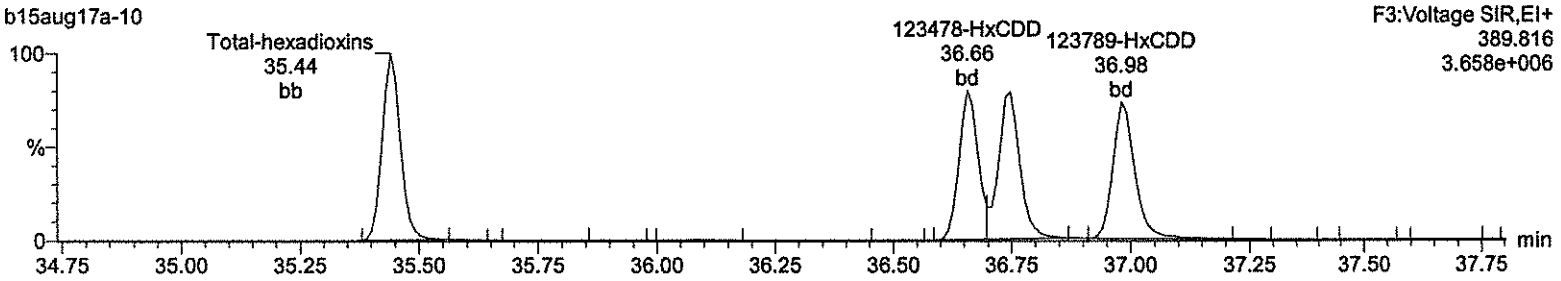
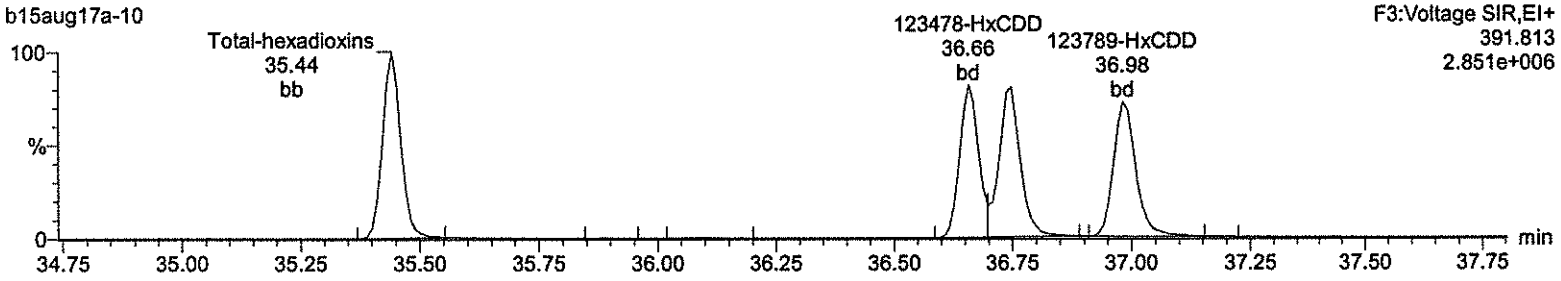
Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

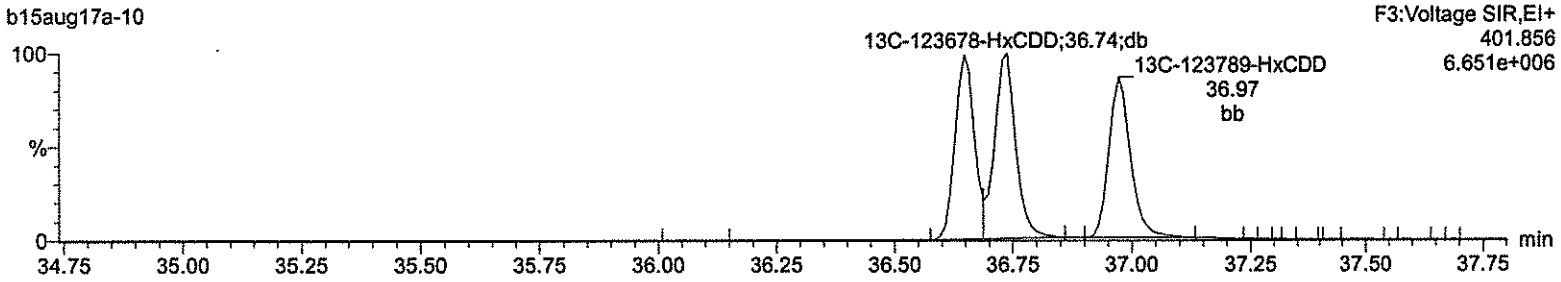
Total-hexadioxins



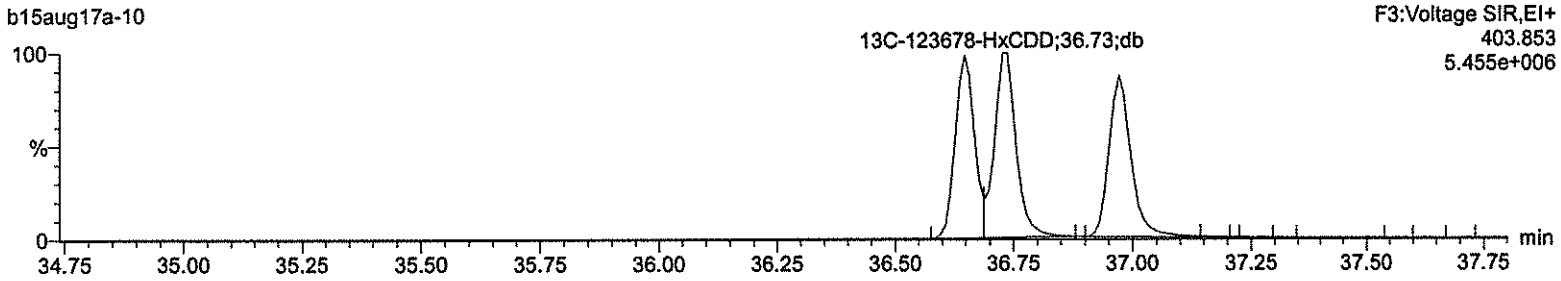
Total-hexadioxins



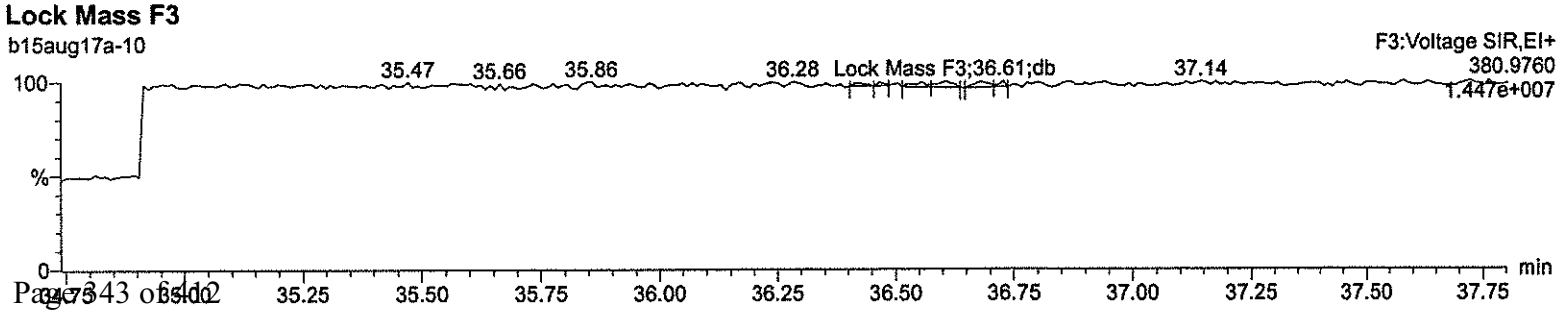
13C-123478-HxCDD



13C-123478-HxCDD



Lock Mass F3

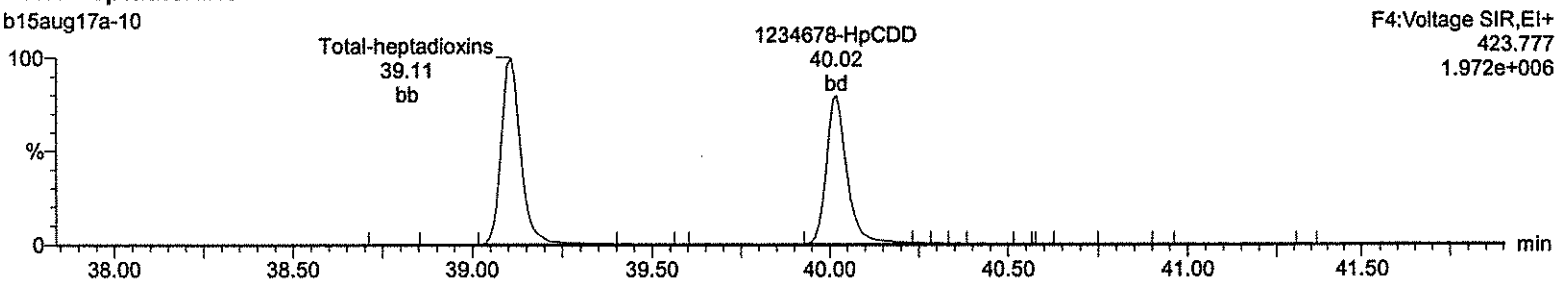


Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

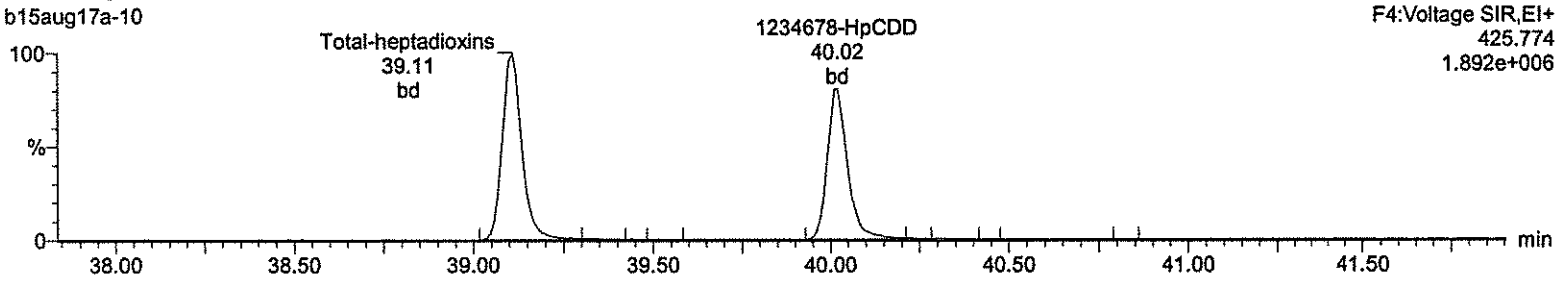
Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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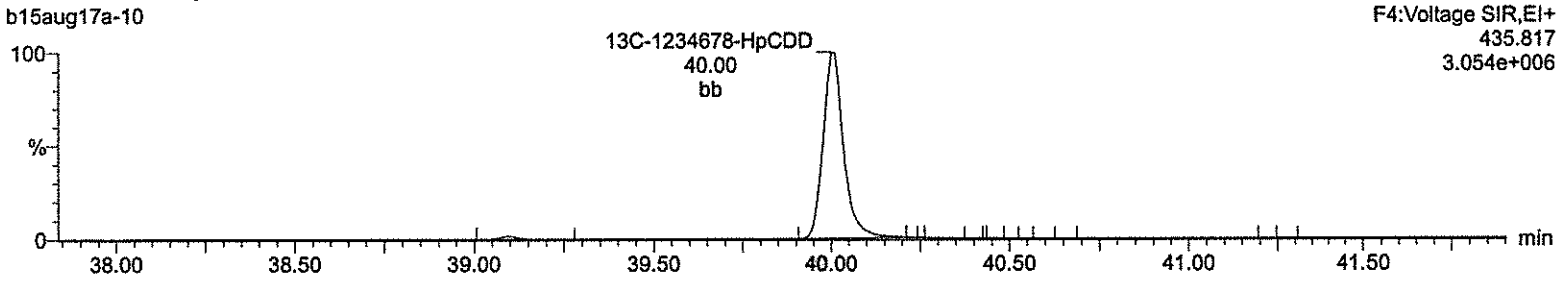

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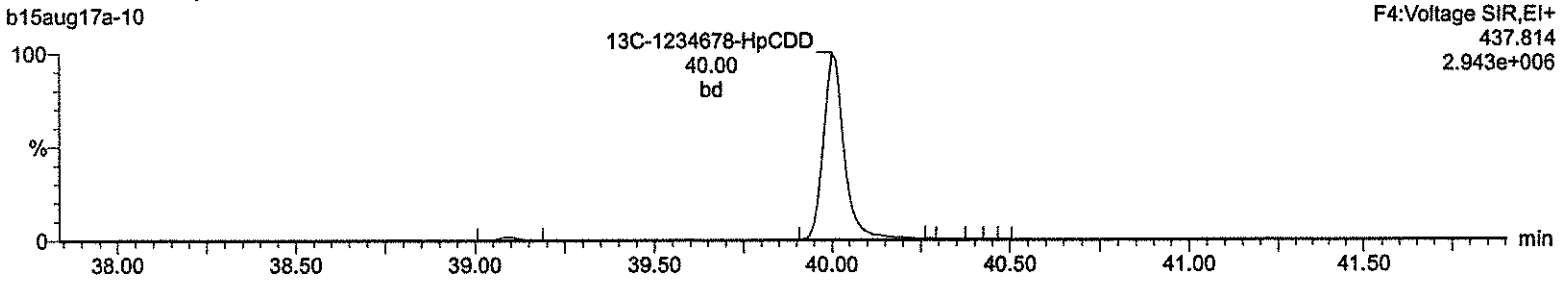
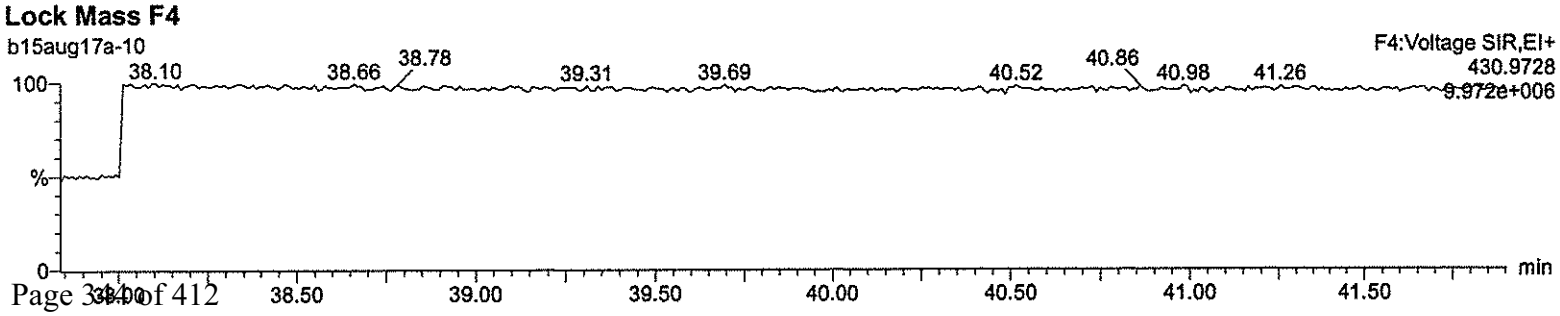


Lock Mass F4



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Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
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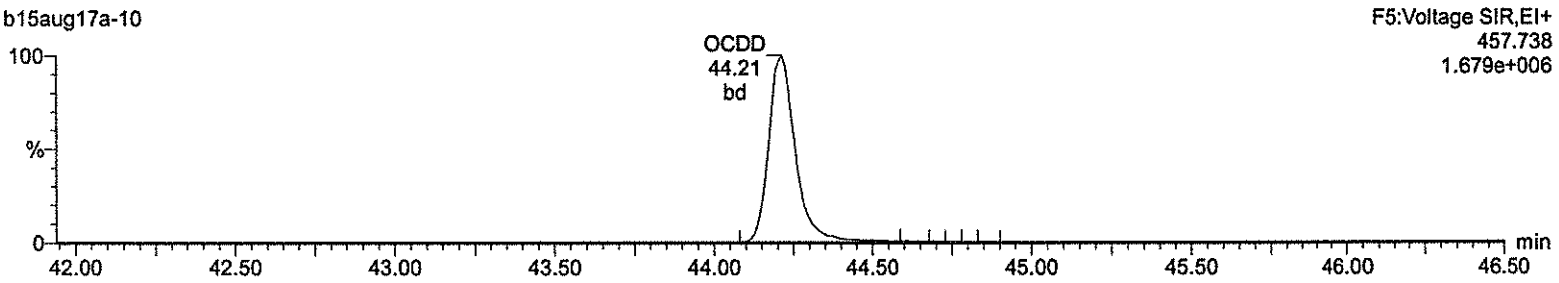
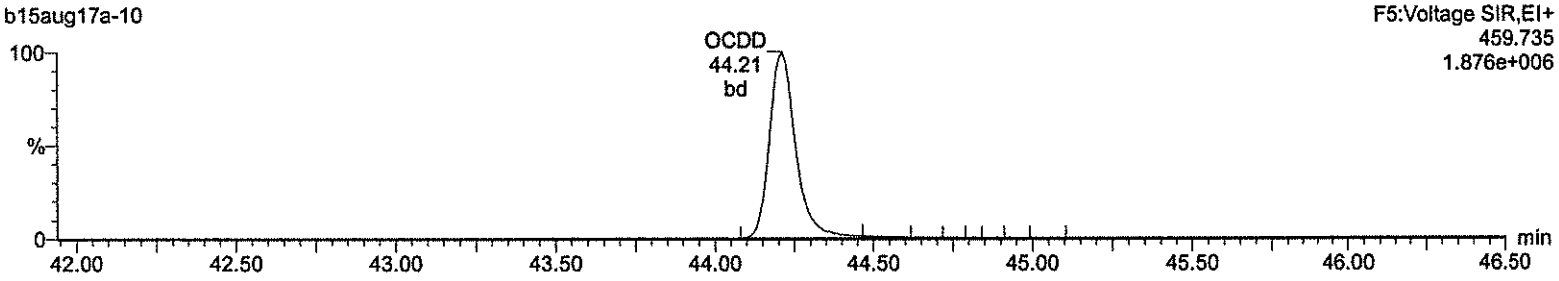
Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

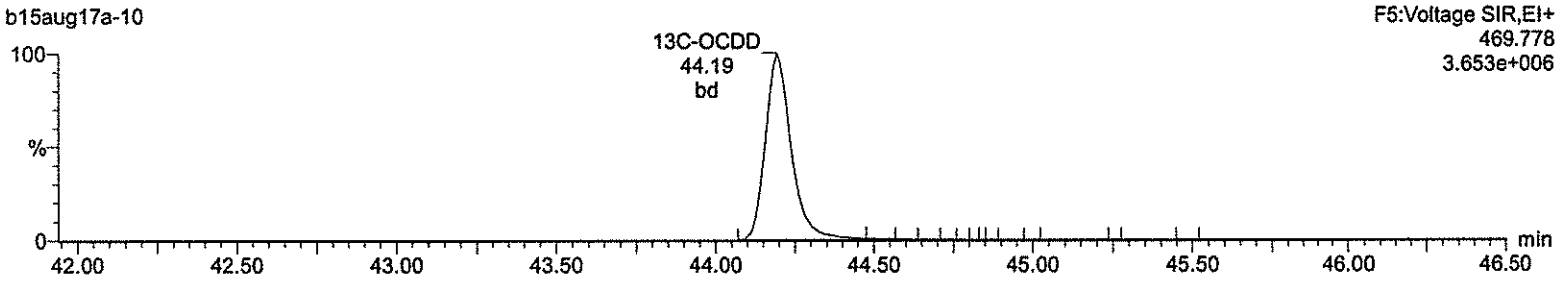
OCDD



OCDD



13C-OCDD



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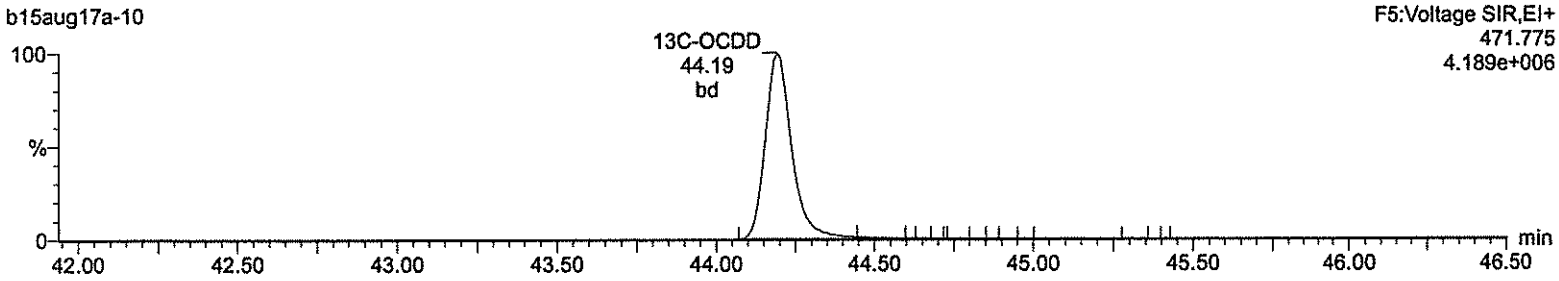
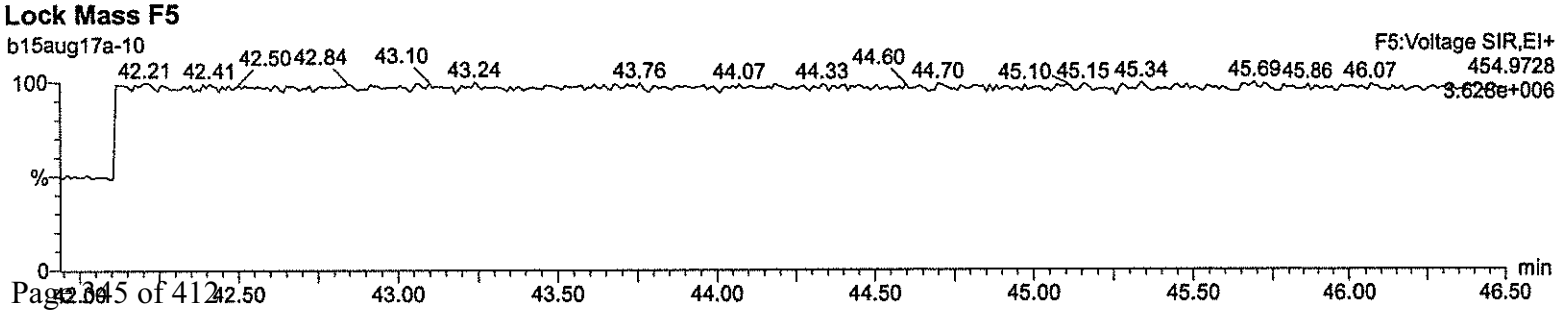


Lock Mass F5



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Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
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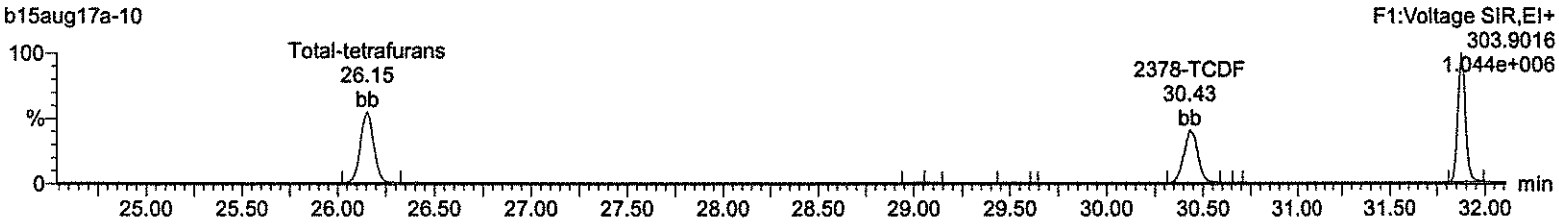
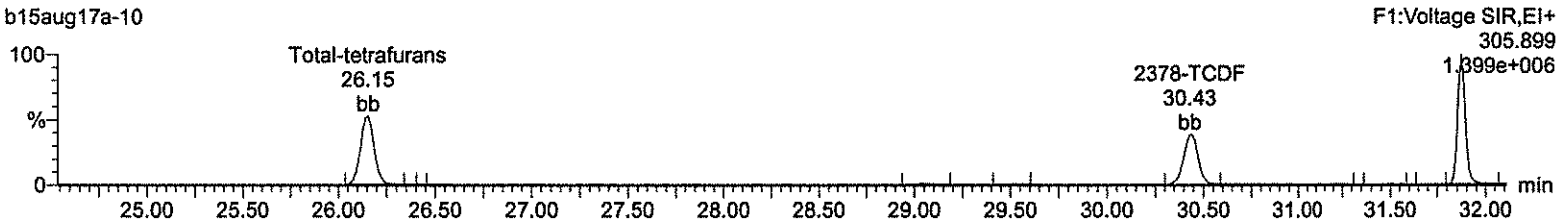
Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

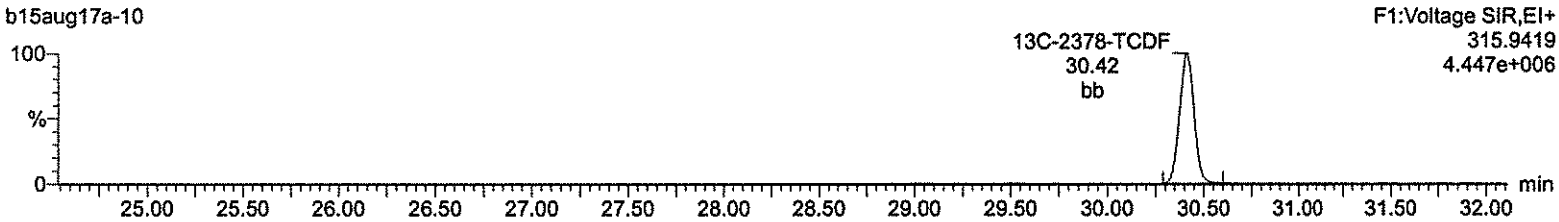
Total-tetrafurans



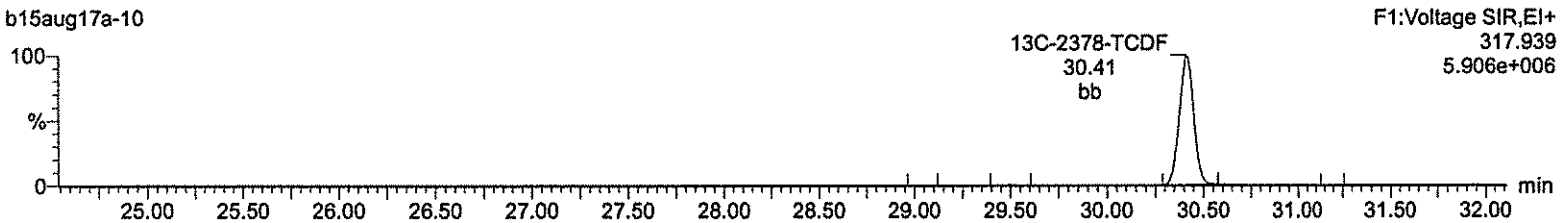
Total-tetrafurans



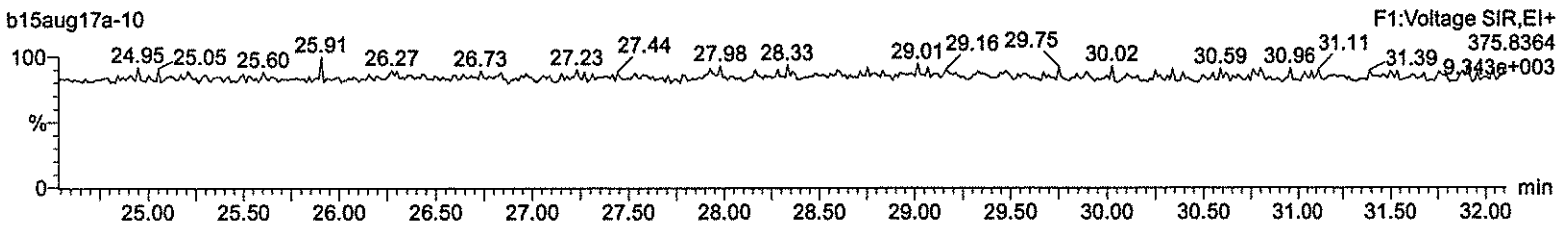
13C-2378-TCDF



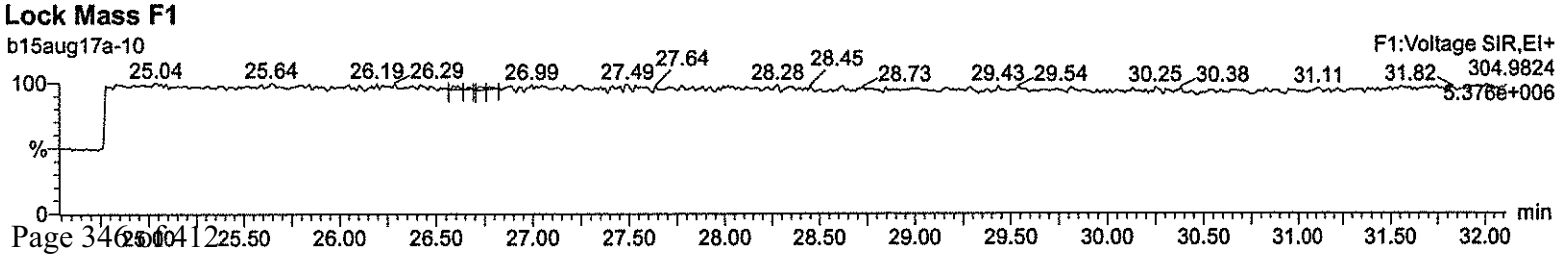
13C-2378-TCDF



HxDPE



Lock Mass F1



Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
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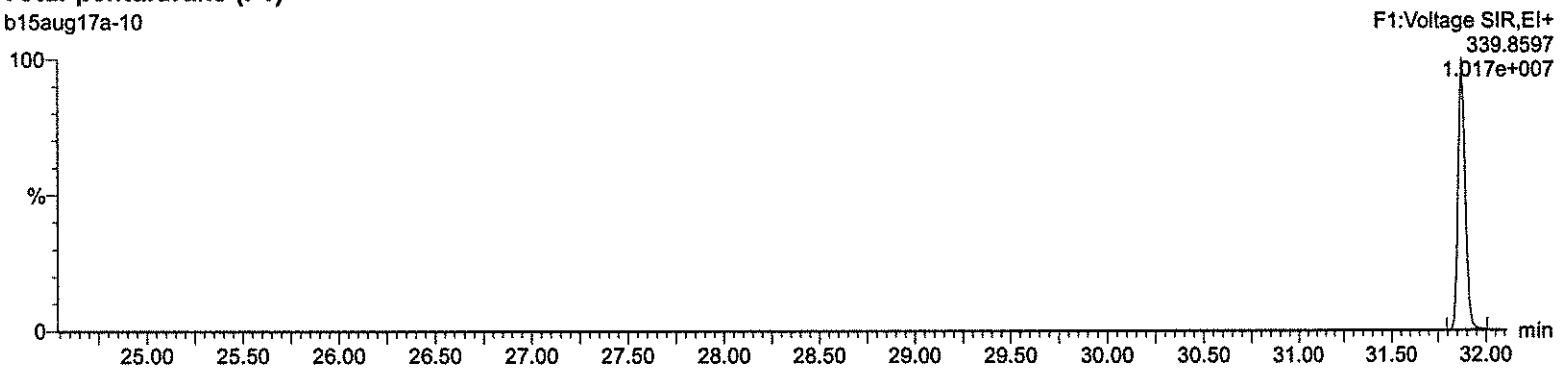
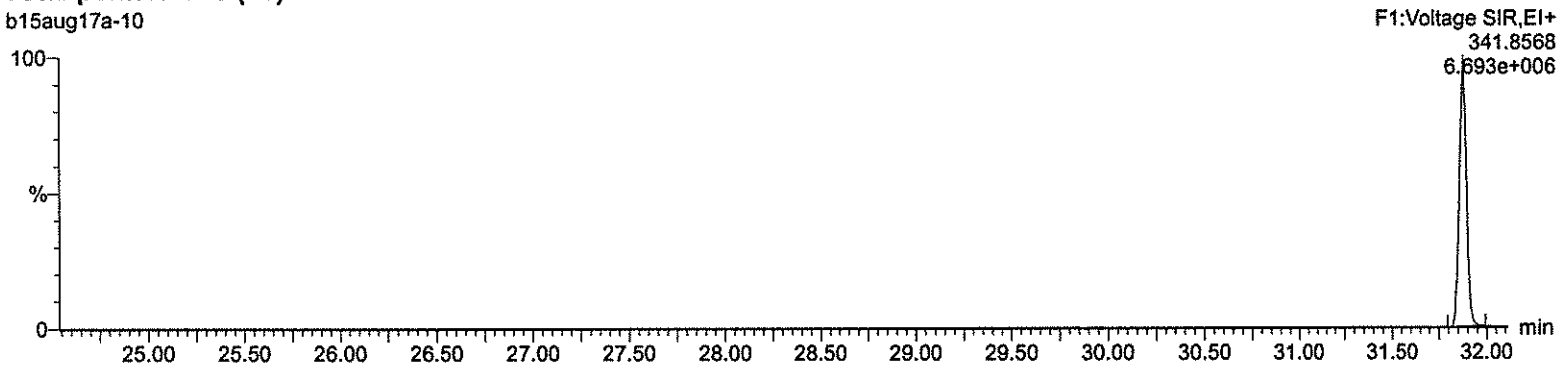
Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

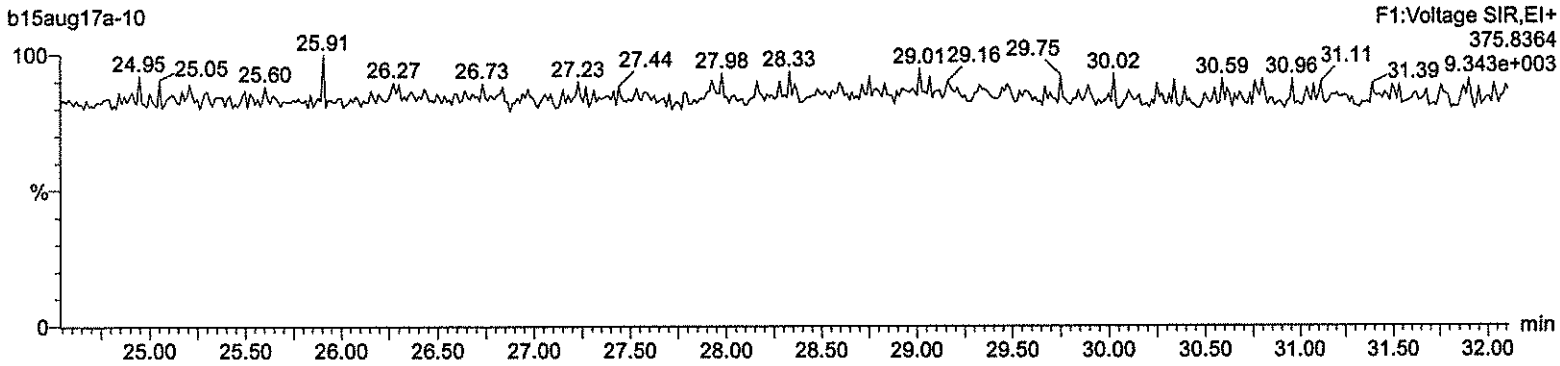
Total-pentafurans (F1)



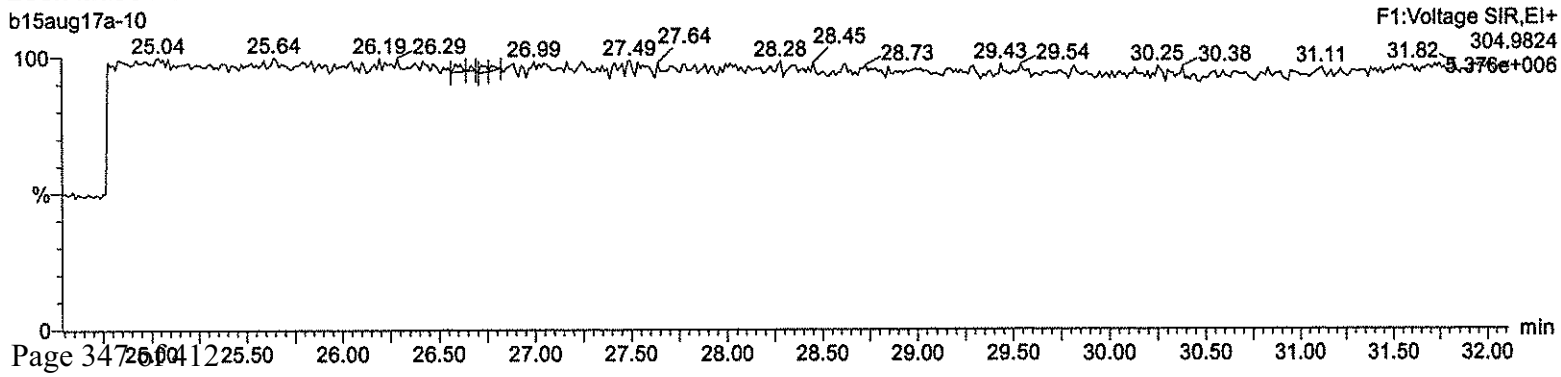
Total-pentafurans (F1)



HxDPE



Lock Mass F1



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Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
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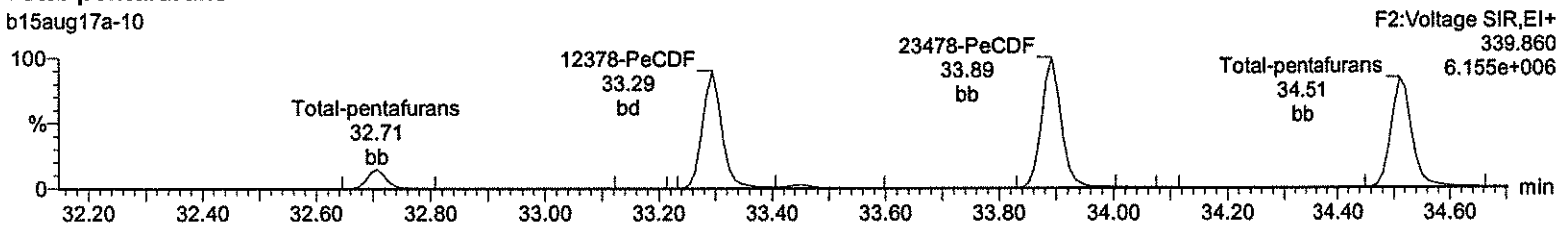
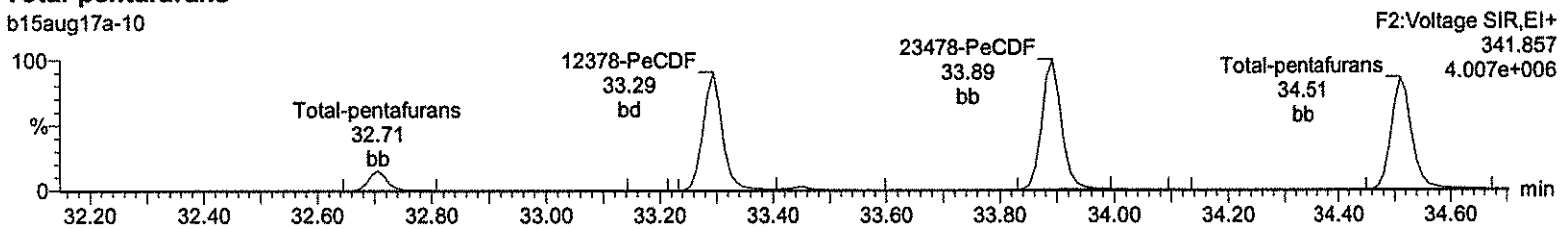
Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

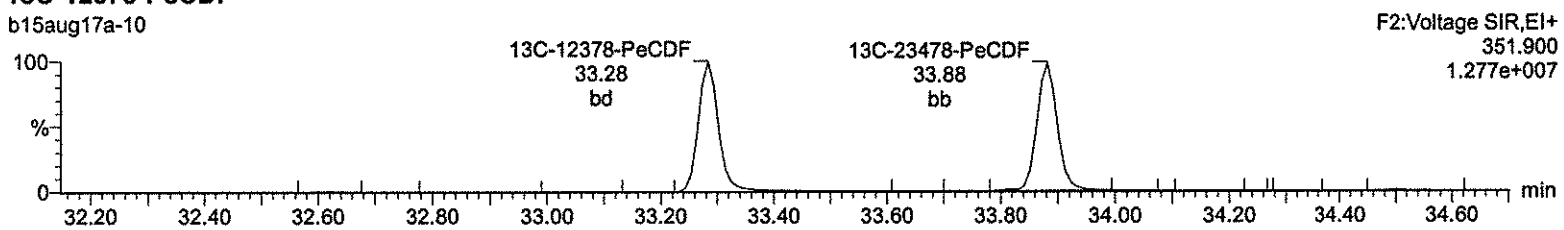
Total-pentafurans



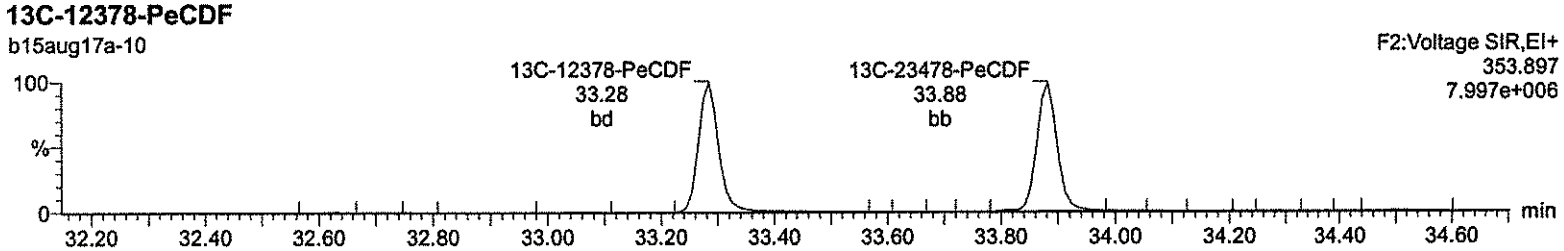
Total-pentafurans



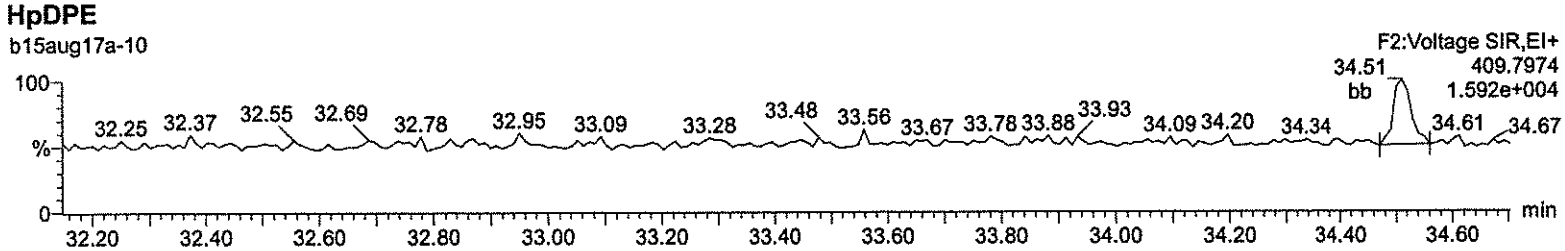
13C-12378-PeCDF



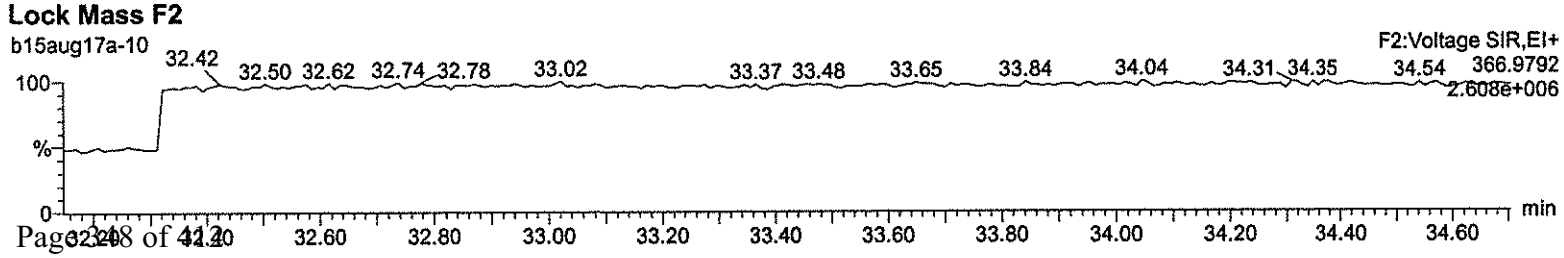
13C-12378-PeCDF



HpDPE



Lock Mass F2



Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
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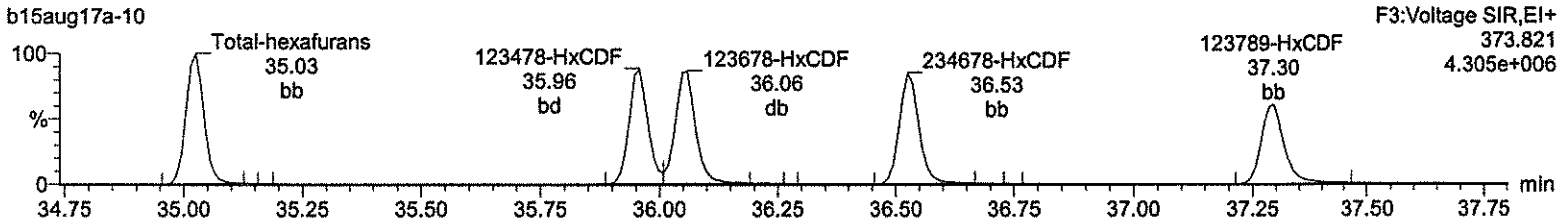
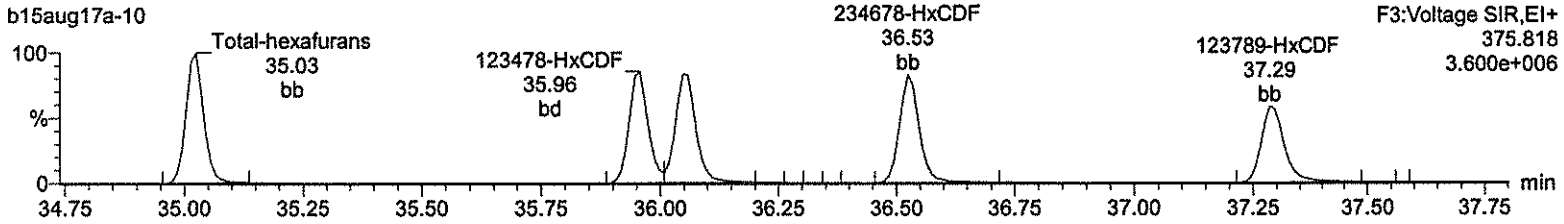
Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

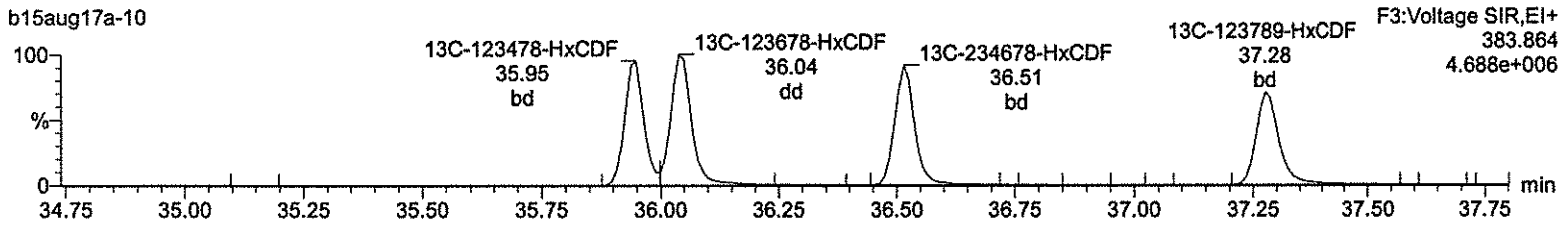
Total-hexafurans



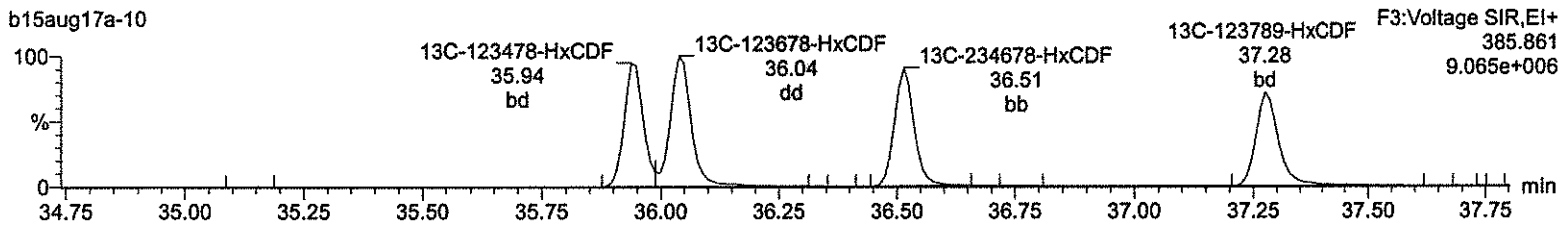
Total-hexafurans



13C-123478-HxCDF



13C-123478-HxCDF



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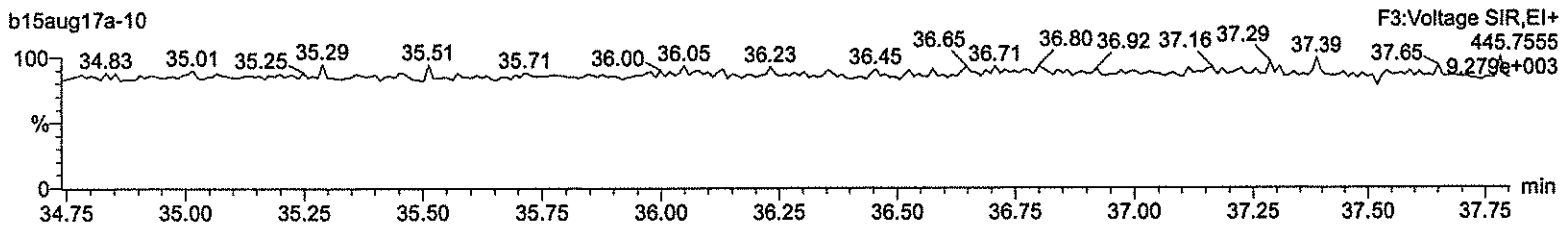
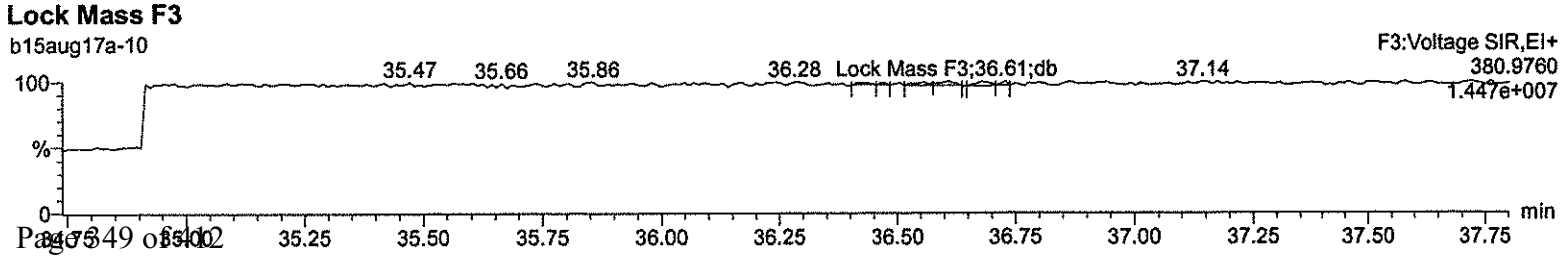


Lock Mass F3



Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
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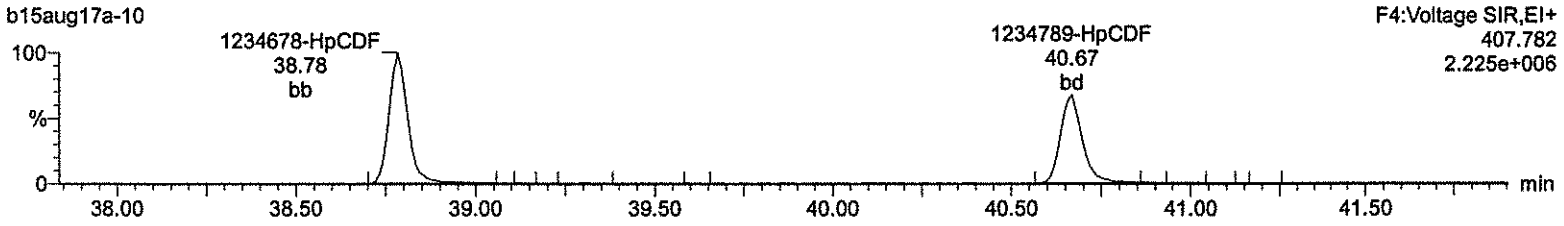
Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

Total-heptafurans



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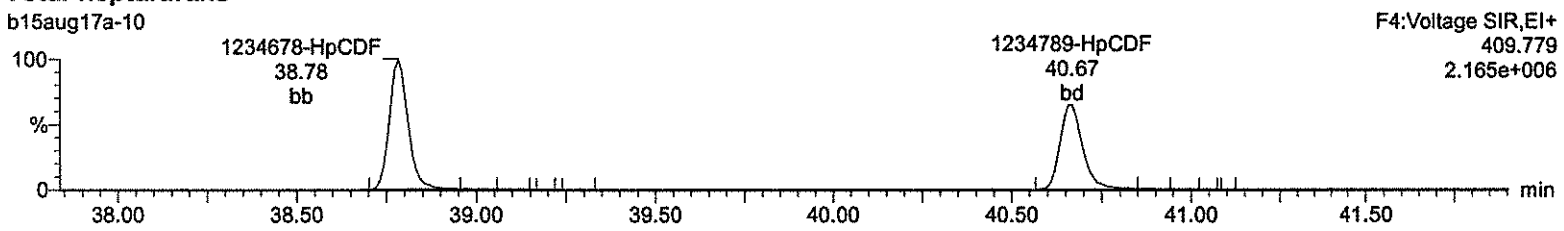

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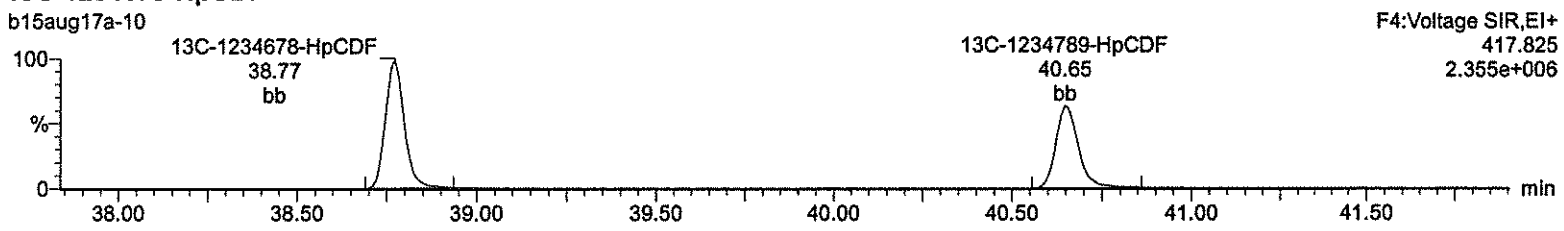

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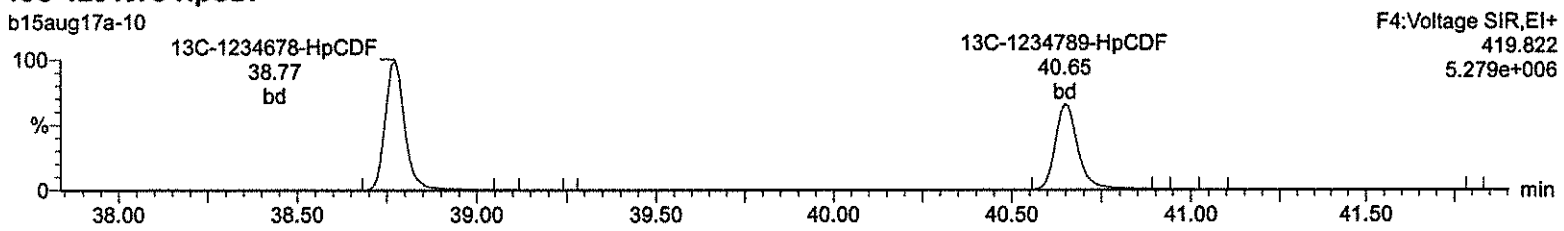

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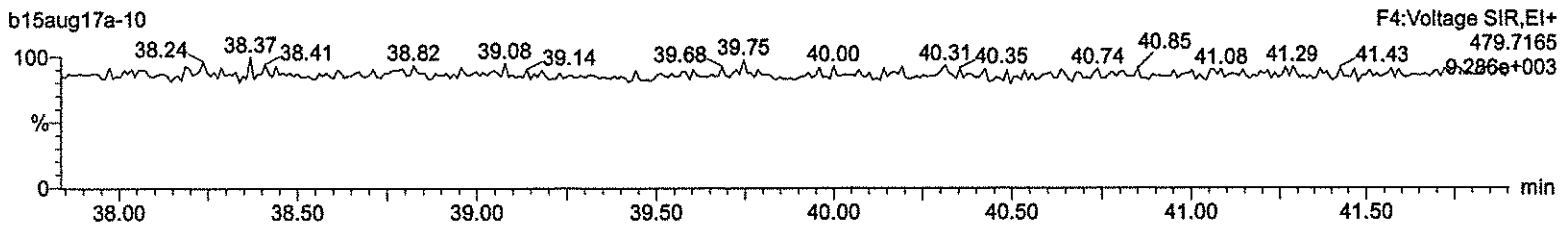

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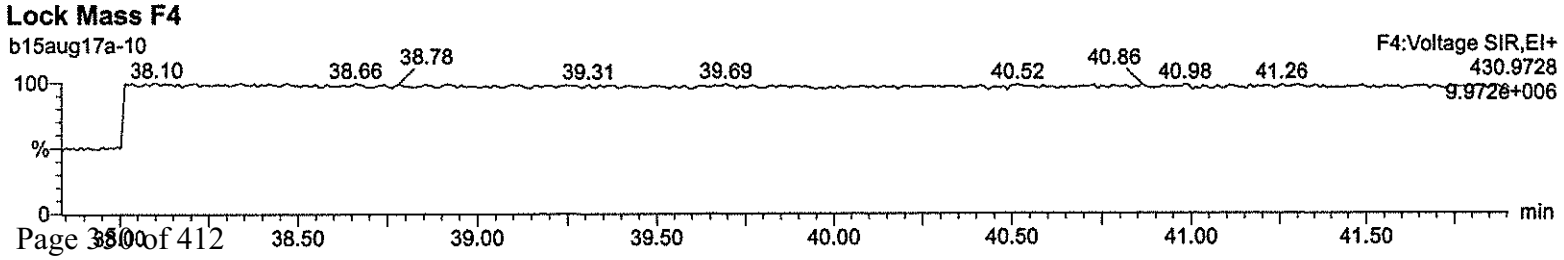

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Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

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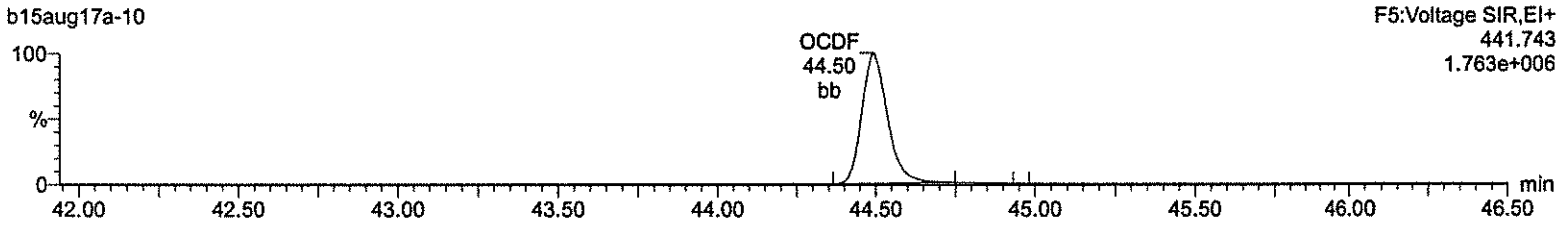

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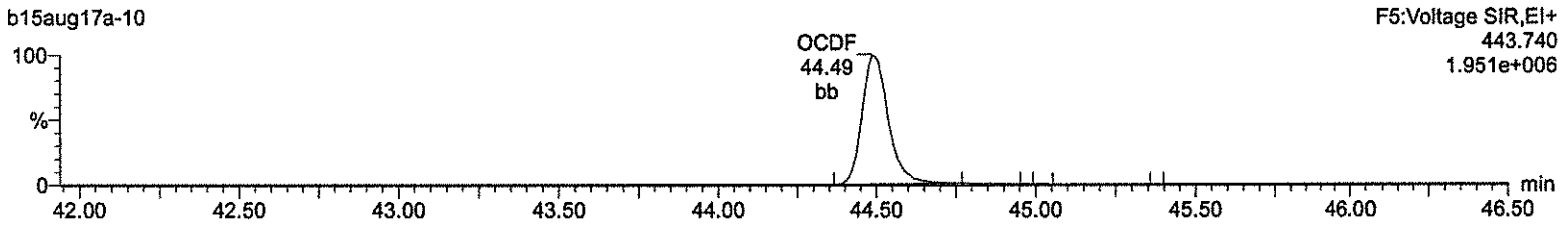

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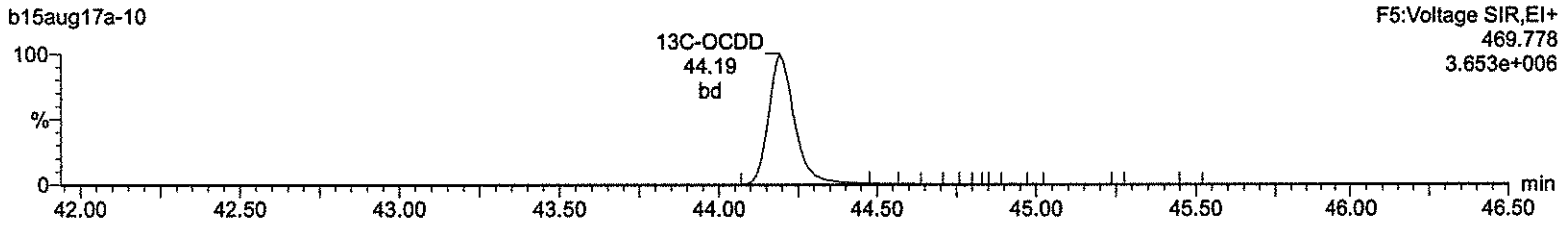

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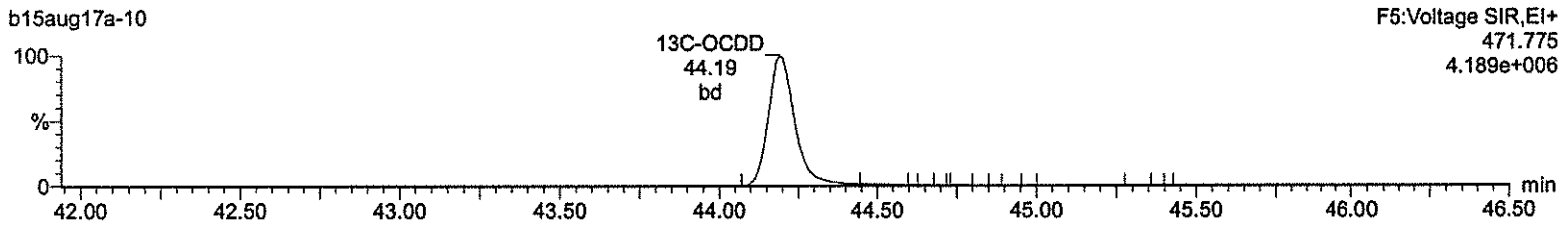

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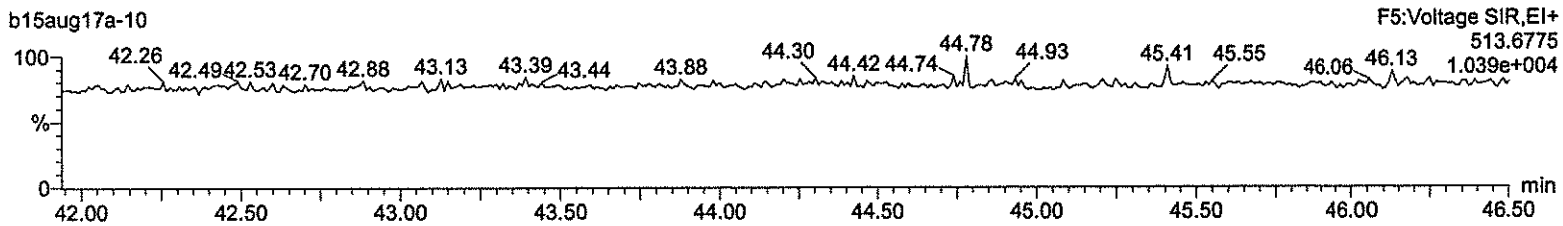

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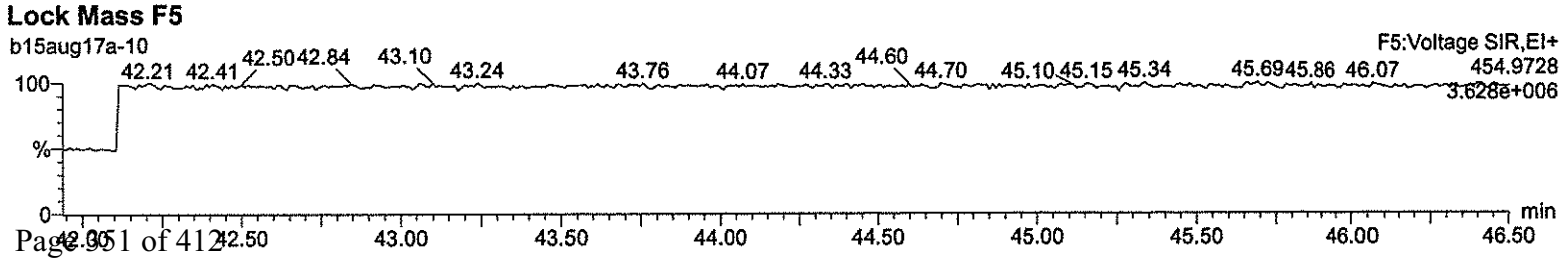

Continuing Calibration Data

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Printed: Thursday, March 29, 2018 09:48:28 Eastern Standard Time

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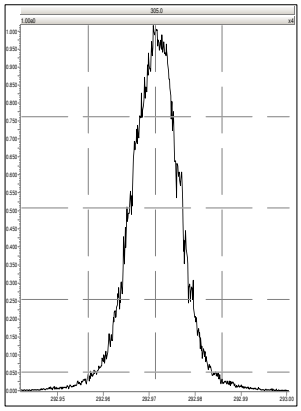

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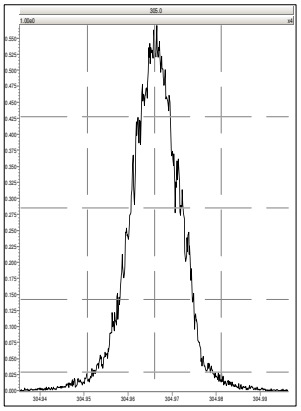

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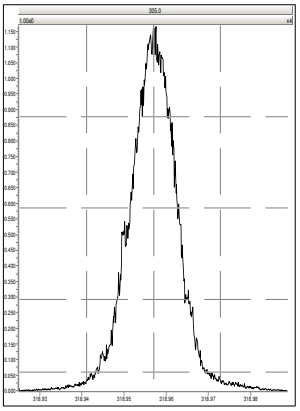

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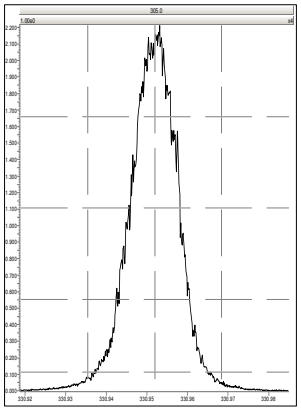

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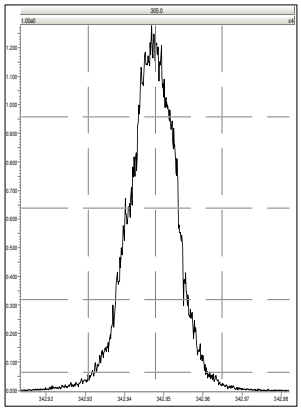

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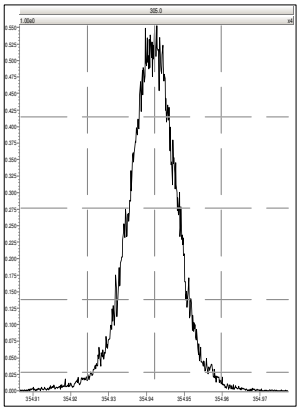

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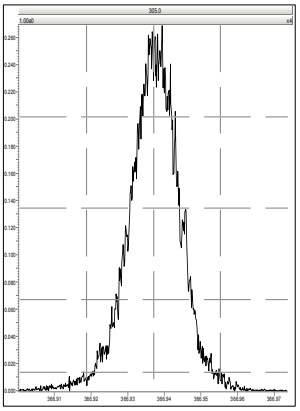

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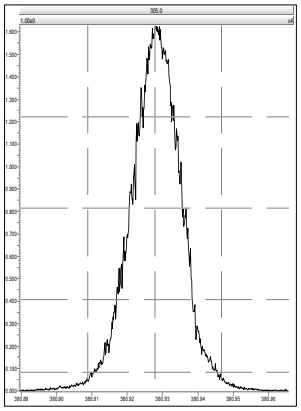

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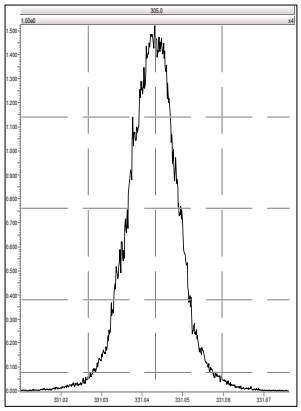

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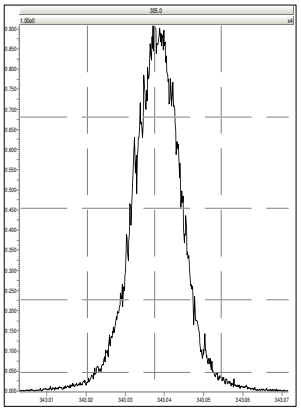

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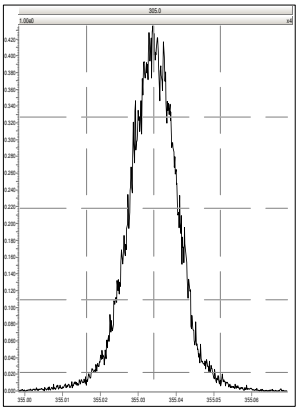

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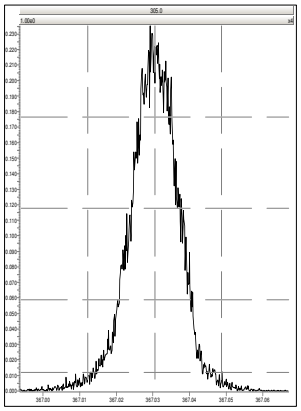

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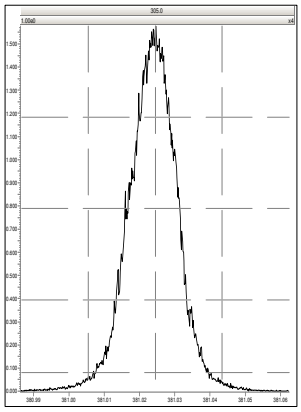

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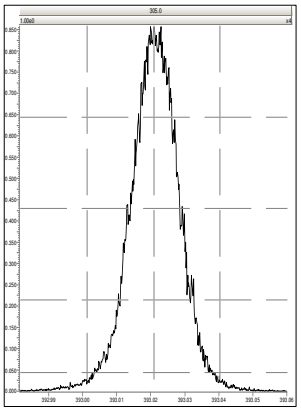

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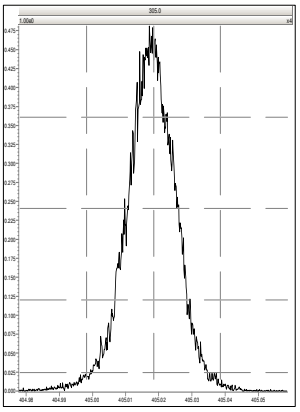

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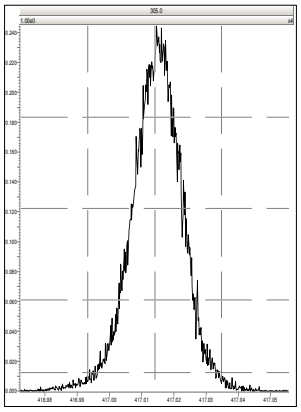

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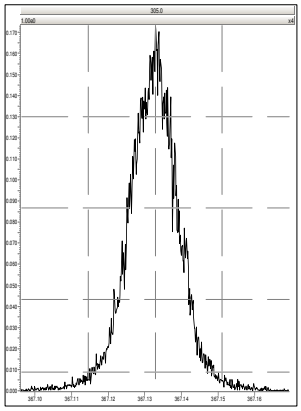

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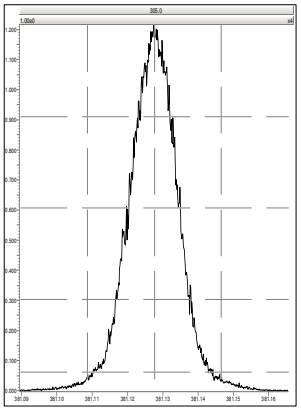

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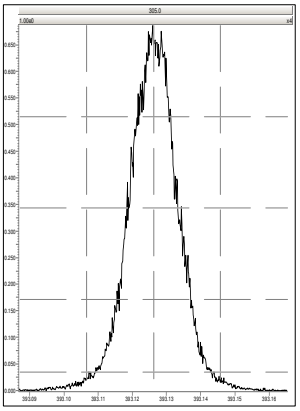

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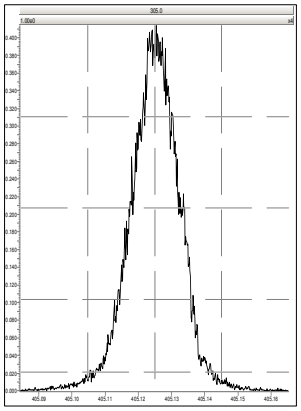

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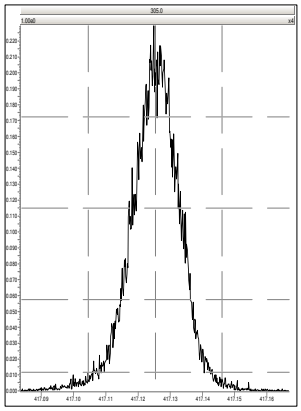

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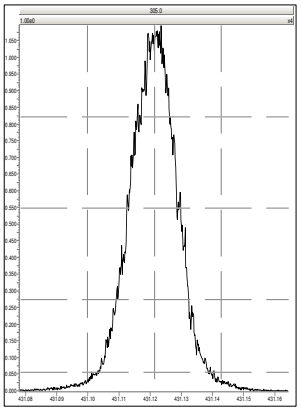

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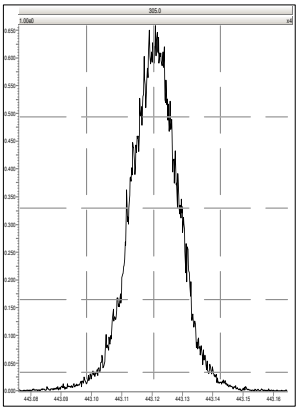

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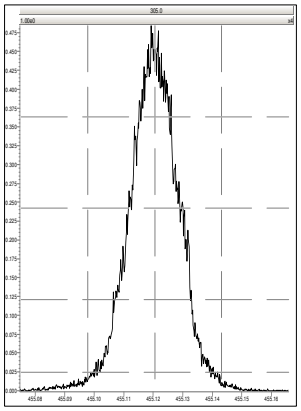

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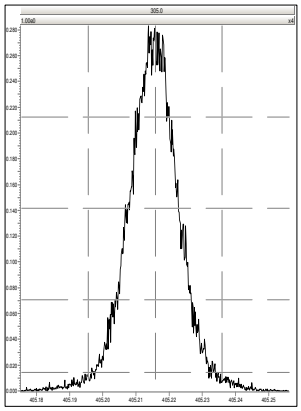

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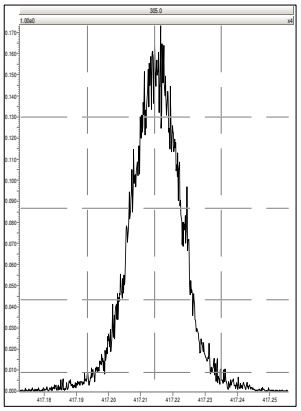

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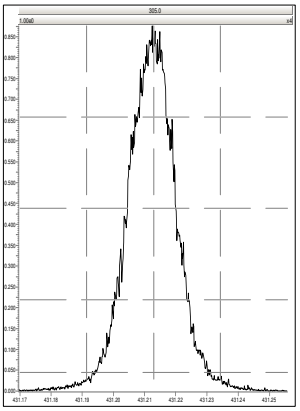

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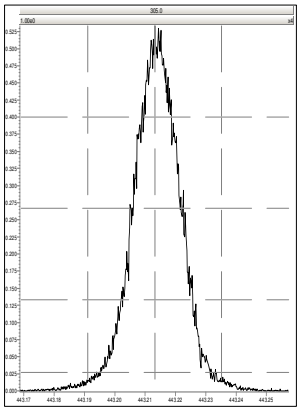

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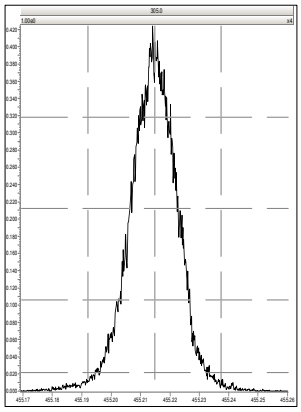

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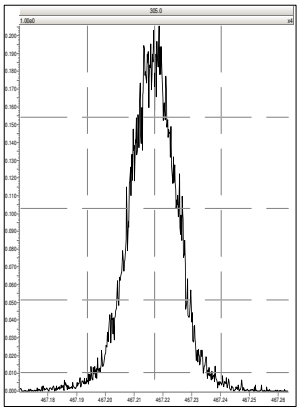

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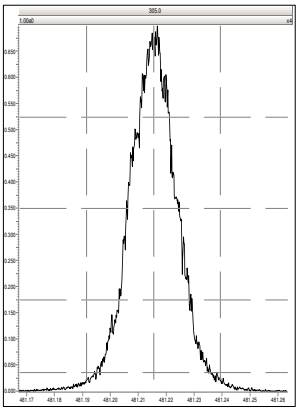

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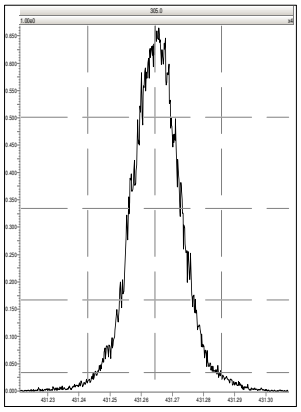

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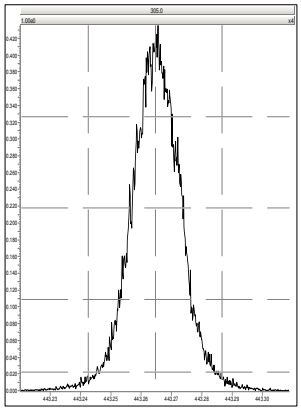

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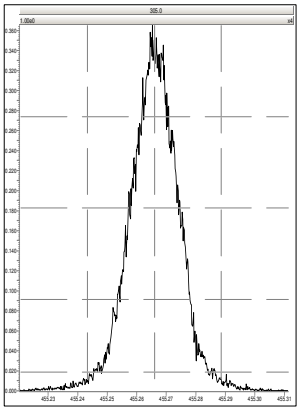

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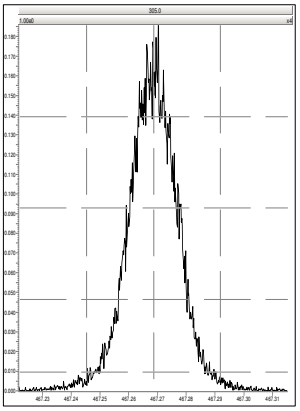

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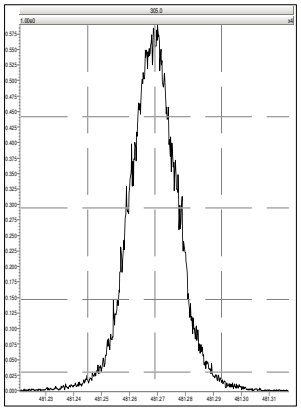

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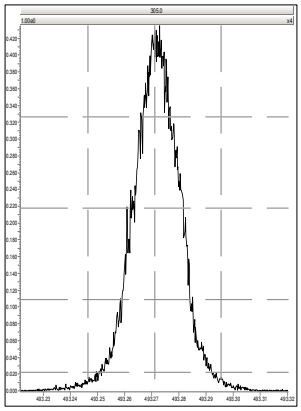

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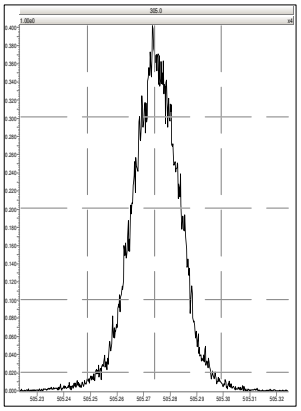

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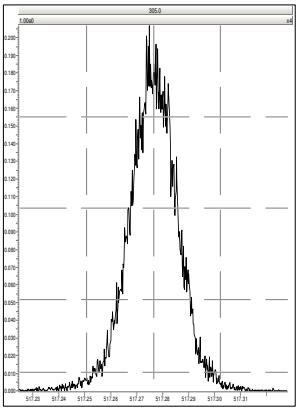

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Resolution Check Report **MassLynx 4.1**

Printed: Thursday, March 29, 2018 21:15:43 Eastern Standard Time

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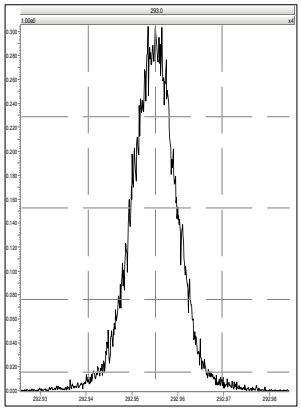
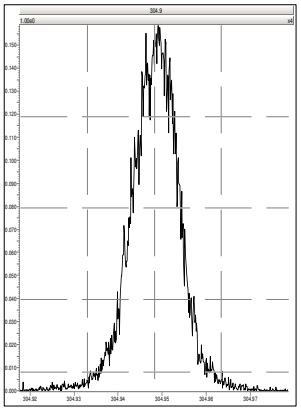


M 304.9824 R 13283



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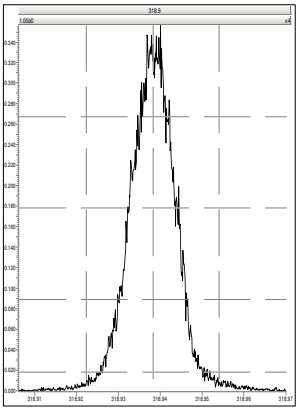

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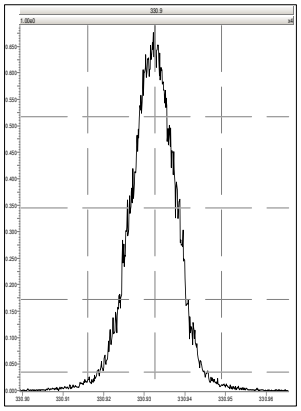

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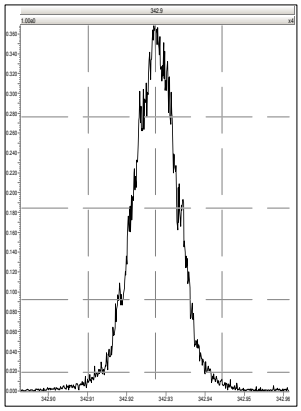

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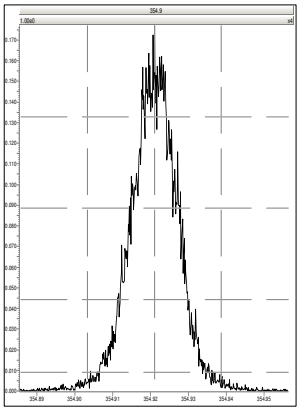

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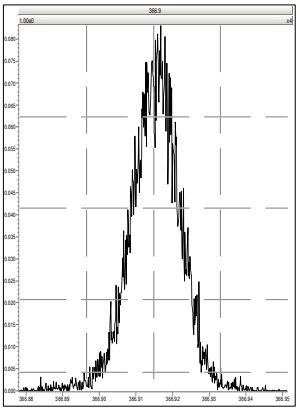

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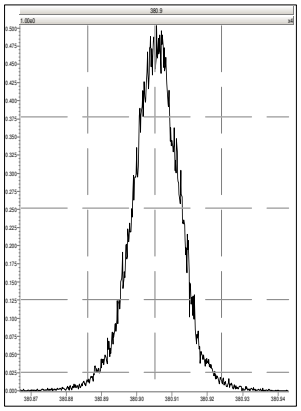

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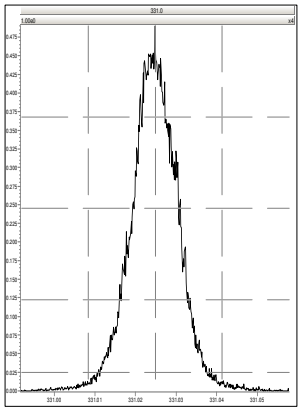

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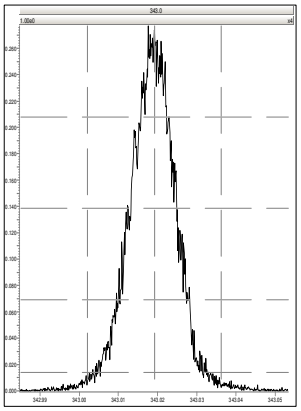

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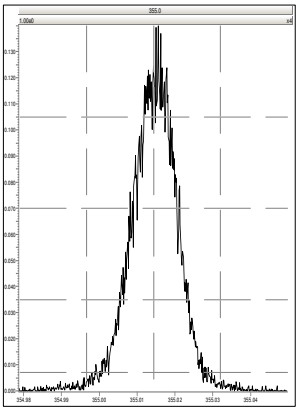

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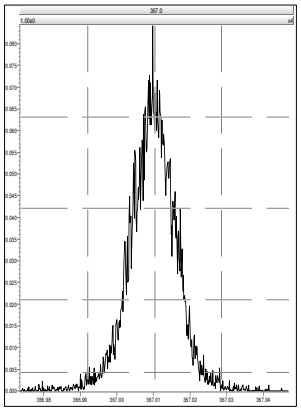

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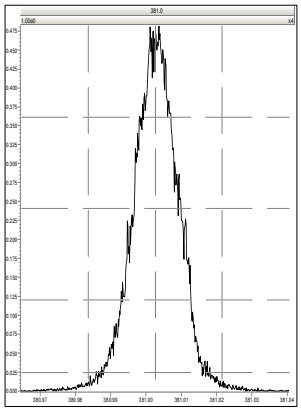

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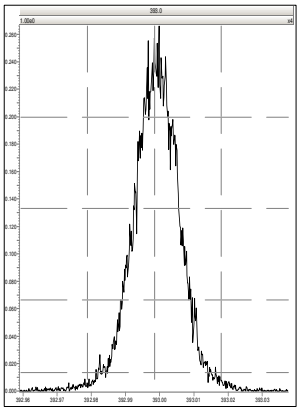

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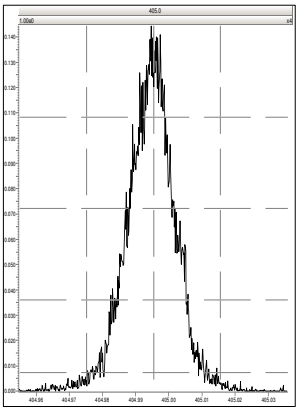

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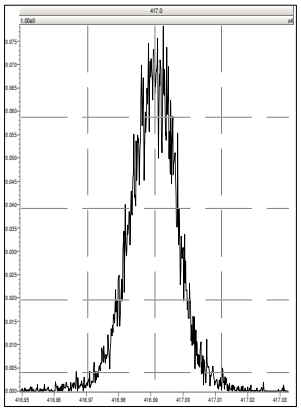

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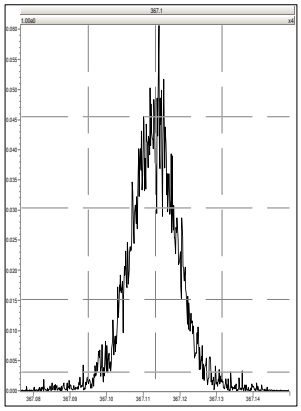

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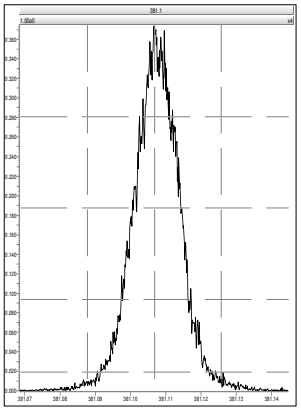

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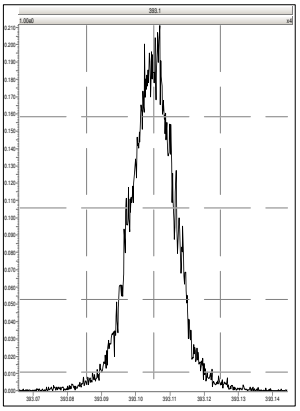

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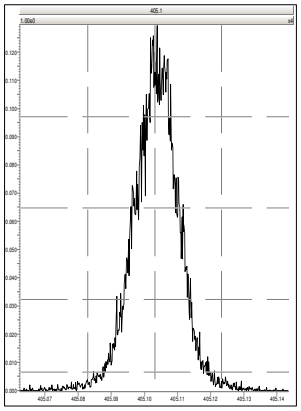

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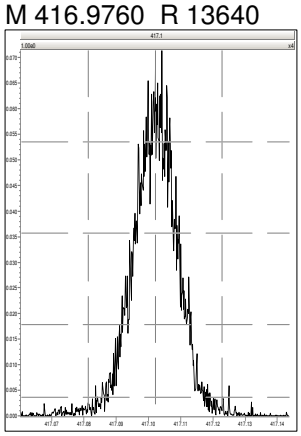

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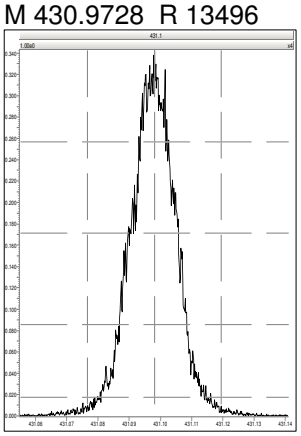

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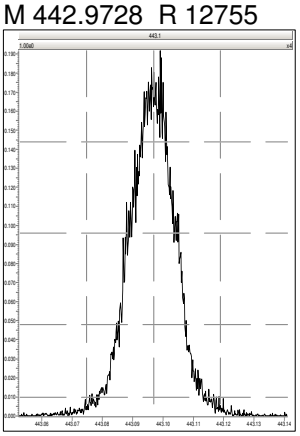

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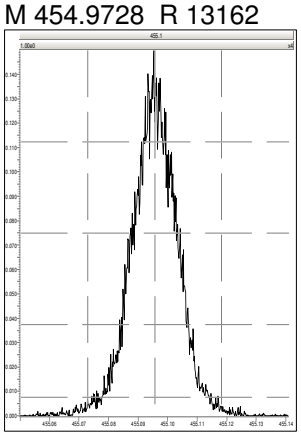

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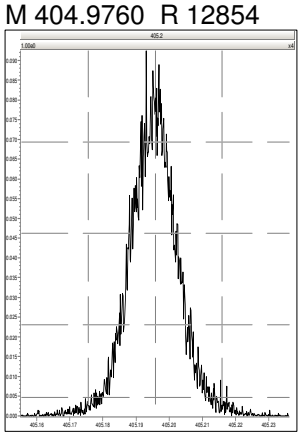

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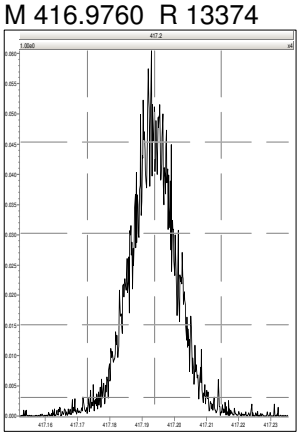

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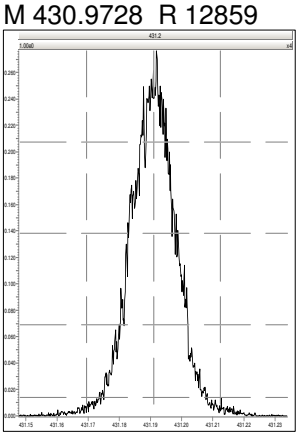

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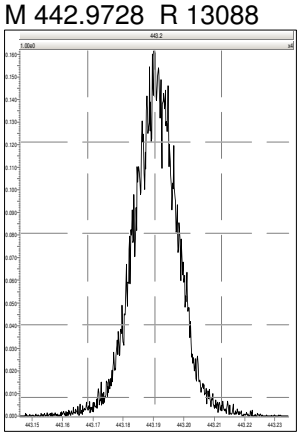

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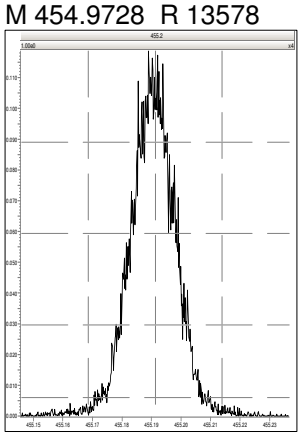

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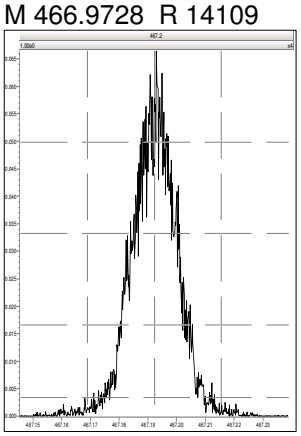

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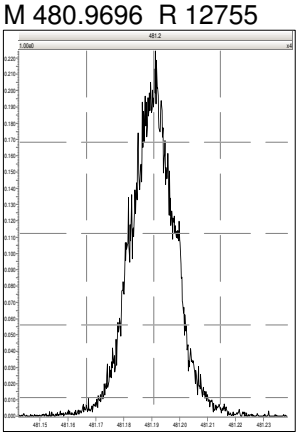

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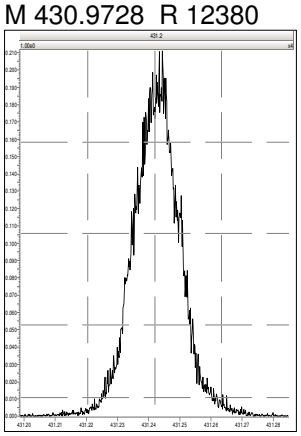

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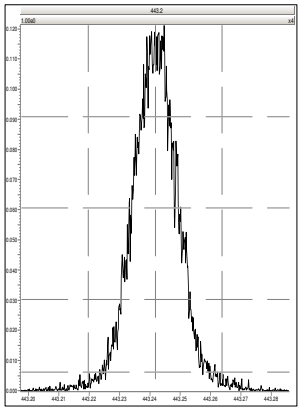

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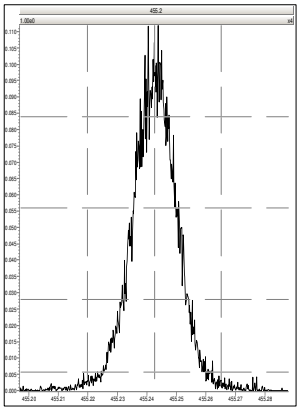

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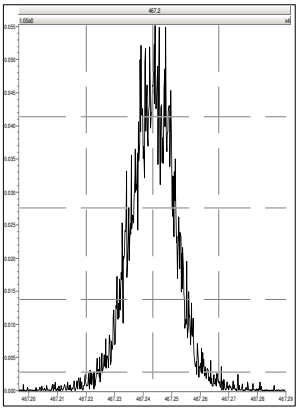

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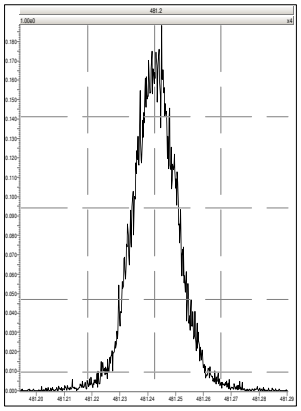

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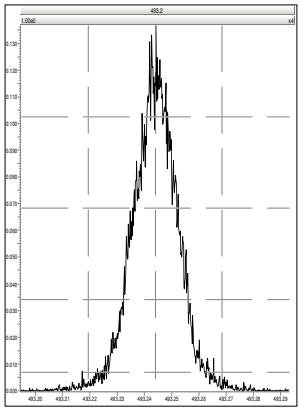

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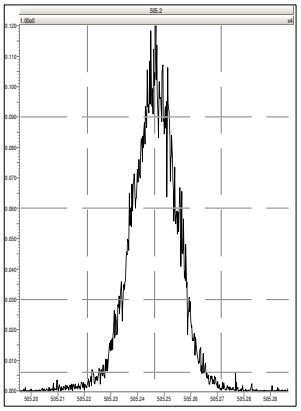

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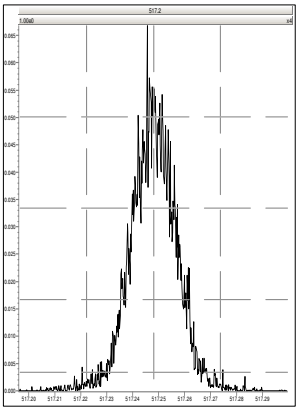

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Quantify Sample Summary Report **MassLynx 4.1**
Method Window Defining Report

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Printed: Friday, March 30, 2018 10:03:31 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\WDM_b22mar18.mdb 23 Mar 2018 09:35:02
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

	Name	RT
1	First TCDF	25.19
2	Last TCDF	31.33
3	First PeCDF	31.32
4	Last PeCDF	34.01
5	First HxCDF	34.49
6	Last HxCDF	36.65
7	First HpCDF	38.05
8	Last HpCDF	39.84
9	OCDF	43.40
10	First TCDD	26.90
11	2378-TCDD	30.40
12	Last TCDD	31.24
13	First PeCDD	32.32
14	Last PeCDD	33.85
15	First HxCDD	34.89
16	Last HxCDD	36.37
17	First HpCDD	38.36
18	Last HpCDD	39.22
19	OCDD	43.13

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Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b28mar18b_3-14.qld

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Printed: Friday, March 30, 2018 10:03:31 Eastern Standard Time

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Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

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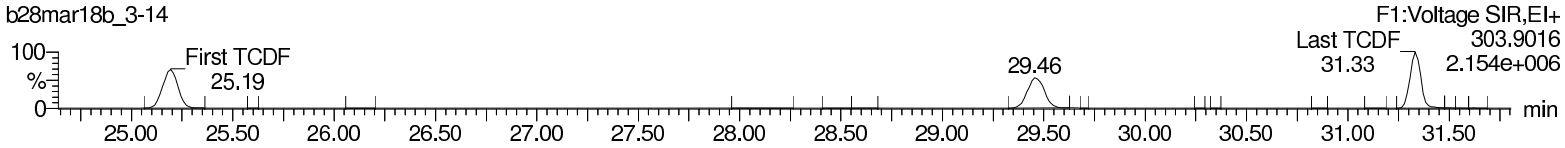

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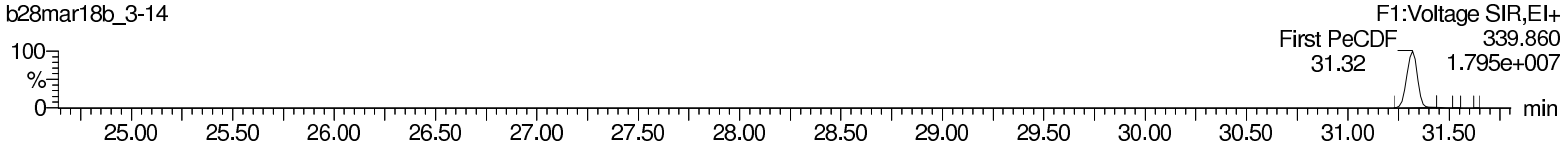

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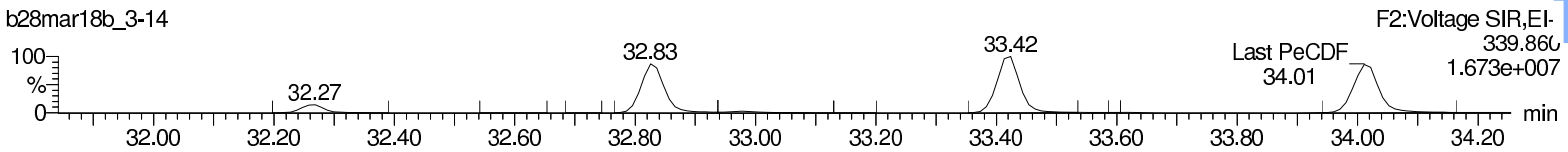

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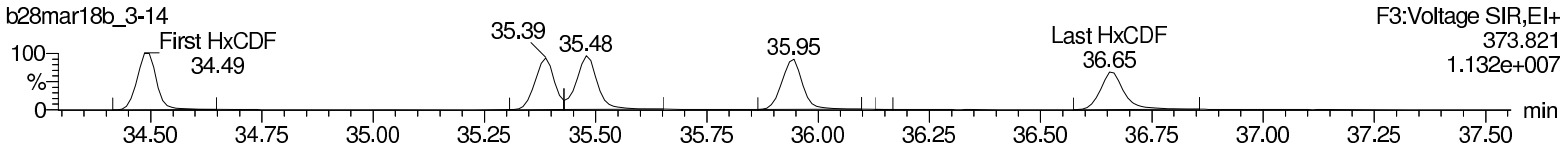

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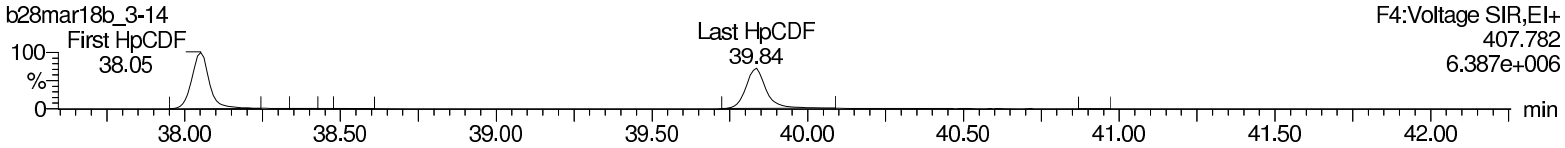

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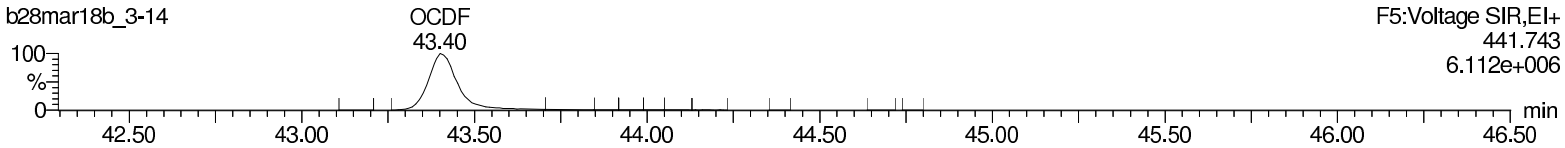

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Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b28mar18b_3-14.qld

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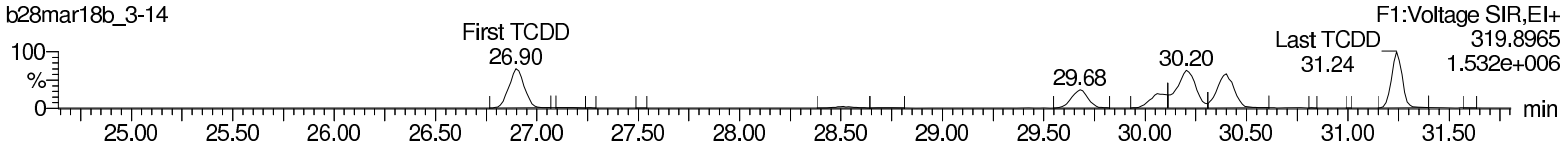
Printed: Friday, March 30, 2018 10:03:31 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

First TCDD



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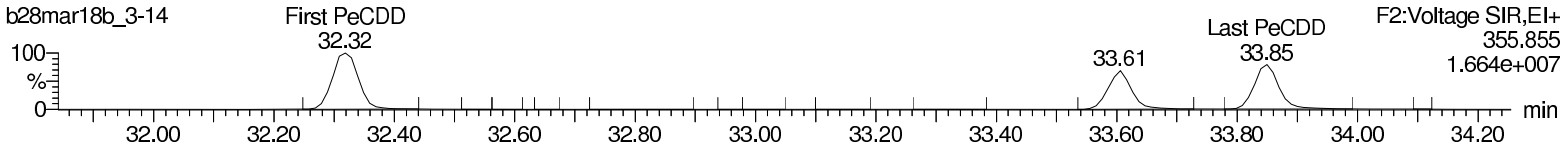

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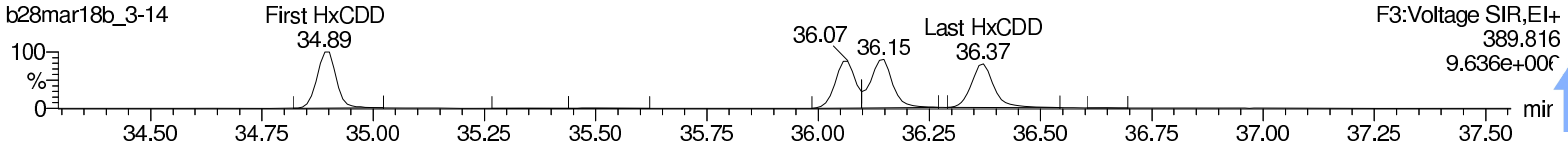

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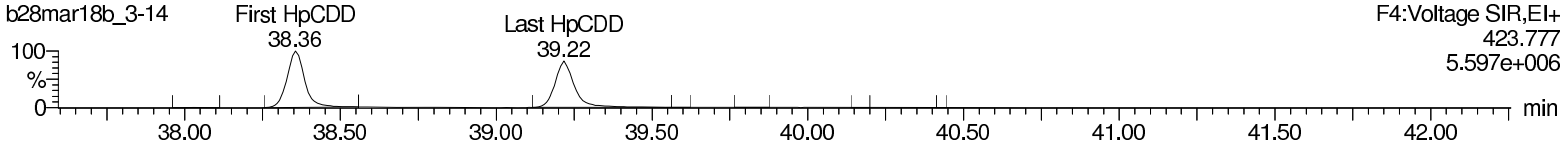
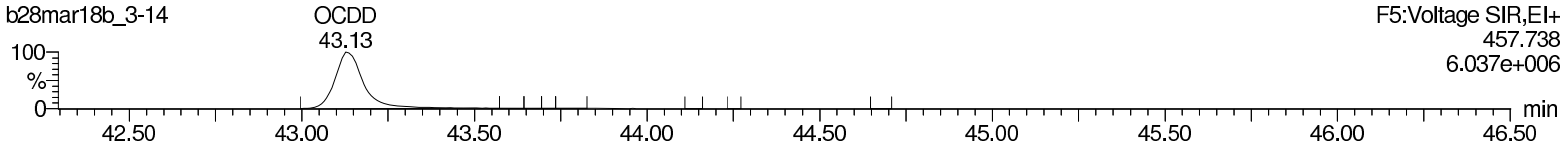


OCDD



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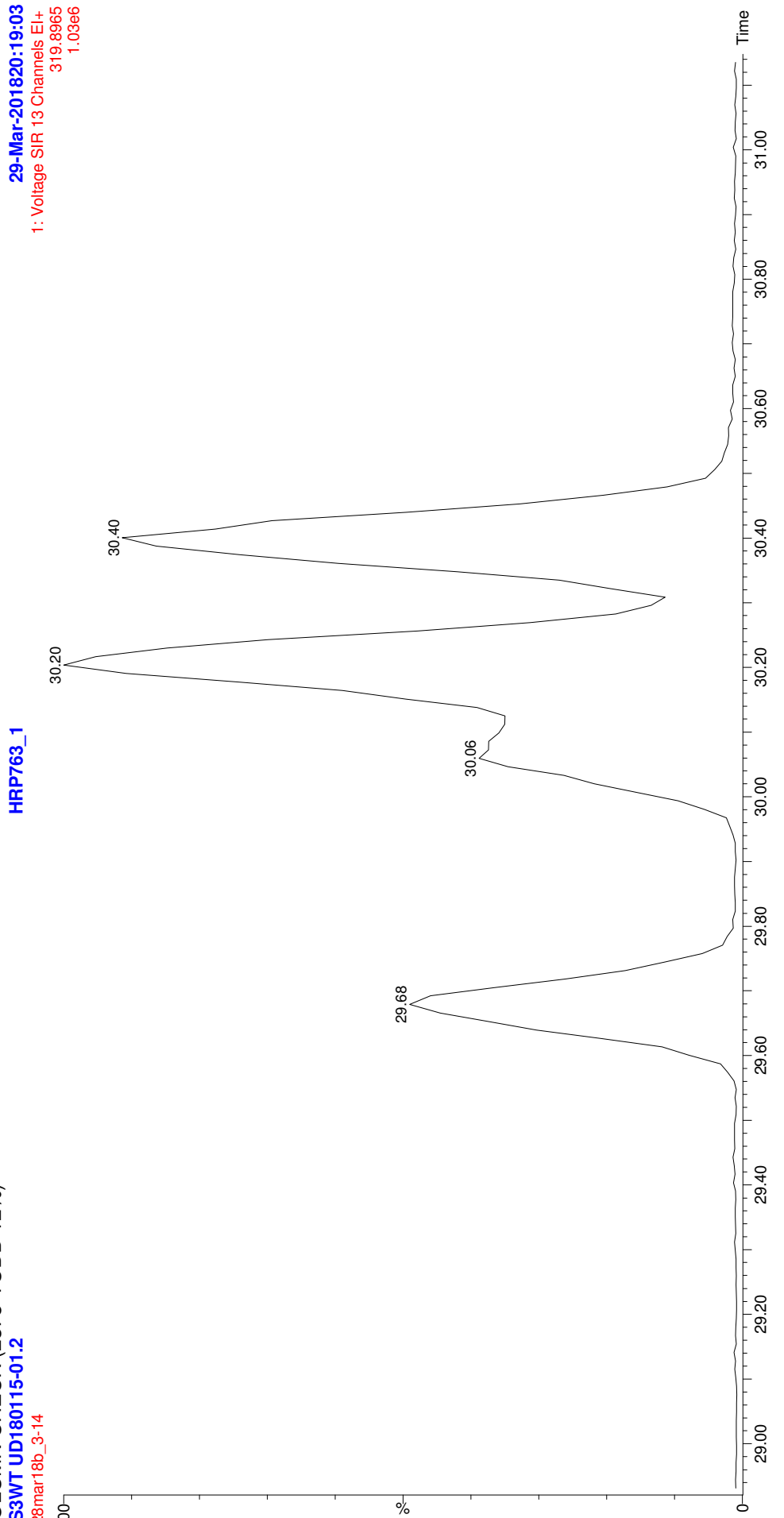

COLUMN CHECK (2378-TCDD 12%)
CS3WT UD180115-01.2
b28mar18b_3-14

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	8.99e4	1.20e5	2.10e5	30.40	1.001	0.75	NO	10.315	0.0877	0.919	0.891	3.1	9.32e5	2768	336.6	1.21e6	4388	275.8	db	dd
2	12378-PeCDD	5.08e5	3.25e5	8.33e5	33.61	1.000	1.57	NO	57.635	0.107	0.910	0.789	15.3	1.14e7	8059	1418.4	7.18e6	5274	1360.7	bb	bb
3	123478-HxCDD	4.20e5	3.36e5	7.56e5	36.07	1.000	1.25	NO	55.687	0.133	0.933	0.838	11.4	8.01e6	7738	1035.4	6.56e6	5858	1119.1	bd	bd
4	123678-HxCDD	4.80e5	3.86e5	8.66e5	36.15	1.001	1.24	NO	54.977	0.122	0.924	0.840	10.0	8.26e6	7738	1067.5	6.70e6	5858	1144.5	db	db
5	123789-HxCDD	4.40e5	3.58e5	7.98e5	36.37	1.007	1.23	NO	56.075	0.131	0.913	0.814	12.1	7.46e6	7738	963.6	5.92e6	5858	1010.7	bb	bb
6	1234678-HpCDD	3.30e5	3.25e5	6.55e5	39.22	1.000	1.02	NO	47.597	0.138	0.954	1.003	-4.8	4.59e6	5520	830.6	4.36e6	4945	880.8	bd	bb
7	OCDD	5.94e5	6.69e5	1.26e6	43.13	1.000	0.89	NO	107.383	0.144	0.978	0.910	7.4	6.02e6	3159	1905.8	6.91e6	3871	1784.7	bd	bd
8	2378-TCDF	1.12e5	1.47e5	2.58e5	29.46	1.000	0.76	NO	9.507	0.0406	0.875	0.921	-4.9	1.16e6	2037	567.8	1.52e6	2515	604.3	bb	bb
9	12378-PeCDF	6.49e5	4.24e5	1.07e6	32.83	1.000	1.53	NO	48.588	0.0824	0.799	0.822	-2.8	1.45e7	9905	1462.0	9.65e6	6012	1604.4	bd	bd
10	23478-PeCDF	7.31e5	4.76e5	1.21e6	33.42	1.000	1.53	NO	49.566	0.0714	0.918	0.926	-0.9	1.67e7	9905	1681.0	1.07e7	6012	1776.7	bb	bb
11	123478-HxCDF	5.17e5	4.26e5	9.43e5	35.39	1.000	1.21	NO	53.237	0.134	1.063	0.998	6.5	1.03e7	8315	1243.2	8.43e6	10247	822.8	bd	bd
12	123678-HxCDF	5.89e5	4.82e5	1.07e6	35.48	1.000	1.22	NO	53.390	0.125	0.997	0.934	6.8	1.08e7	8315	1301.8	8.98e6	10247	876.8	db	db
13	234678-HxCDF	5.41e5	4.43e5	9.84e5	35.95	1.001	1.22	NO	52.982	0.138	1.094	1.033	6.0	1.01e7	8315	1211.1	8.14e6	10247	794.6	bb	bb
14	123789-HxCDF	4.64e5	3.87e5	8.51e5	36.65	1.000	1.20	NO	53.351	0.182	1.017	0.953	6.7	7.53e6	8315	905.7	6.19e6	10247	603.9	bb	bd
15	1234678-HpCDF	4.10e5	4.05e5	8.15e5	38.05	1.000	1.01	NO	52.008	0.0978	1.141	1.097	4.0	6.36e6	4749	1340.2	6.30e6	4633	1359.8	bb	bb
16	1234789-HpCDF	3.43e5	3.36e5	6.79e5	39.84	1.000	1.02	NO	52.897	0.141	1.173	1.109	5.8	4.58e6	4749	963.8	4.42e6	4633	953.1	bb	bb
17	OCDF	5.98e5	6.73e5	1.27e6	43.40	1.007	0.89	NO	106.697	0.171	0.984	0.922	6.7	6.10e6	5036	1211.6	6.87e6	3404	2018.6	bd	bd
18	13C-2378-TCDD	9.86e5	1.29e6	2.28e6	30.37	1.024	0.76	NO	101.798	0.0672	1.162	1.142	1.8	9.90e6	3840	2576.7	1.31e7	2462	5318.2	bb	bb
19	13C-12378-PeCDD	1.12e6	7.09e5	1.83e6	33.60	1.133	1.58	NO	97.044	0.0919	0.933	0.962	-3.0	2.42e7	4020	6024.1	1.52e7	3234	4689.6	bb	bb
20	13C-123478-HxCDD	8.94e5	7.28e5	1.62e6	36.06	0.992	1.23	NO	96.317	0.114	0.989	1.027	-3.7	1.68e7	5965	2818.1	1.39e7	7028	1973.3	bd	bd
21	13C-123678-HxCDD	1.04e6	8.36e5	1.87e6	36.13	0.994	1.24	NO	101.754	0.104	1.143	1.123	1.8	1.83e7	5965	3071.8	1.51e7	7028	2143.1	db	db
22	13C-1234678-HpCDD	6.94e5	6.79e5	1.37e6	39.21	1.078	1.02	NO	111.214	0.118	0.838	0.753	11.2	9.59e6	4948	1937.6	9.09e6	4976	1827.4	bb	bd
23	13C-OCDD	1.19e6	1.40e6	2.58e6	43.12	1.186	0.85	NO	217.199	0.110	0.788	0.726	8.6	1.23e7	4045	3042.6	1.41e7	4870	2893.4	bb	bd
24	13C-2378-TCDF	1.29e6	1.66e6	2.95e6	29.44	0.993	0.77	NO	112.591	0.0928	1.505	1.337	12.6	1.33e7	6286	2115.5	1.70e7	3896	4365.3	bb	bb
25	13C-12378-PeCDF	1.64e6	1.05e6	2.69e6	32.82	1.107	1.57	NO	110.231	0.166	1.369	1.242	10.2	3.59e7	10586	3389.8	2.34e7	6329	3695.5	bd	bd
26	13C-23478-PeCDF	1.60e6	1.02e6	2.63e6	33.41	1.127	1.57	NO	108.614	0.167	1.340	1.234	8.6	3.67e7	10586	3465.7	2.29e7	6329	3611.1	bb	bb
27	13C-123478-HxCDF	5.93e5	1.18e6	1.77e6	35.38	0.973	0.50	NO	98.431	0.102	1.082	1.099	-1.6	1.16e7	4571	2539.2	2.27e7	7915	2873.9	bd	bd
28	13C-123678-HxCDF	7.20e5	1.43e6	2.15e6	35.47	0.975	0.50	NO	102.948	0.0881	1.309	1.272	2.9	1.33e7	4571	2905.2	2.56e7	7915	3237.0	db	dd
29	13C-234678-HxCDF	6.02e5	1.20e6	1.80e6	35.93	0.988	0.50	NO	101.625	0.104	1.097	1.079	1.6	1.09e7	4571	2388.3	2.19e7	7915	2764.1	bb	bb
30	13C-123789-HxCDF	5.66e5	1.11e6	1.67e6	36.64	1.008	0.51	NO	103.369	0.114	1.020	0.987	3.4	9.04e6	4571	1977.6	1.77e7	7915	2237.8	bb	bb
31	13C-1234678-HpCDF	4.40e5	9.89e5	1.43e6	38.04	1.046	0.44	NO	102.623	0.113	0.872	0.849	2.6	6.73e6	4036	1668.7	1.52e7	6677	2272.5	bd	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	3.58e5	8.00e5	1.16e6	39.83	1.095	0.45	NO	104.617	0.142	0.706	0.675	4.6	4.63e6	4036	1147.2	1.03e7	6677	1547.8	bd	bb
33	13C-1234-TCDD	8.54e5	1.11e6	1.96e6	29.65	0.000	0.77	NO	100.000	0.0768	1.000	1.000	-0.0	8.93e6	3840	2325.2	1.15e7	2462	4683.8	bb	bb
34	13C-123789-HxCDD	9.04e5	7.36e5	1.64e6	36.36	0.000	1.23	NO	100.000	0.117	1.000	1.000	-0.0	1.54e7	5965	2574.1	1.23e7	7028	1750.6	bd	bb
35	37Cl-2378-TCDD	2.21e5		2.21e5	30.40	1.025			9.703	0.0196	1.126	1.161	-3.0	2.27e6	1871	1211.7				bb	

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Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

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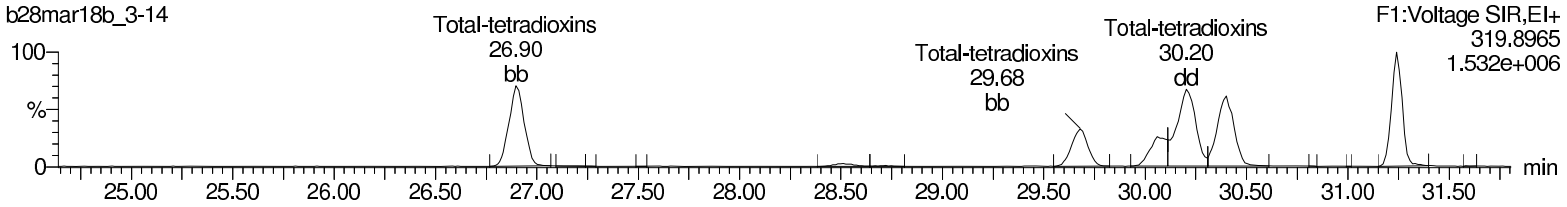
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

Total-tetradioxins



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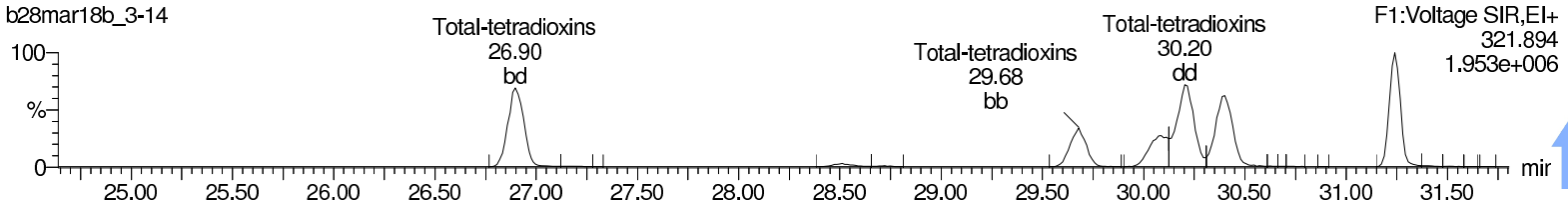

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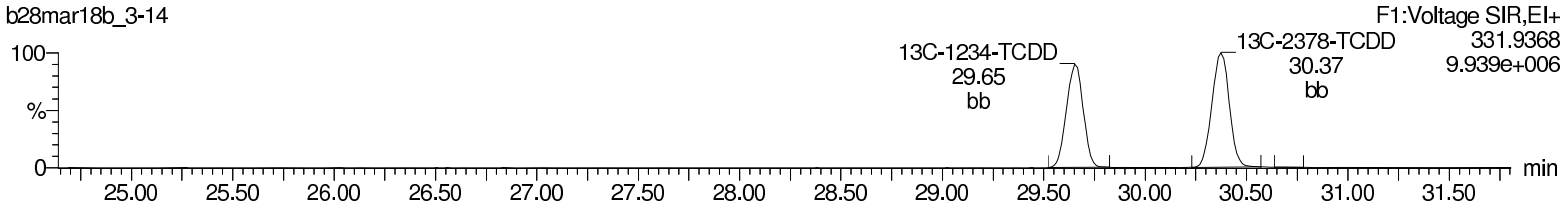

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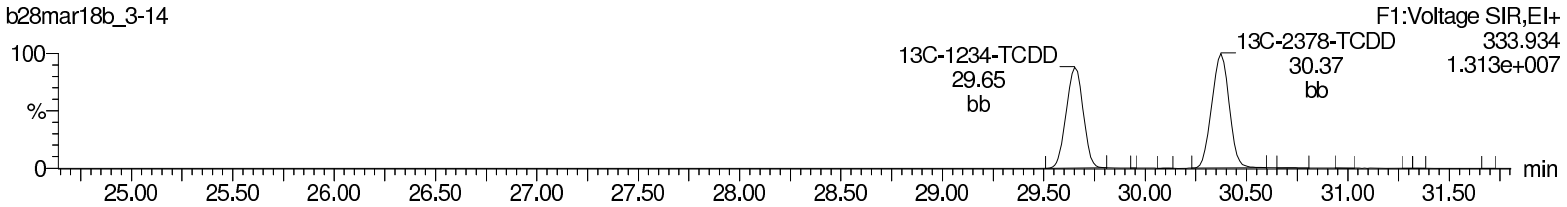

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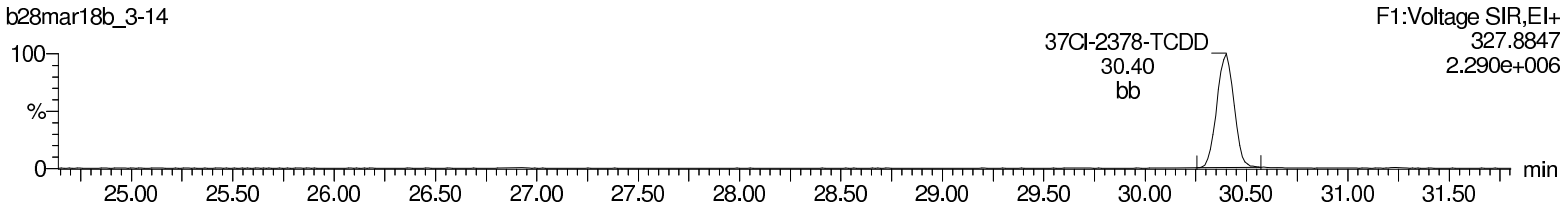

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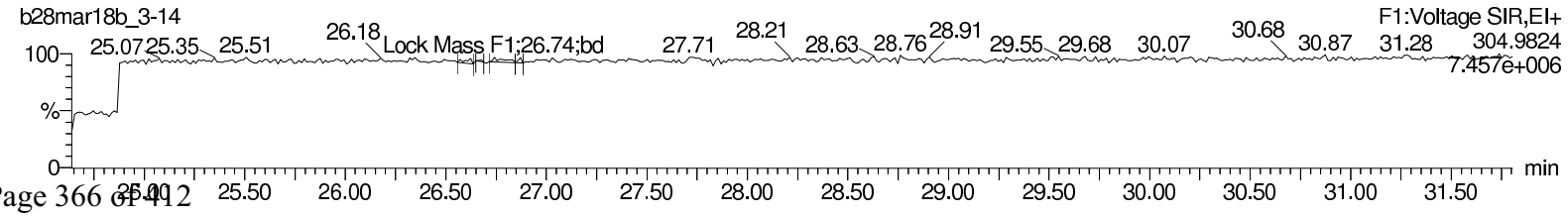

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Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

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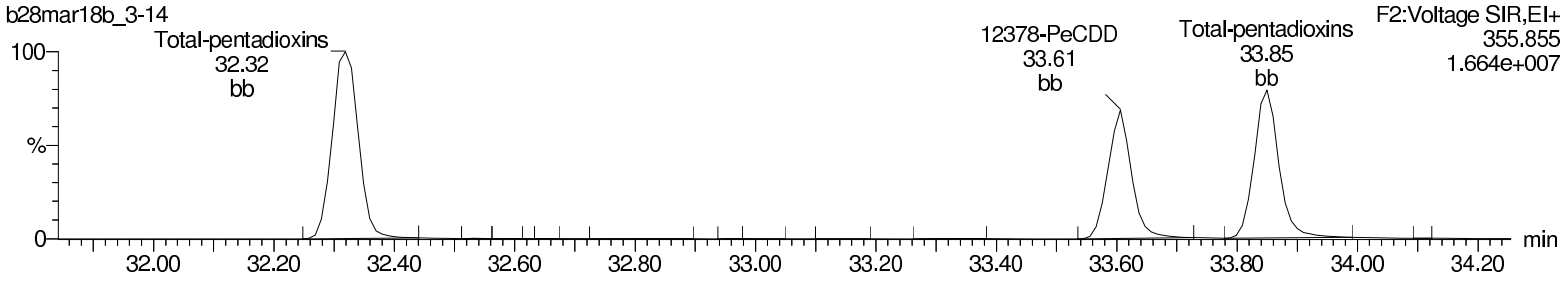

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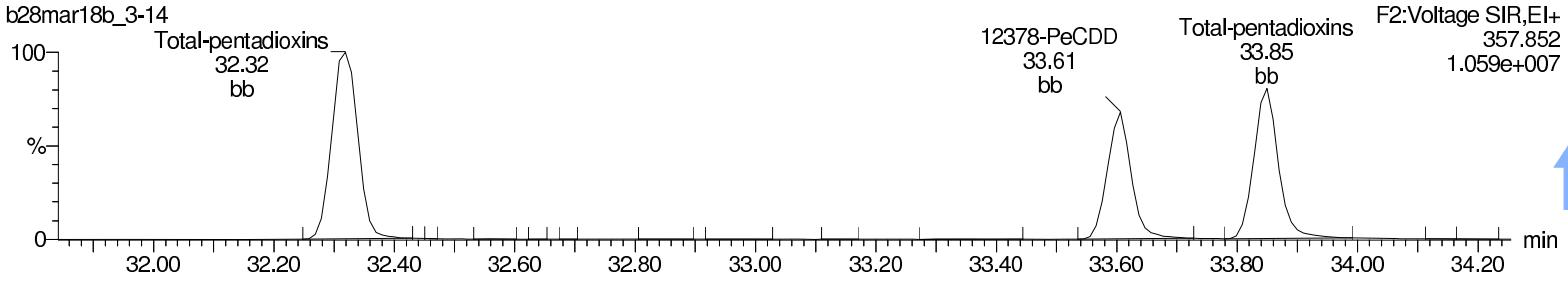

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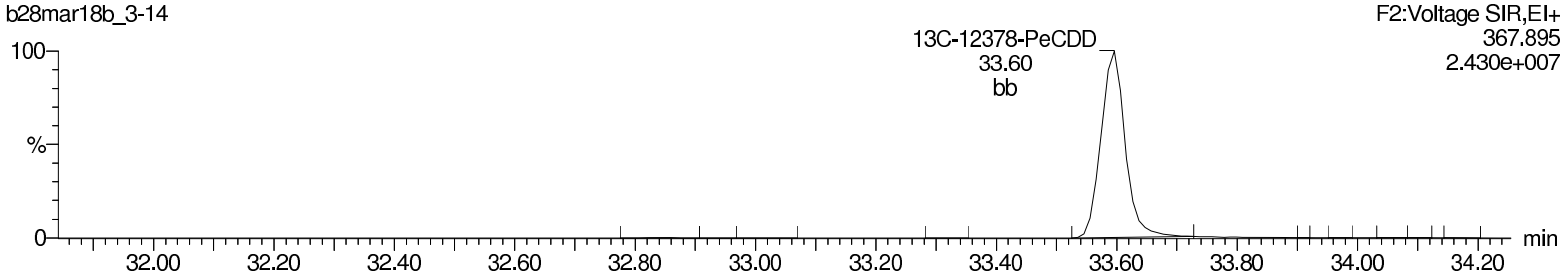

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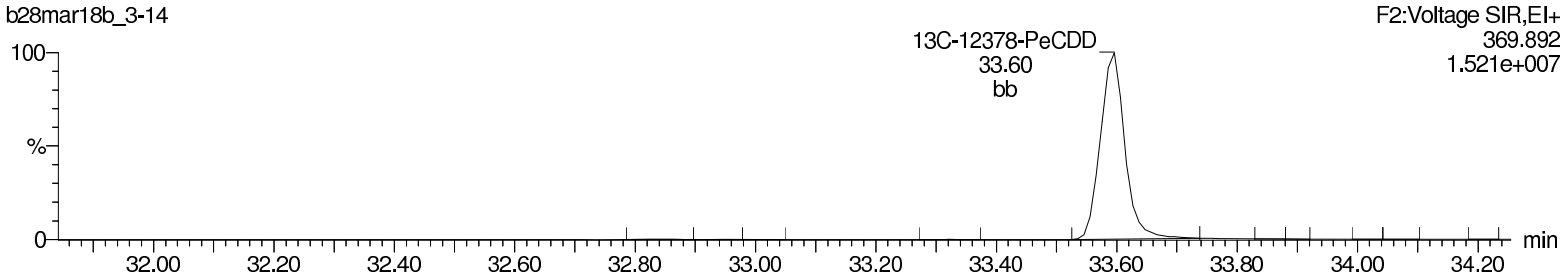

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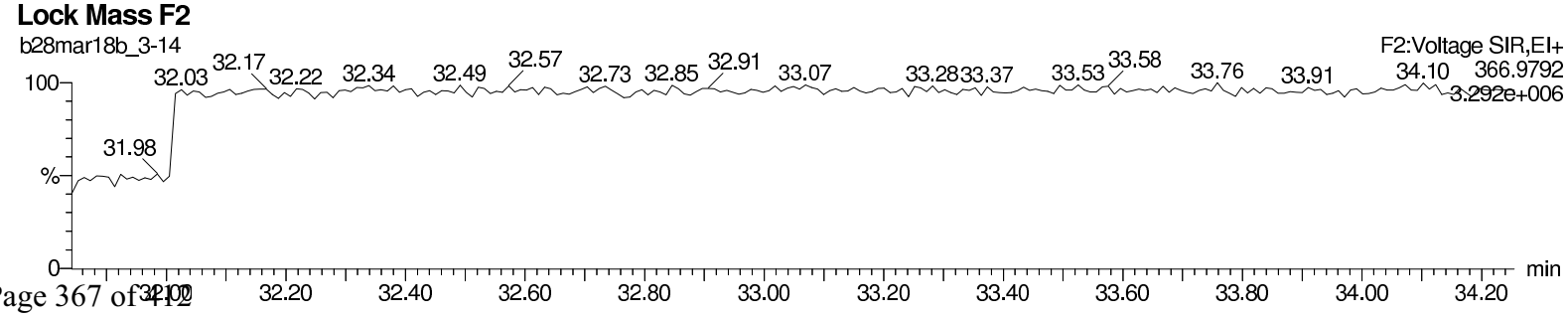

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Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

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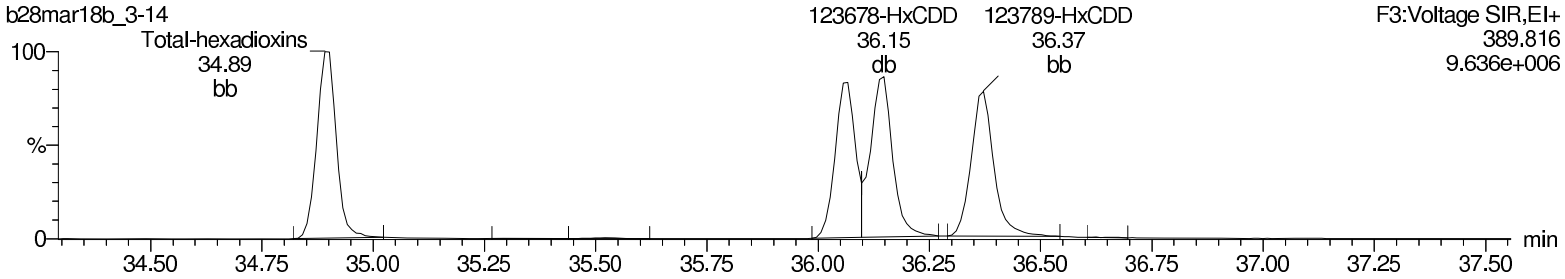

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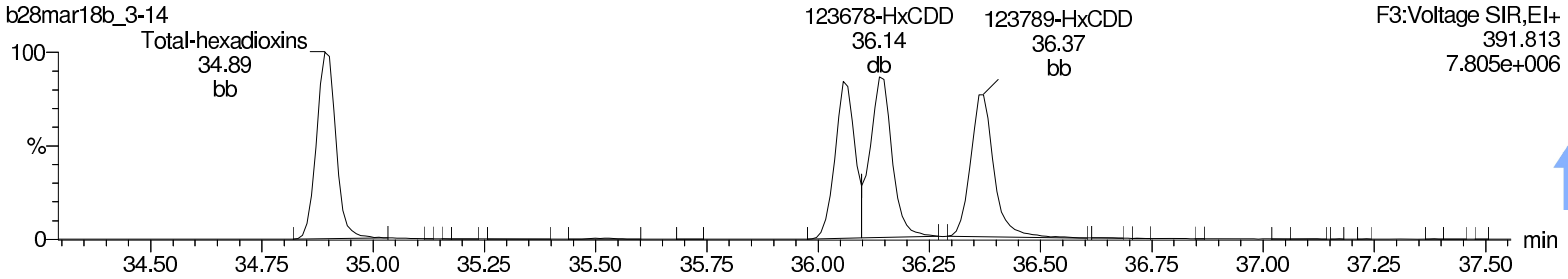

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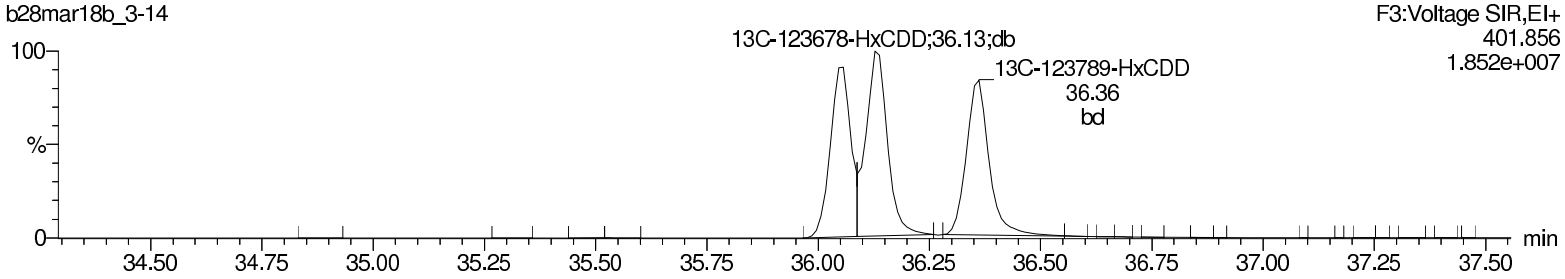

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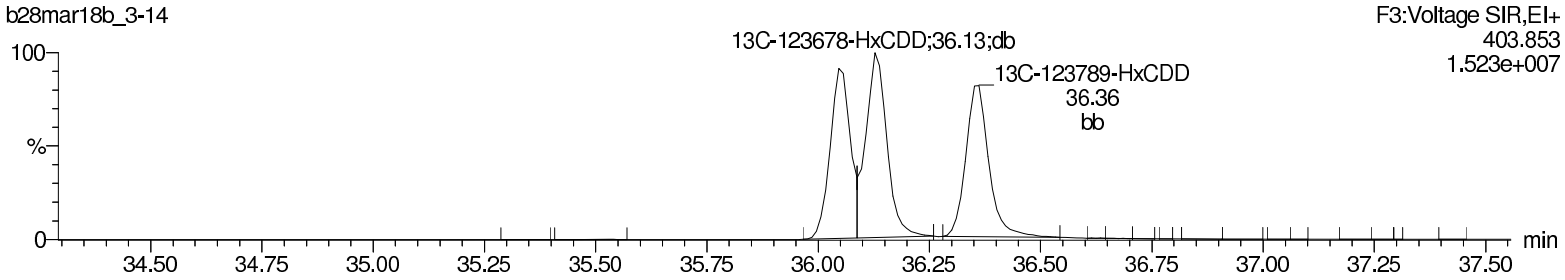

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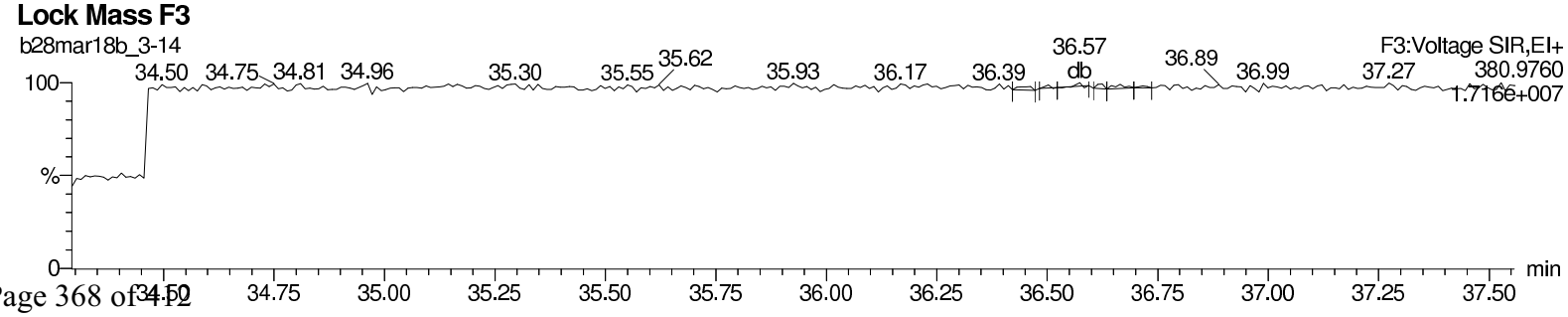

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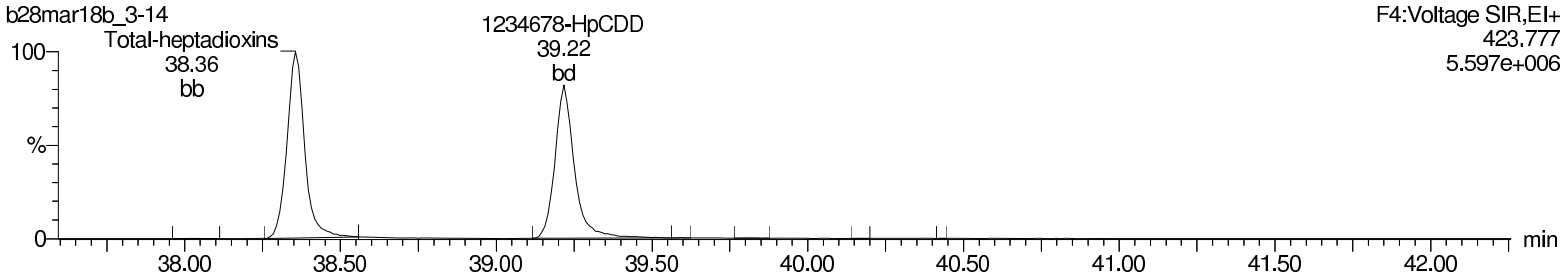
Total-heptadioxins



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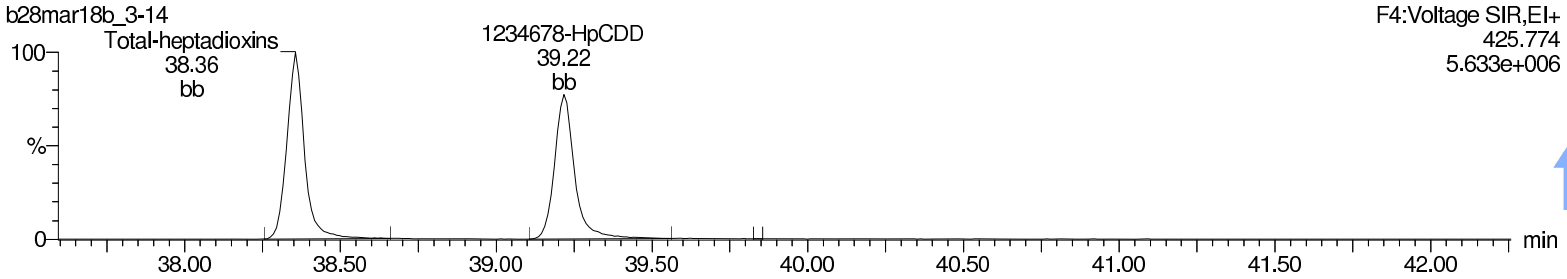

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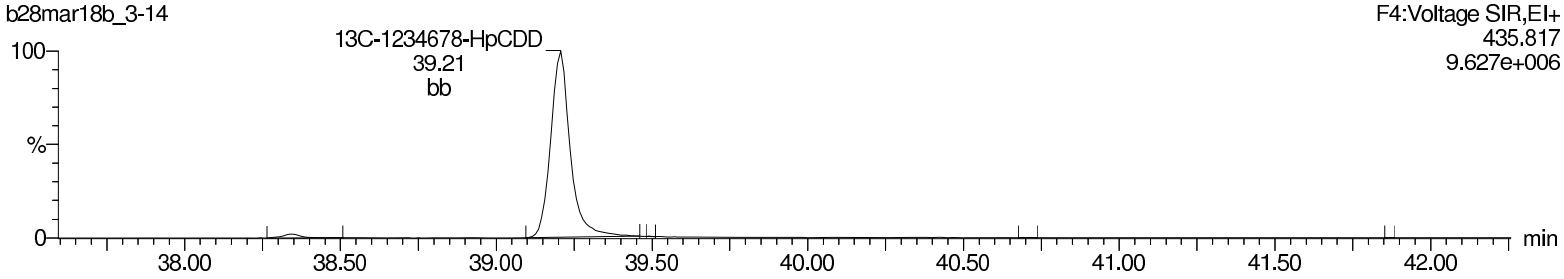

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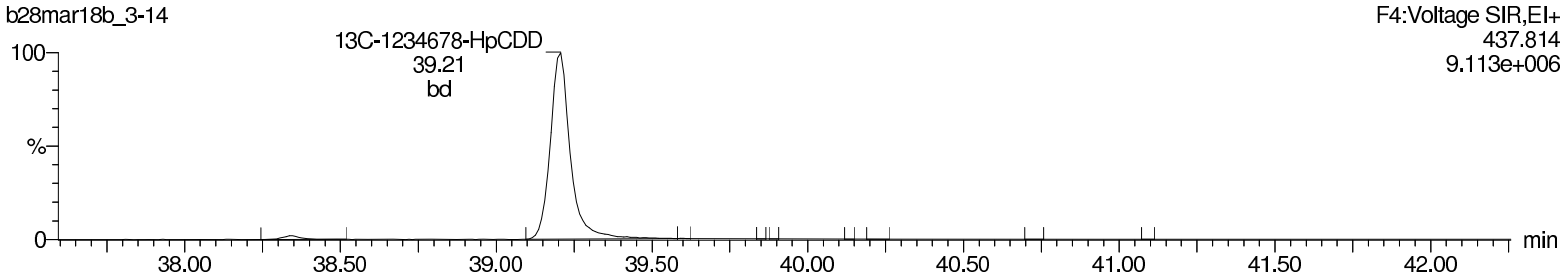

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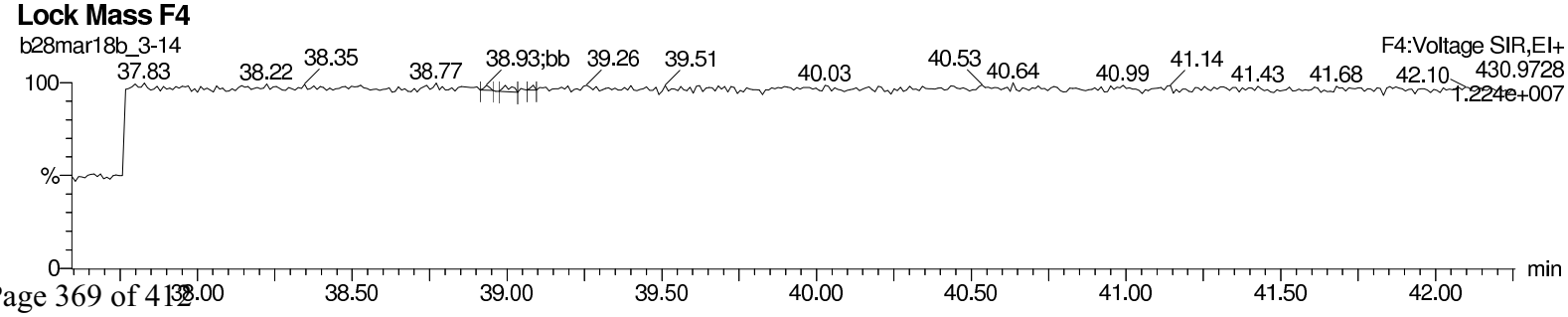

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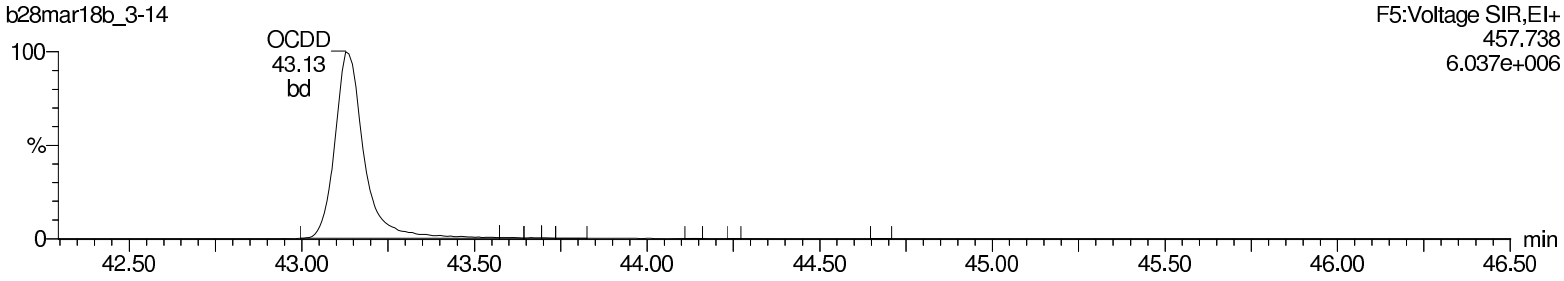
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

OCDD



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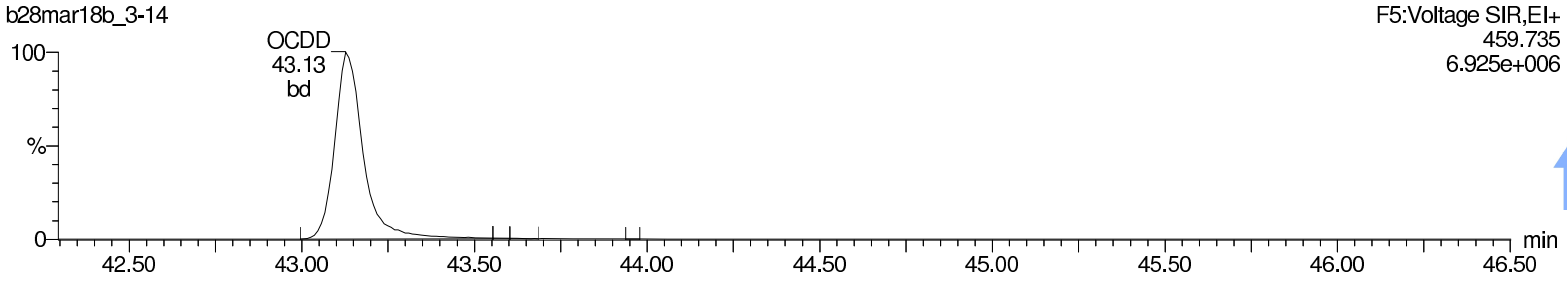

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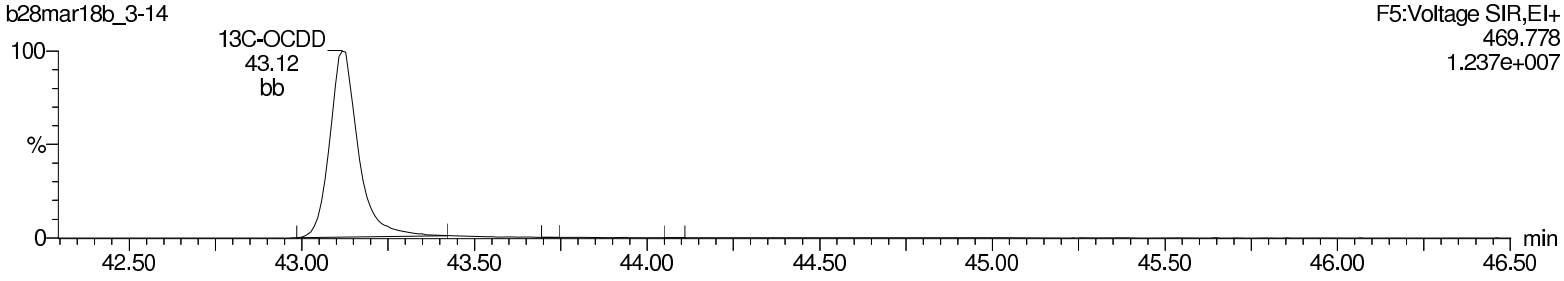
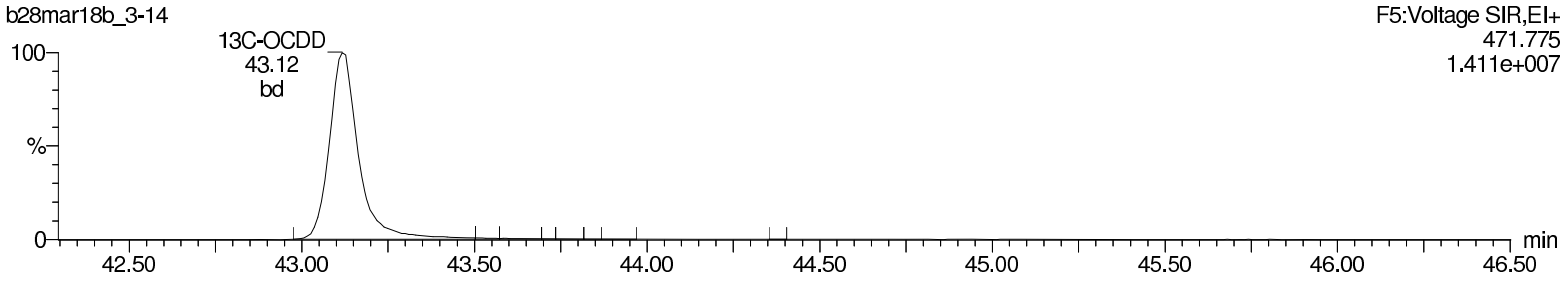
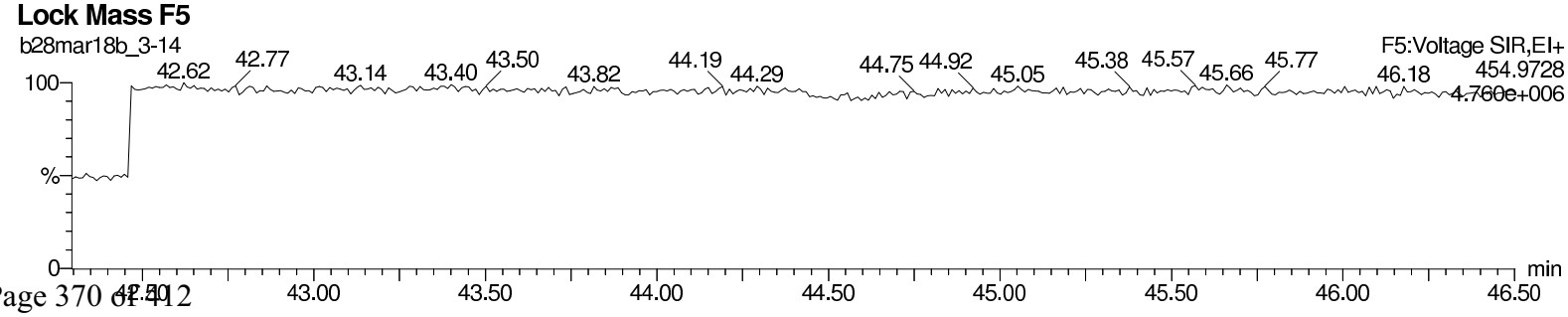


13C-OCDD



Lock Mass F5

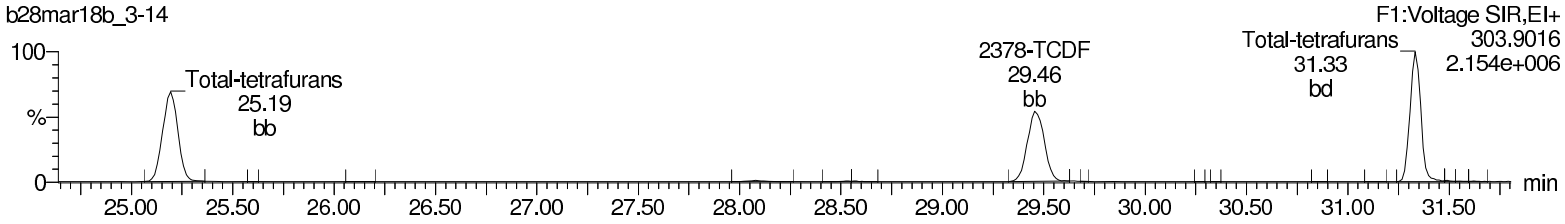


Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

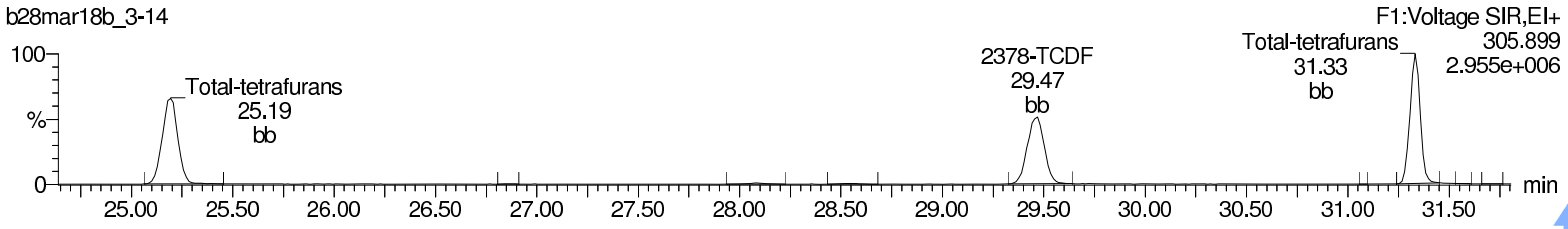
Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

Total-tetrafurans



Total-tetrafurans



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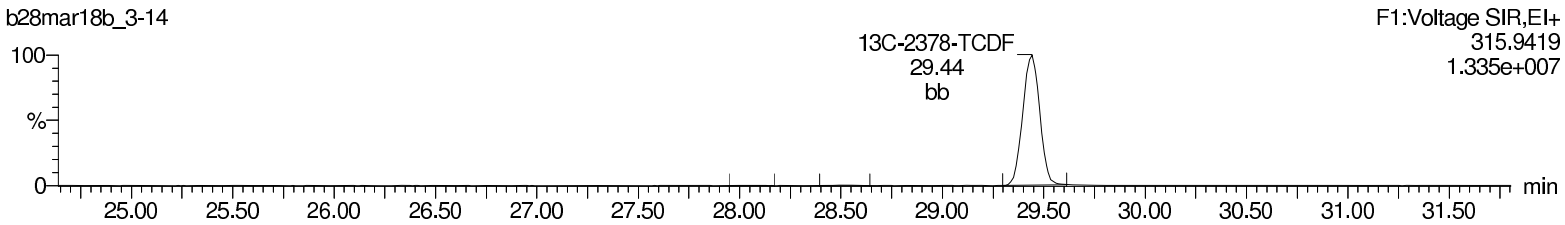

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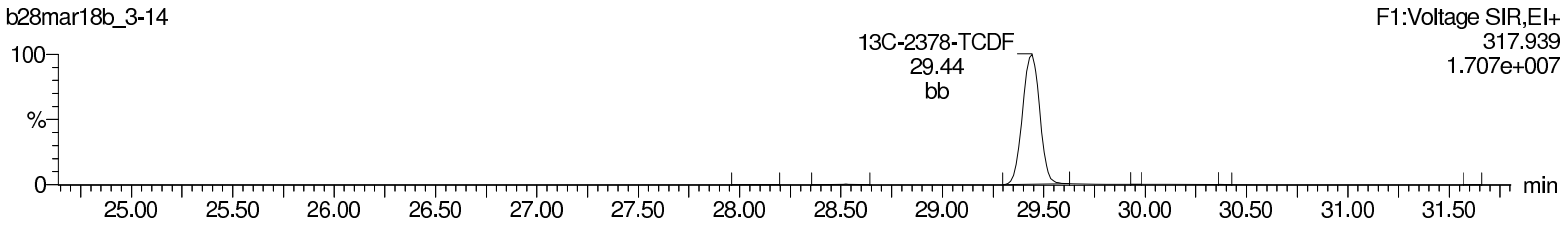
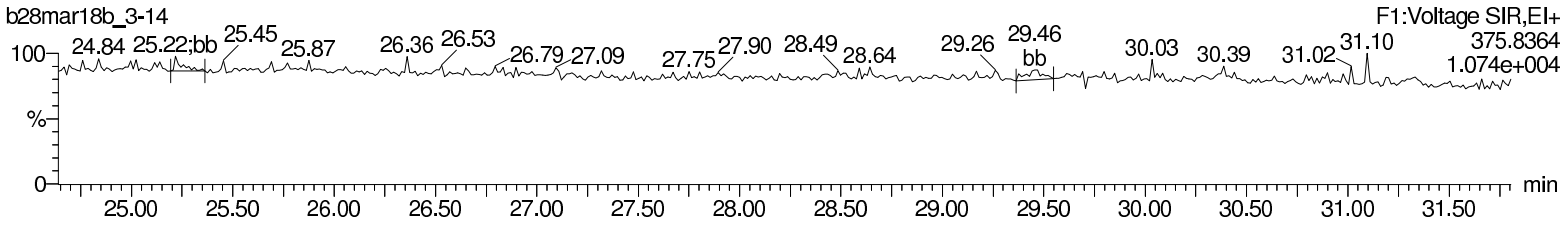
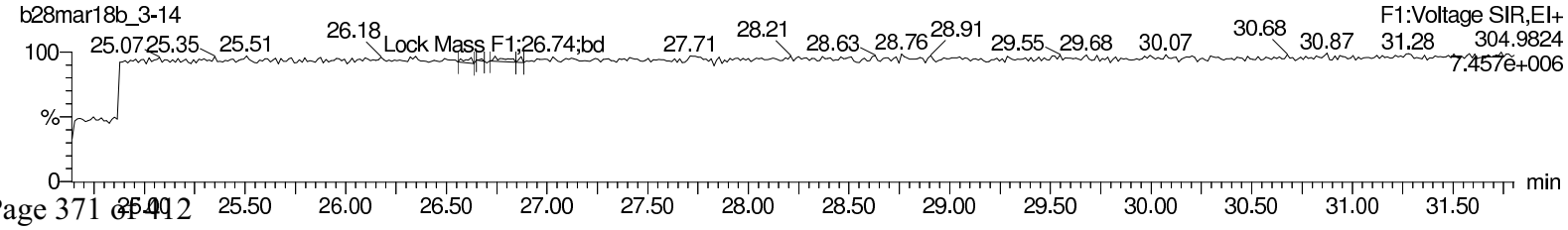


HxDPE



Lock Mass F1

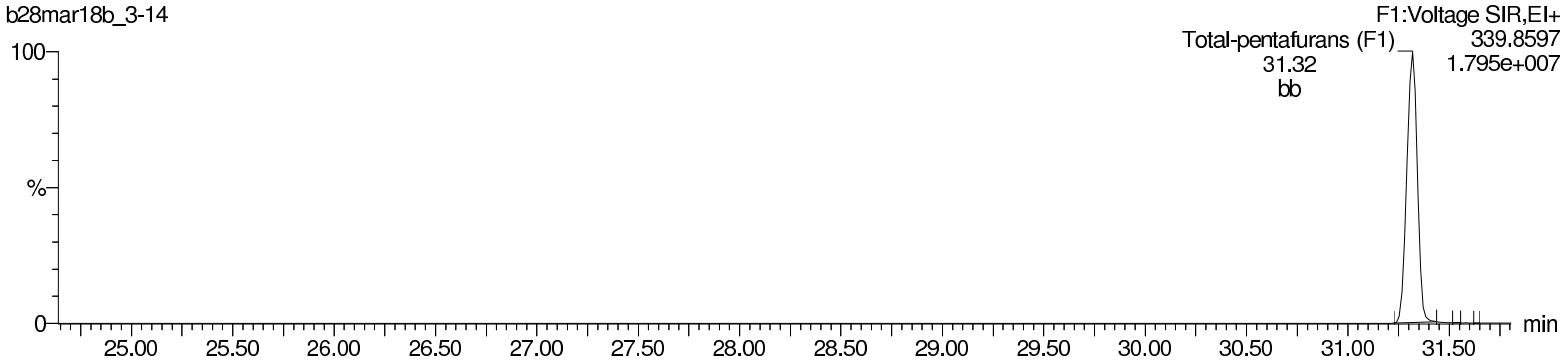


Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

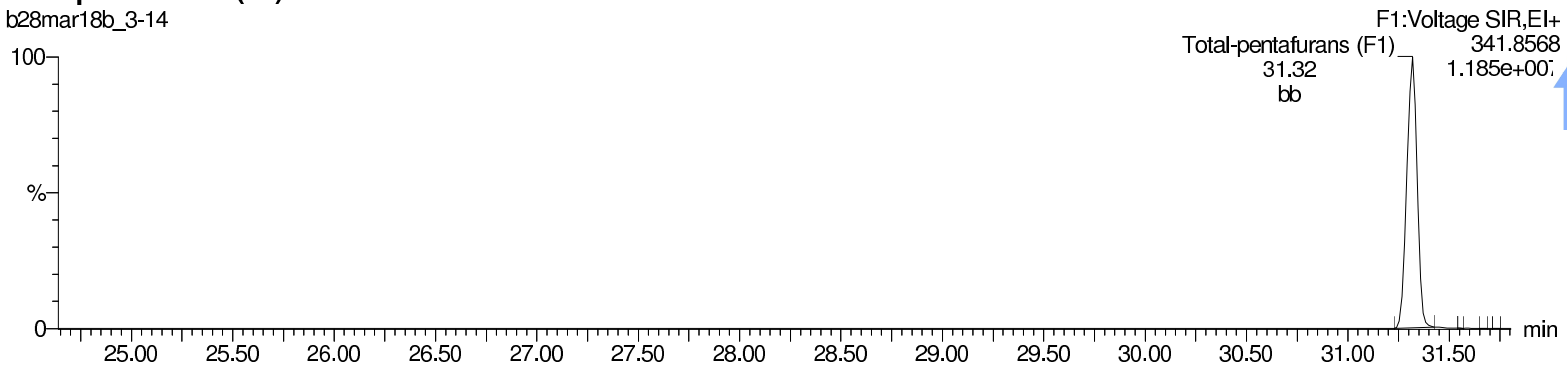
Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

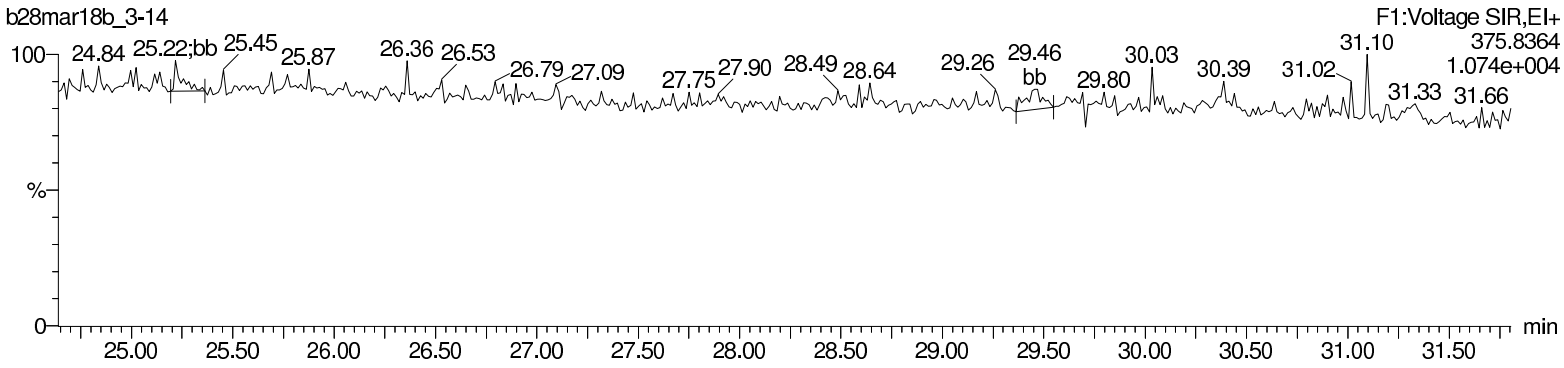
Total-pentafurans (F1)



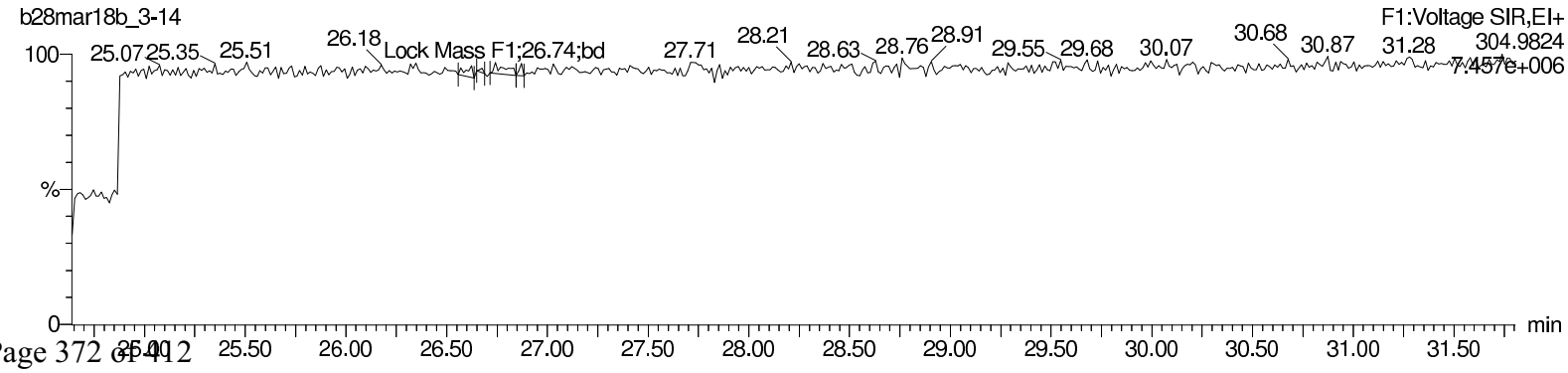
Total-pentafurans (F1)



HxDPE



Lock Mass F1



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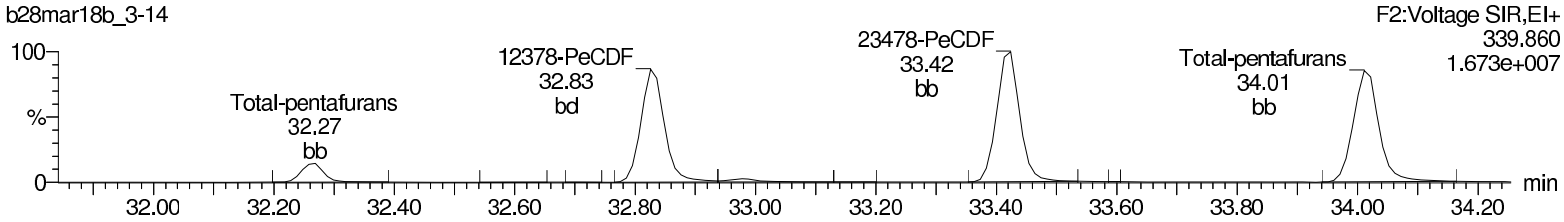
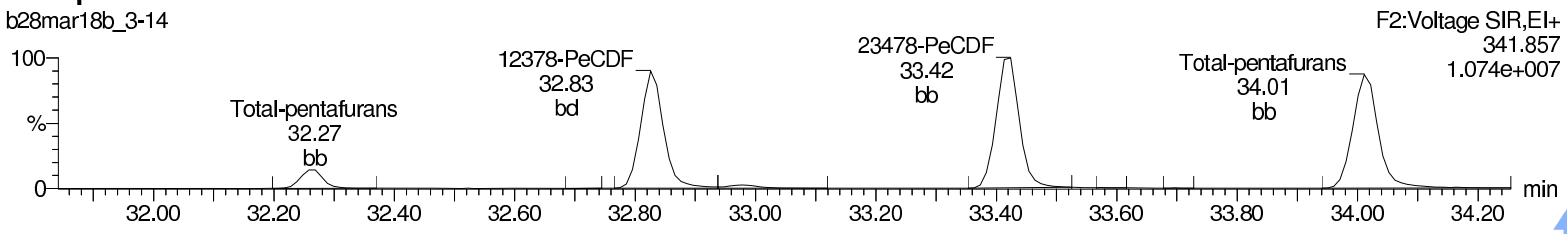
Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

Total-pentafurans



Total-pentafurans



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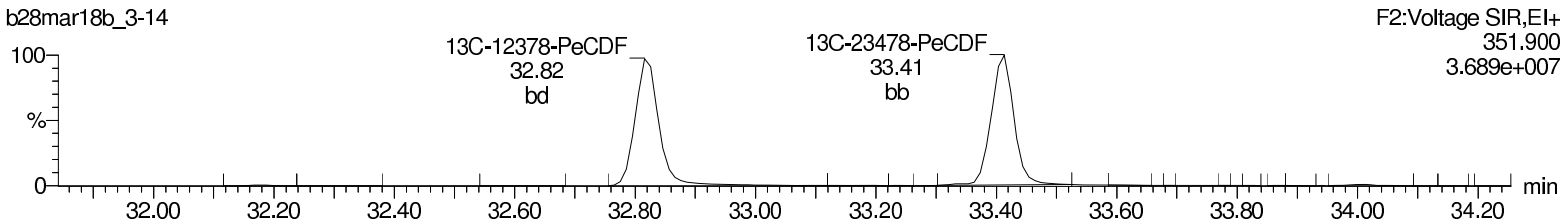

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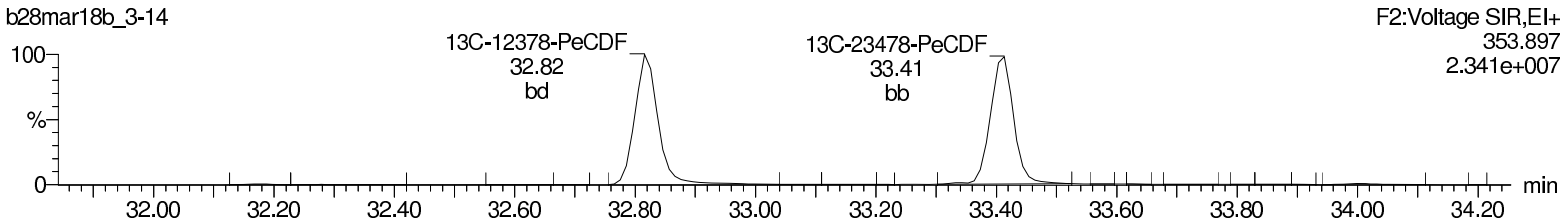

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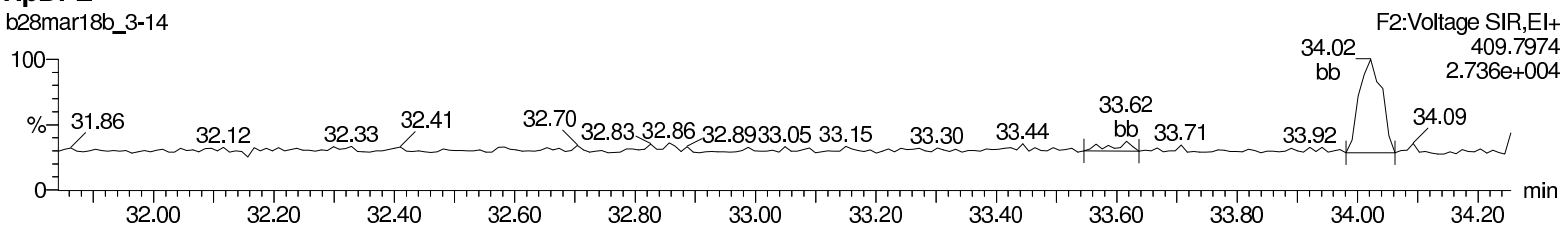

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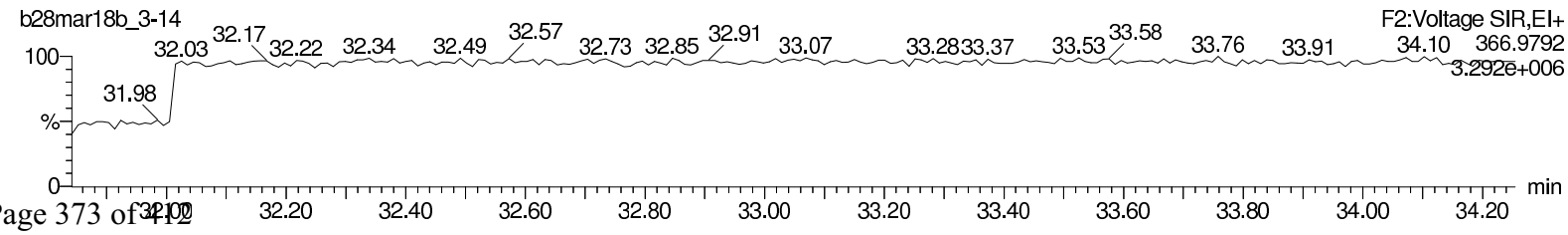

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
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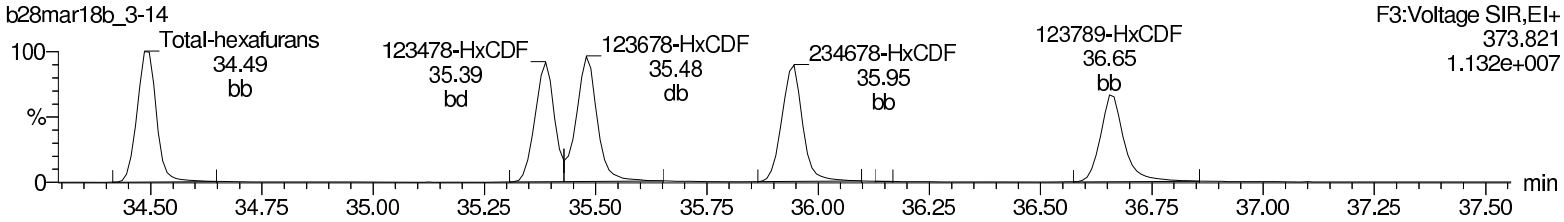
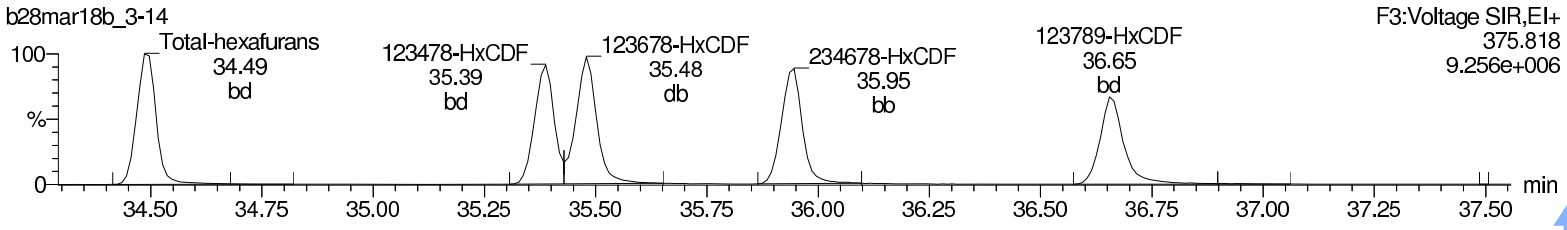
Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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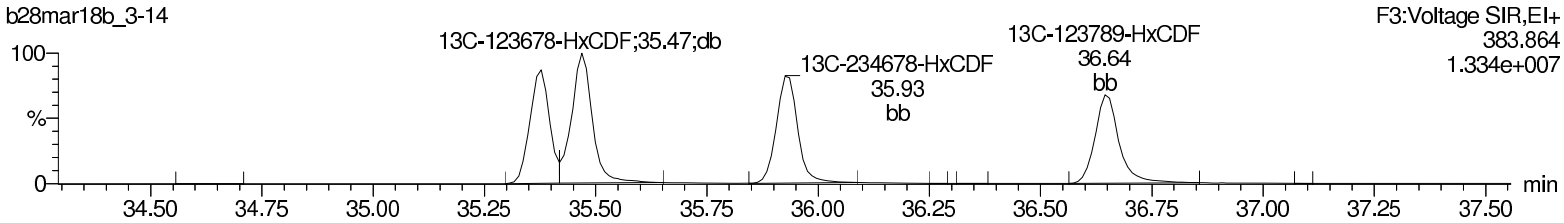

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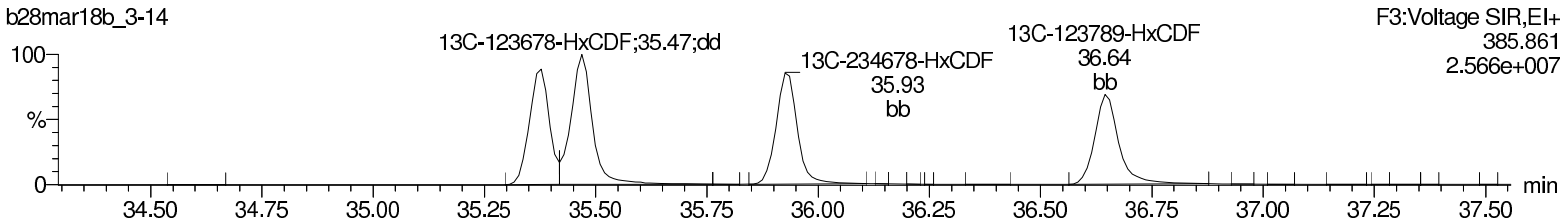

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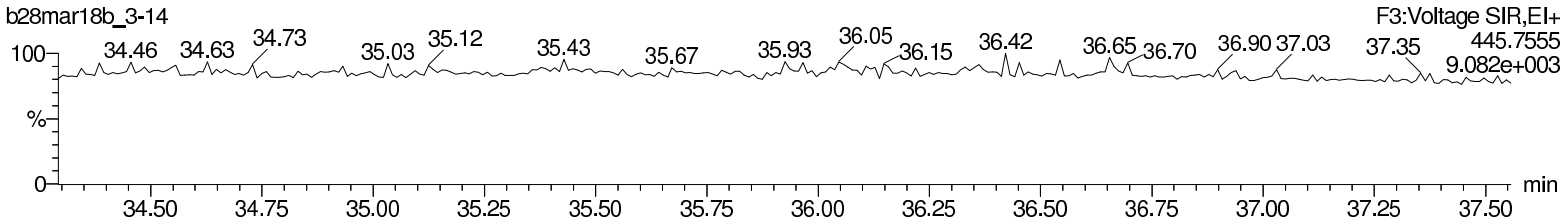

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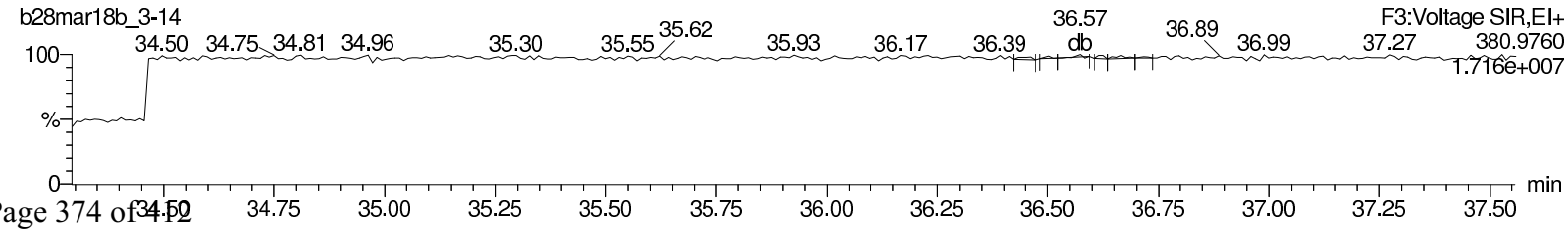

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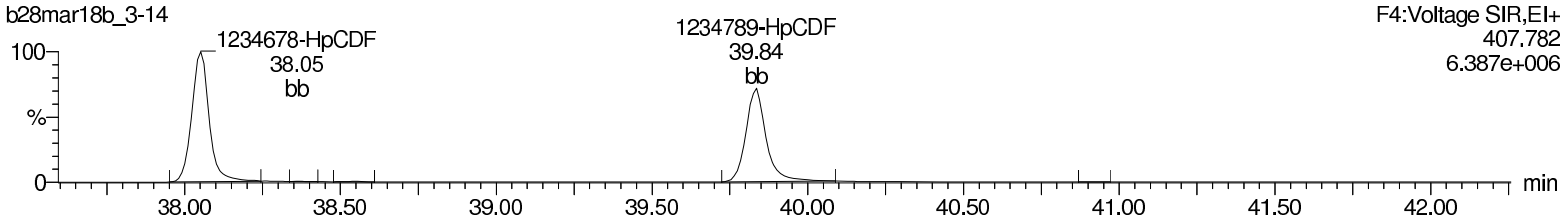
Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

Total-heptafurans



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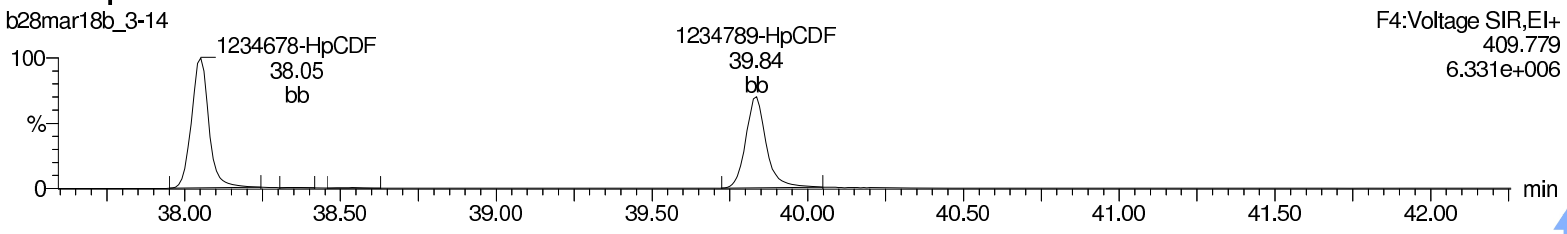

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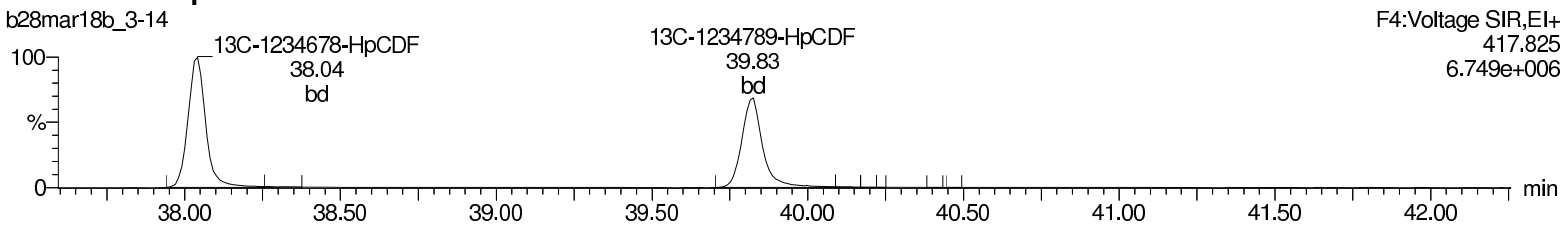

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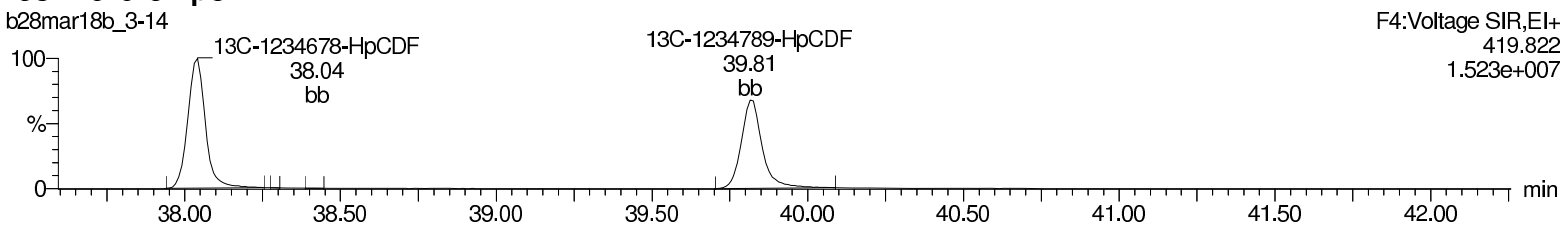

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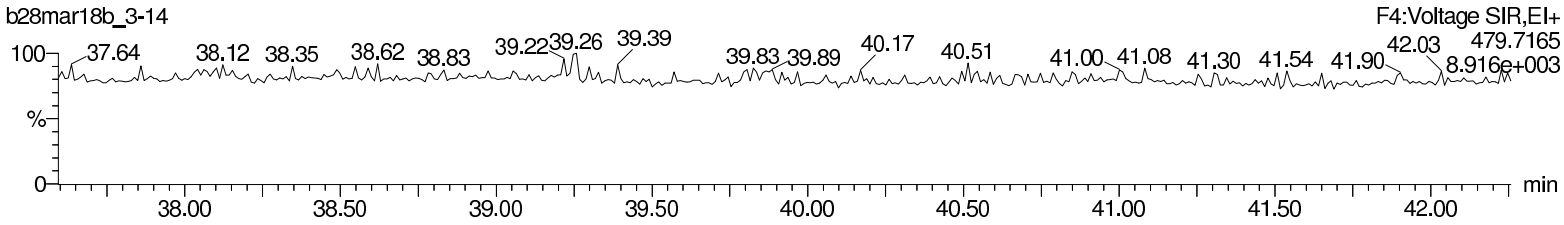

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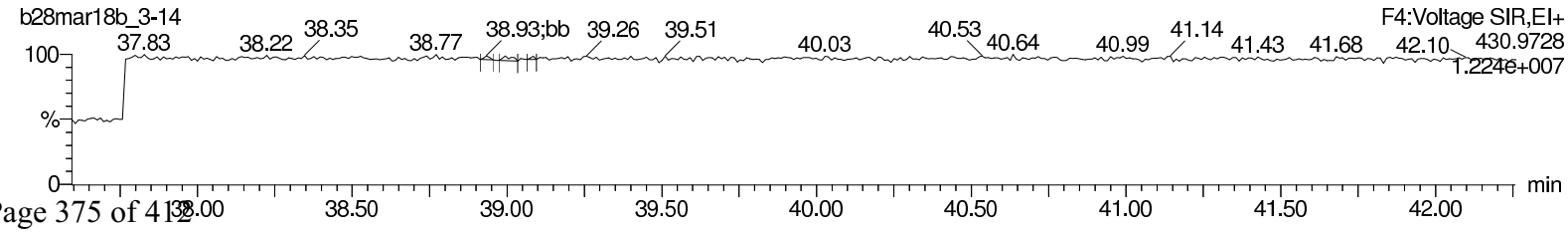

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Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
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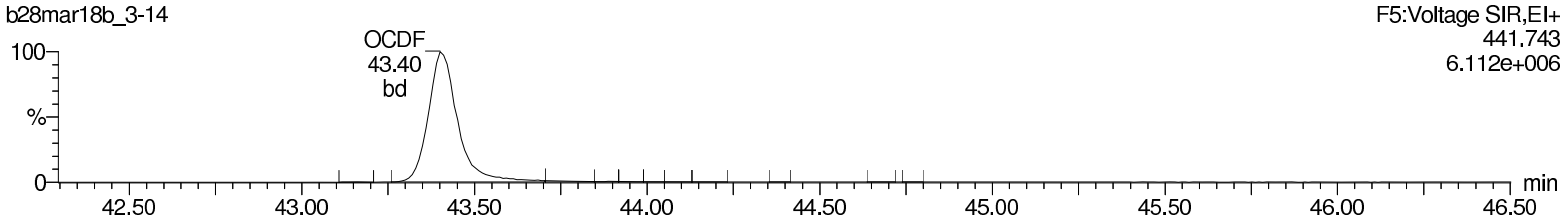
Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

OCDF



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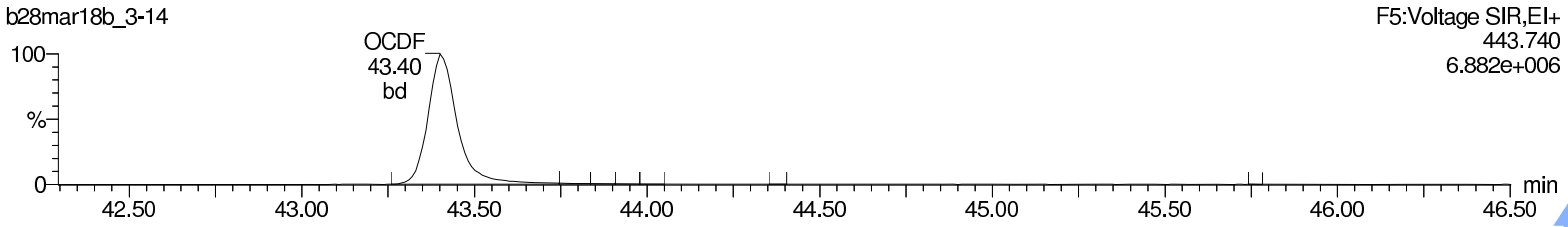

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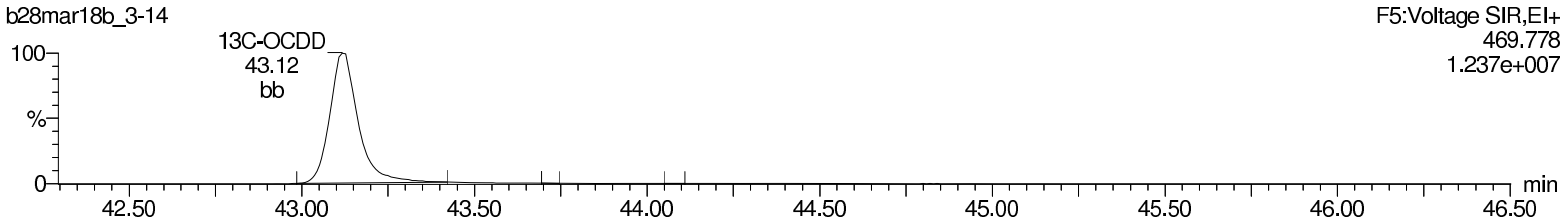

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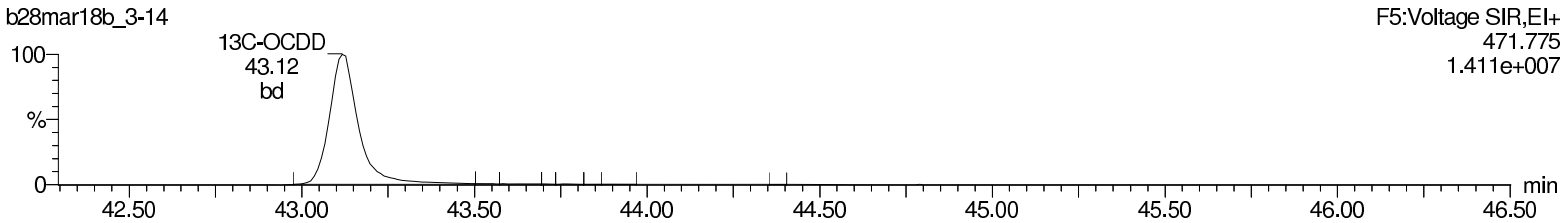
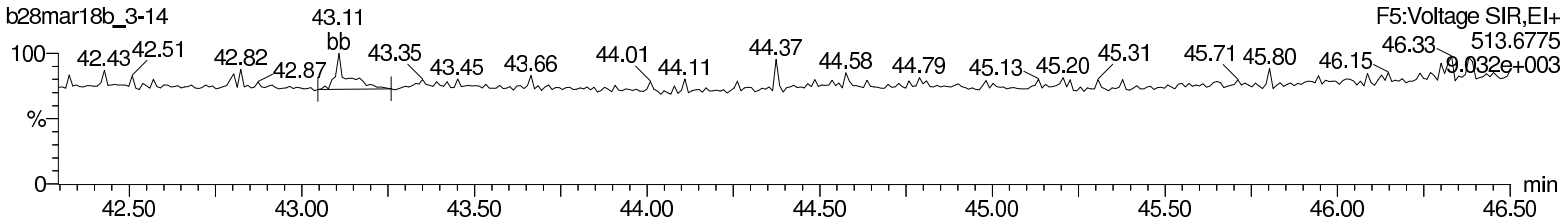


DeDPE



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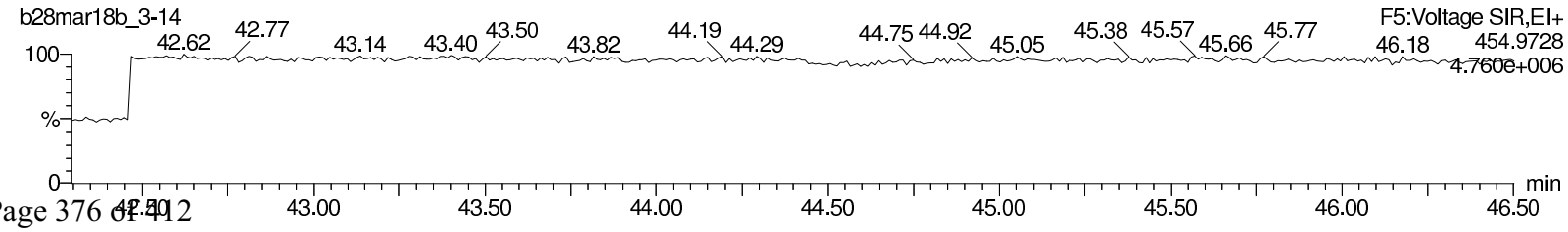

Instrument: HRP763_1

Name	Run Date	Analyst	Sample Information	Batch ID	Injection Volume	Ms Method	Tune Method
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b28mar18b_4-2	29-MAR-2018 22:03:36	Chris Presnell	12020983-1 LCSD		1 uL	dioxin_db5ms	10K
b28mar18b_4-3	29-MAR-2018 22:52:09	Chris Presnell	12020981-1 MB		1 uL	dioxin_db5ms	10K
b28mar18b_4-4	29-MAR-2018 23:40:43	Chris Presnell	13112001-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-5	30-MAR-2018 00:29:18	Chris Presnell	13112002-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-6	30-MAR-2018 01:17:51	Chris Presnell	13112003-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-7	30-MAR-2018 02:06:25	Chris Presnell	13112004-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-8	30-MAR-2018 02:54:58	Chris Presnell	13112005-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-9	30-MAR-2018 03:43:31	Chris Presnell	13112006-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-10	30-MAR-2018 04:32:06	Chris Presnell	13113001-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-11	30-MAR-2018 05:20:40	Chris Presnell	13113002-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-12	30-MAR-2018 06:09:14	Chris Presnell	13113003-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-13	30-MAR-2018 06:57:47	Chris Presnell	13113004-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-14	30-MAR-2018 07:46:22	Chris Presnell	CS3WT UD180115-01.2		1 uL	dioxin_db5ms	10K

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Resolution Check Report **MassLynx 4.1**

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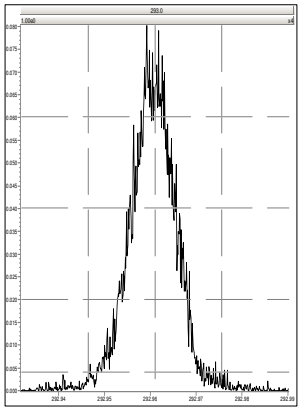
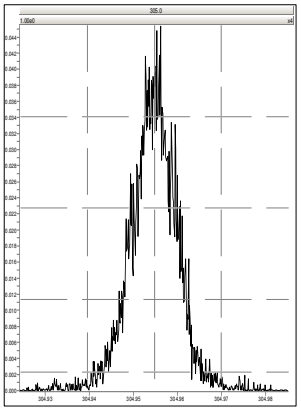
M 292.9824 R 12787



M 304.9824 R 15060



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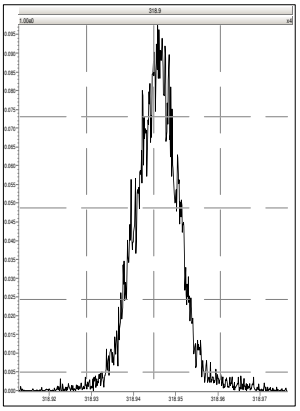

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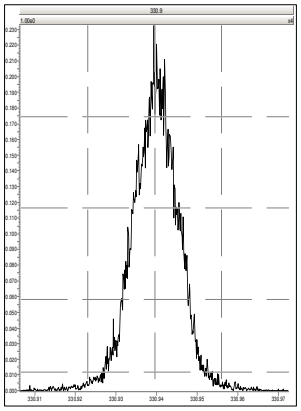

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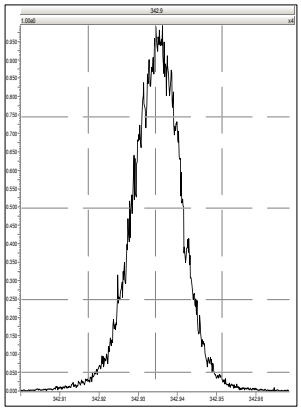

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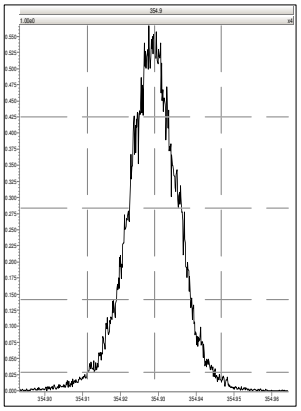

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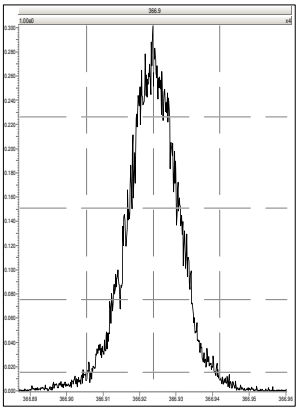

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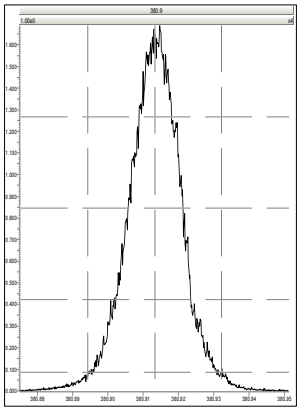

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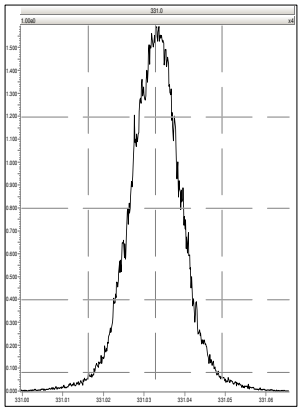

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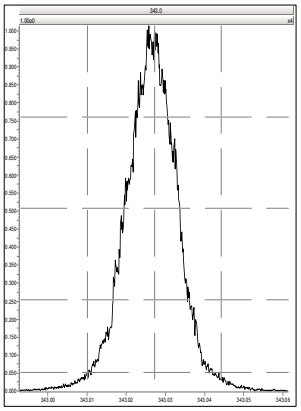
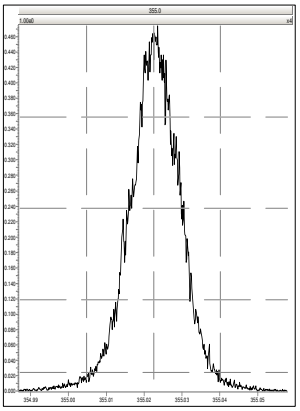
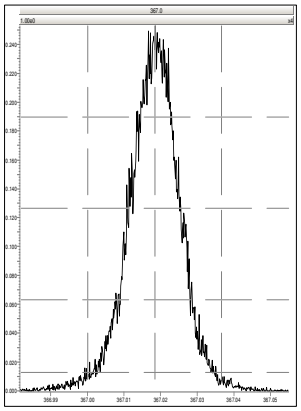


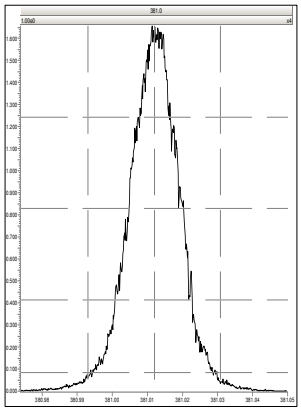
M 354.9792 R 11061



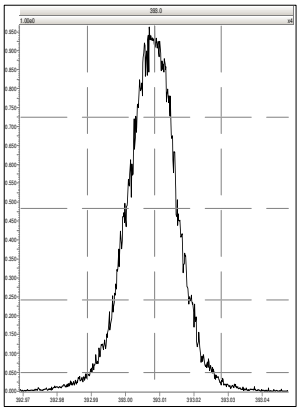
M 366.9792 R 11685



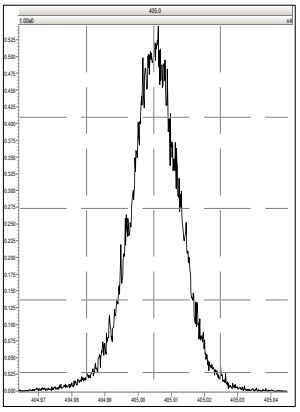
M 380.9760 R 11110



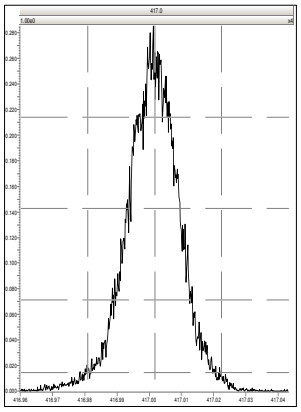
M 392.9760 R 10845



M 404.9760 R 10966



M 416.9760 R 10760



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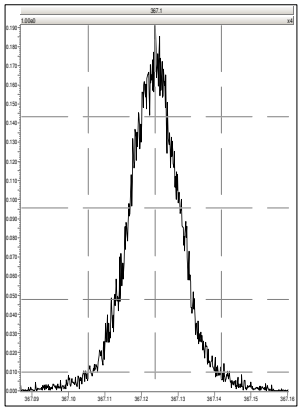
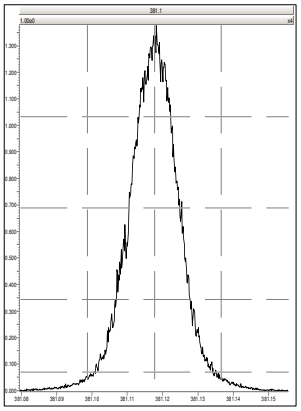
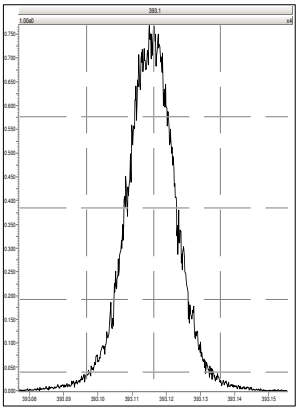
M 366.9792 R 10917



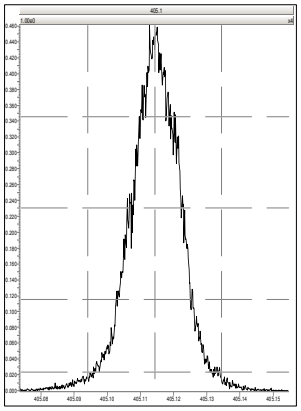
M 380.9760 R 11313



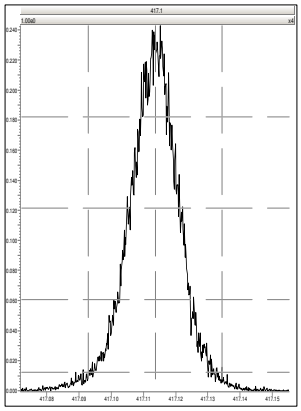
M 392.9760 R 11286



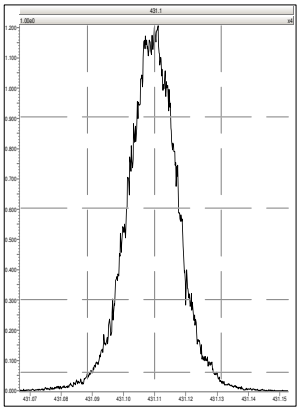
M 404.9760 R 11494



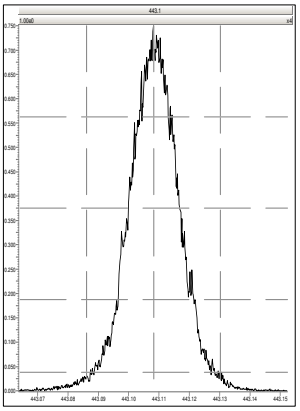
M 416.9760 R 11522



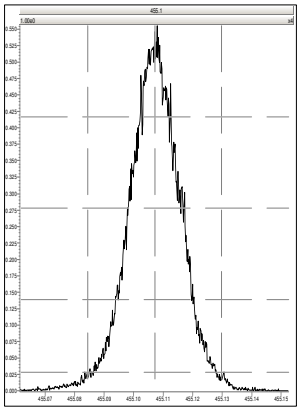
M 430.9728 R 11171



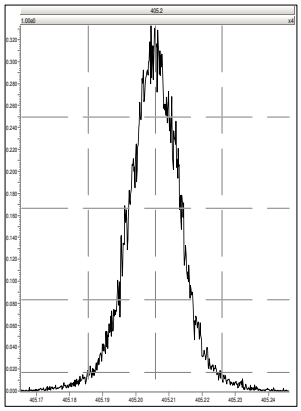
M 442.9728 R 11266



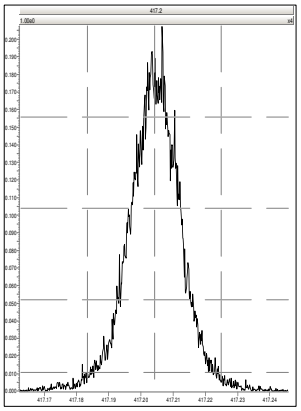
M 454.9728 R 10776



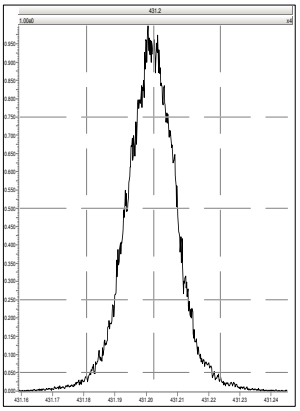
M 404.9760 R 11012



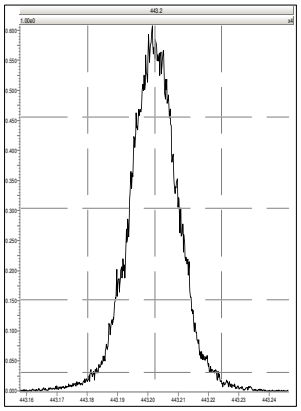
M 416.9760 R 11037



M 430.9728 R 11038



M 442.9728 R 11162



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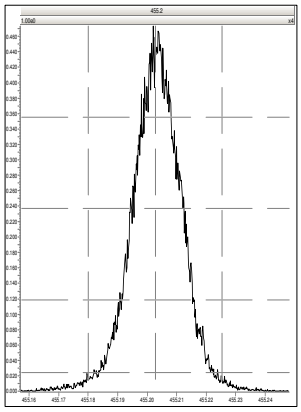
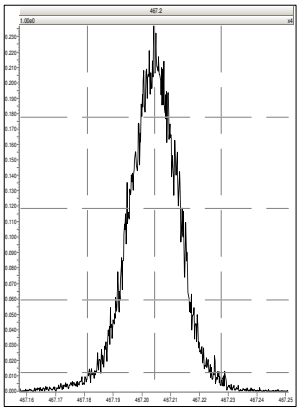
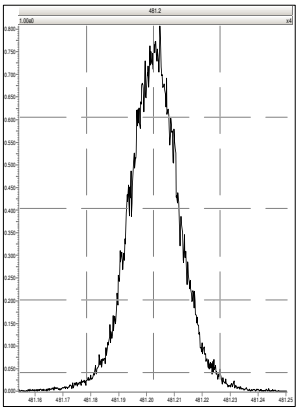


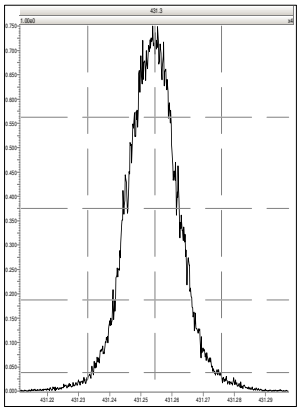
M 466.9728 R 11628



M 480.9696 R 11189



M 430.9728 R 10989



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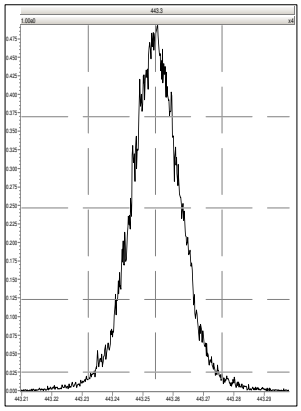
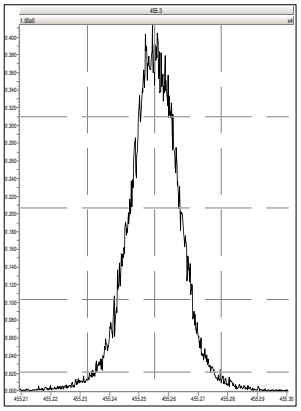
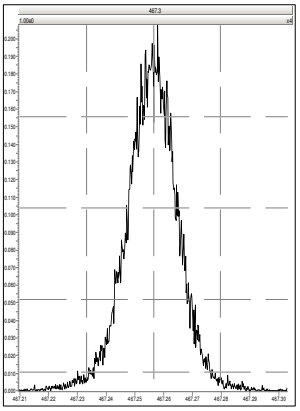
M 442.9728 R 11286



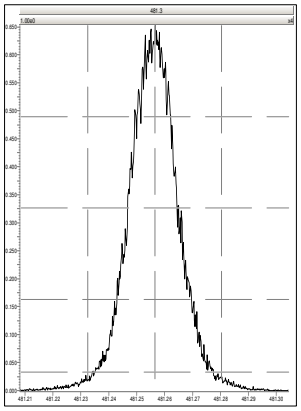
M 454.9728 R 11014



M 466.9728 R 11628



M 480.9696 R 11471



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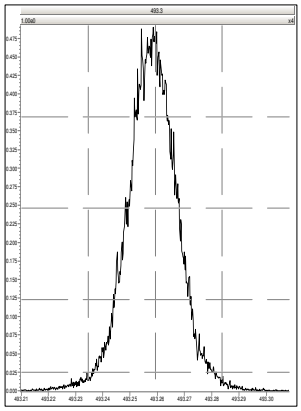
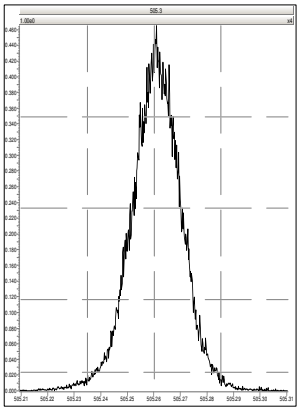
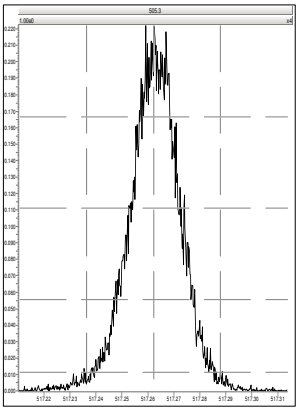


M 504.9696 R 11295



M 516.9697 R 11186



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Instrument: HRP763_1

Name	Run Date	Analyst	Sample Information	Batch ID	Injection Volume	Ms Method	Tune Method
b30mar18a-1	30-MAR-2018 09:34:39	Chris Presnell	CS3WT UD180115-01.2 CPSFX		1 uL	dioxin_db5ms	10K
b30mar18a-2	30-MAR-2018 10:22:23	Chris Presnell	SB		1 uL	dioxin_db5ms	10K
b30mar18a-3	30-MAR-2018 11:10:55	Chris Presnell	12020927-1 MB	37210	1 uL	dioxin_db5ms	10K
b30mar18a-4	30-MAR-2018 11:59:27	Chris Presnell	12020928-1 MB	37210	1 uL	dioxin_db5ms	10K
b30mar18a-5	30-MAR-2018 12:48:02	Chris Presnell	12019729-1 MB	35857	1 uL	dioxin_db5ms	10K
b30mar18a-6	30-MAR-2018 13:36:35	Chris Presnell	12020844-1 MB	37102	1 uL	dioxin_db5ms	10K
b30mar18a-7	30-MAR-2018 14:25:09	Chris Presnell	11440001-1	37210	1 uL	dioxin_db5ms	10K
b30mar18a-8	30-MAR-2018 15:13:43	Chris Presnell	11440002-1	37210	1 uL	dioxin_db5ms	10K
b30mar18a-9	30-MAR-2018 16:02:16	Chris Presnell	11441001-4	37102	1 uL	dioxin_db5ms	10K
b30mar18a-10	30-MAR-2018 16:50:50	Chris Presnell	11443001-3	35857	1 uL	dioxin_db5ms	10K
b30mar18a-11	30-MAR-2018 17:39:25	Chris Presnell	CS3WT UD180115-01.2 CPSFY		1 uL	dioxin_db5ms	10K

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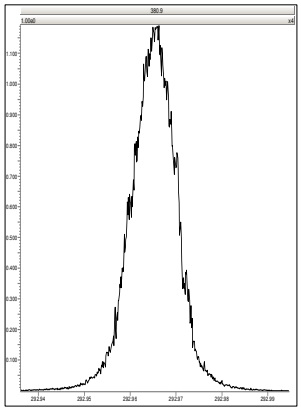
Experiment Calibration Report **MassLynx 4.1**

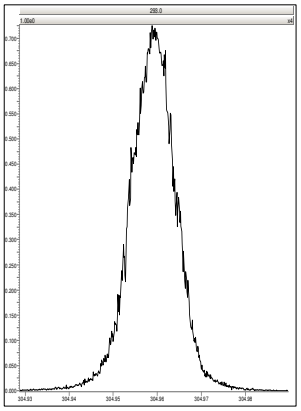
File: Experiment: dioxin_db5ms.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Friday, March 30, 2018 09:32:30 Eastern Standard Time

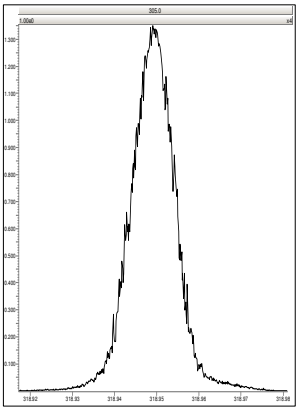
M 292.9824 R 12562



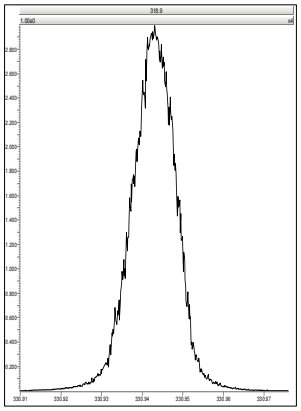
M 304.9824 R 12817



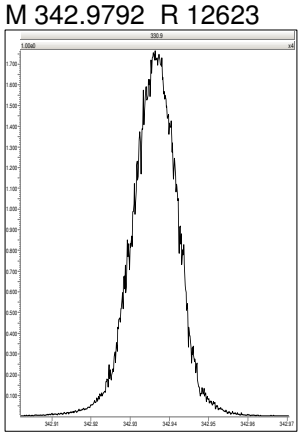
M 318.9792 R 13515



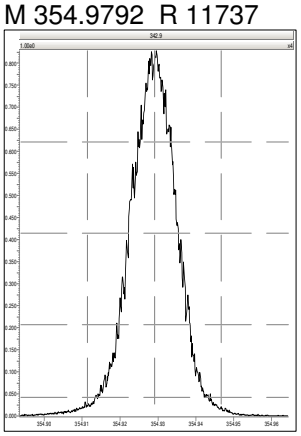
M 330.9792 R 13297



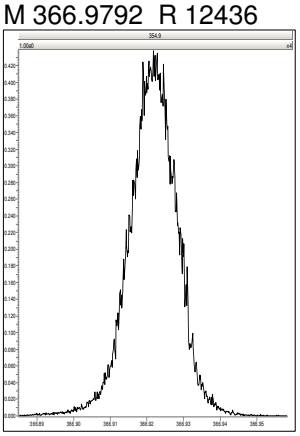
M 342.9792 R 12623



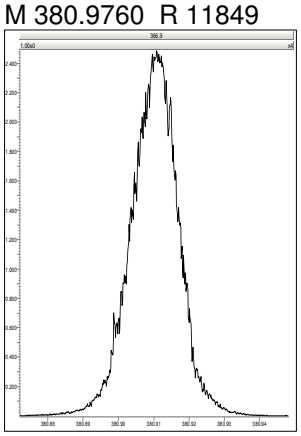
M 354.9792 R 11737



M 366.9792 R 12436



M 380.9760 R 11849



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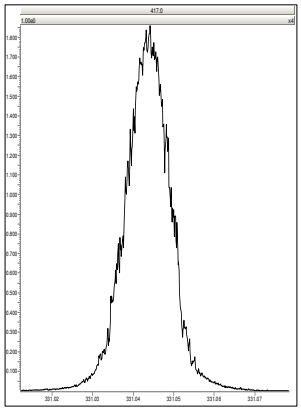
Experiment Calibration Report **MassLynx 4.1**

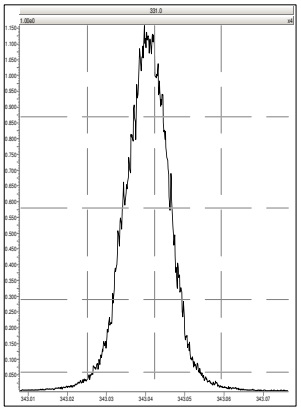
File: Experiment: dioxin_db5ms.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

Printed: Friday, March 30, 2018 09:32:48 Eastern Standard Time

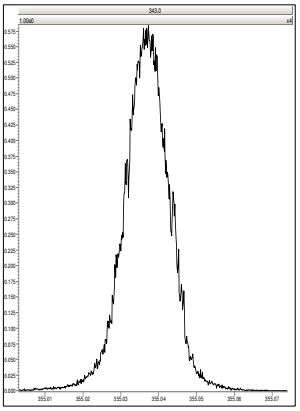
M 330.9792 R 12560



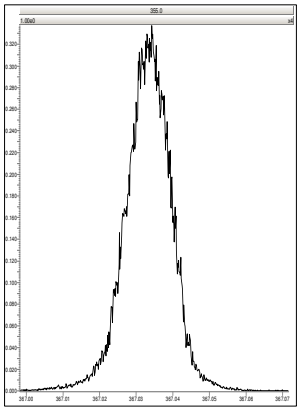
M 342.9792 R 12500



M 354.9792 R 12689



M 366.9792 R 12757



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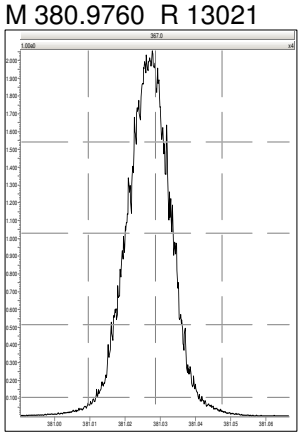
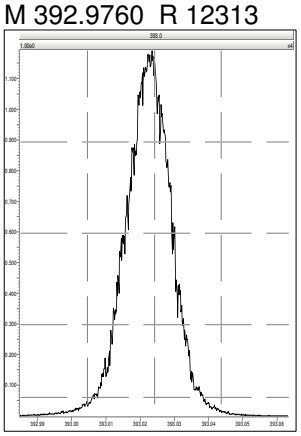
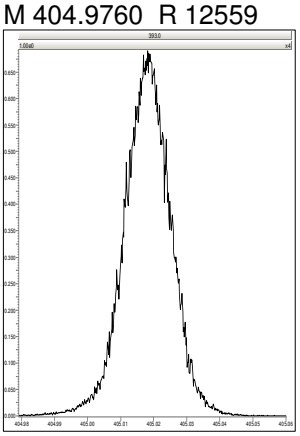


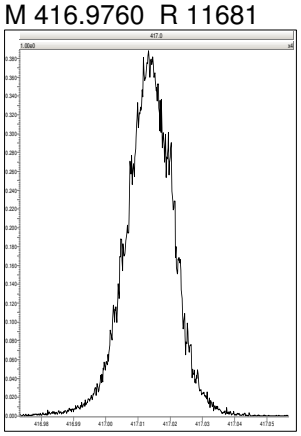
M 392.9760 R 12313



M 404.9760 R 12559



M 416.9760 R 11681



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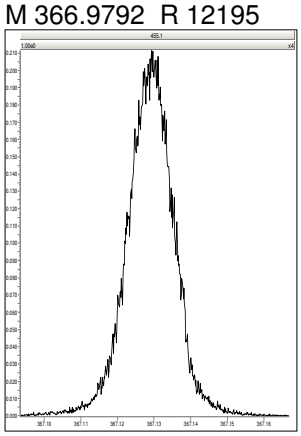
Experiment Calibration Report **MassLynx 4.1**

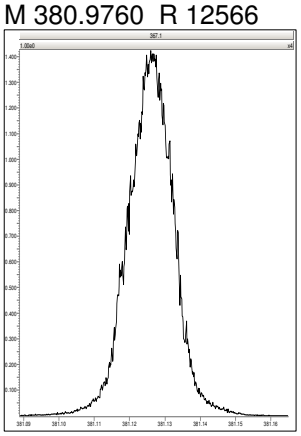
File: Experiment: dioxin_db5ms.exp Reference: Pfk.ref Function: 3 @ 200 (ppm)

Printed: Friday, March 30, 2018 09:33:15 Eastern Standard Time

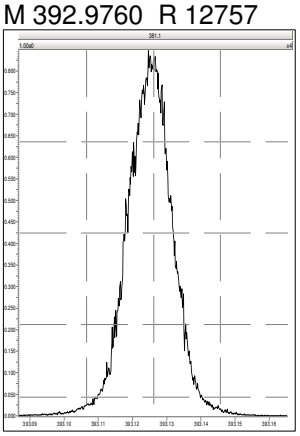
M 366.9792 R 12195



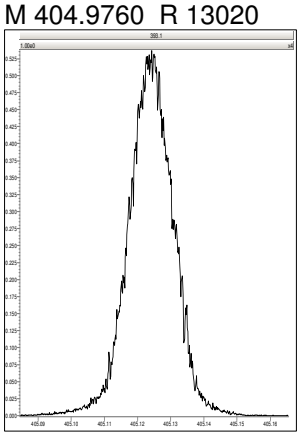
M 380.9760 R 12566



M 392.9760 R 12757



M 404.9760 R 13020



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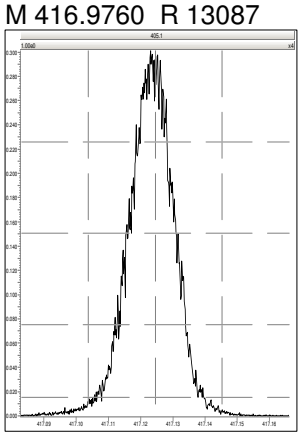

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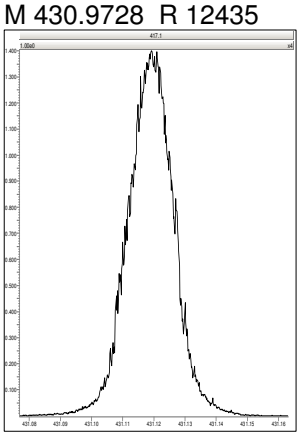
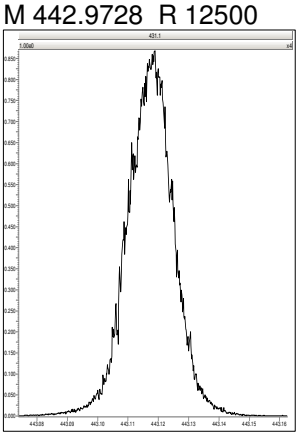
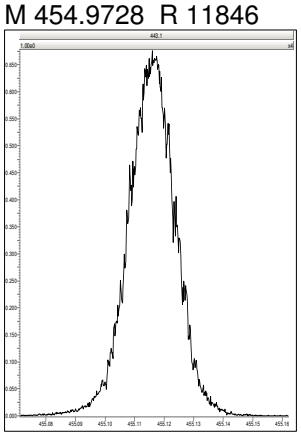


M 442.9728 R 12500



M 454.9728 R 11846



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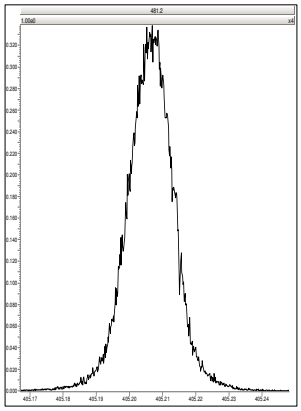
Experiment Calibration Report **MassLynx 4.1**

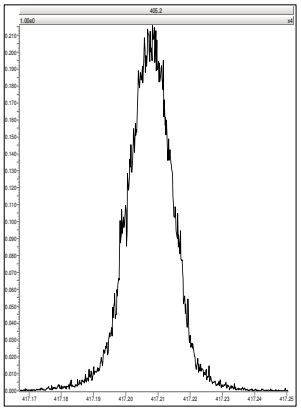
File: Experiment: dioxin_db5ms.exp Reference: Pfk.ref Function: 4 @ 200 (ppm)

Printed: Friday, March 30, 2018 09:33:36 Eastern Standard Time

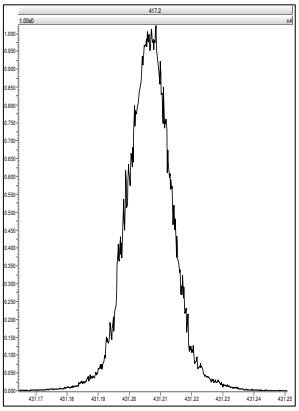
M 404.9760 R 12075



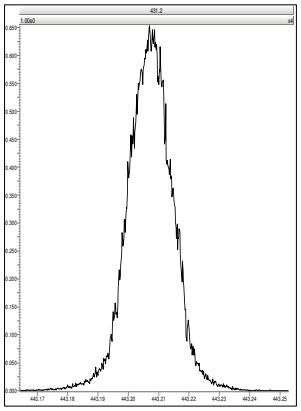
M 416.9760 R 12316



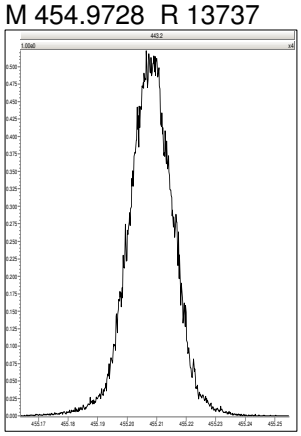
M 430.9728 R 12690



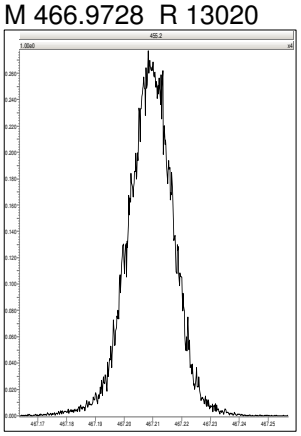
M 442.9728 R 12823



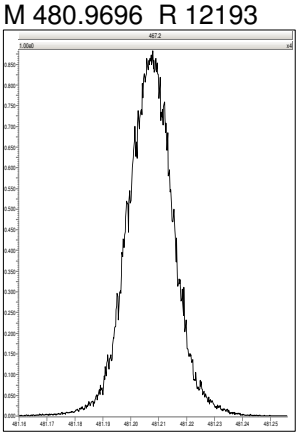
M 454.9728 R 13737



M 466.9728 R 13020



M 480.9696 R 12193



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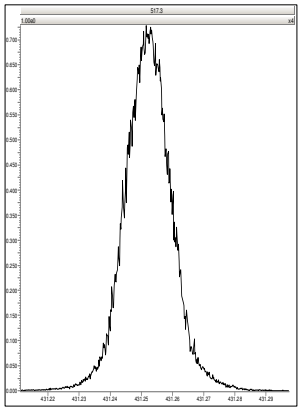
Experiment Calibration Report **MassLynx 4.1**

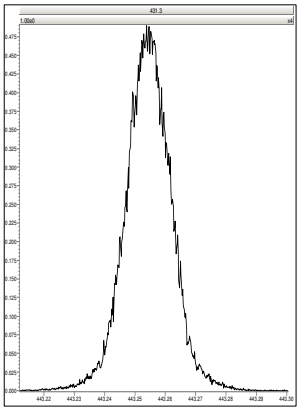
File: Experiment: dioxin_db5ms.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

Printed: Friday, March 30, 2018 09:33:57 Eastern Standard Time

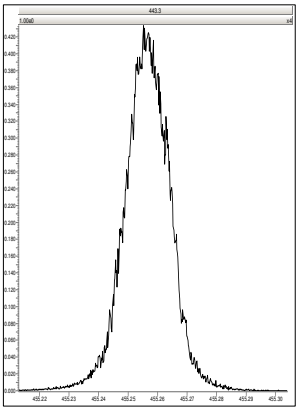
M 430.9728 R 11628



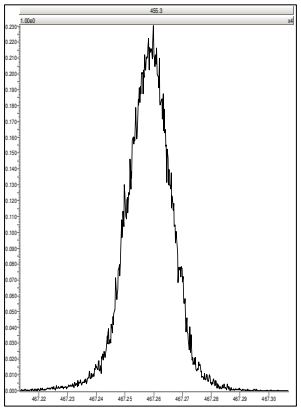
M 442.9728 R 12198



M 454.9728 R 12436



M 466.9728 R 12496



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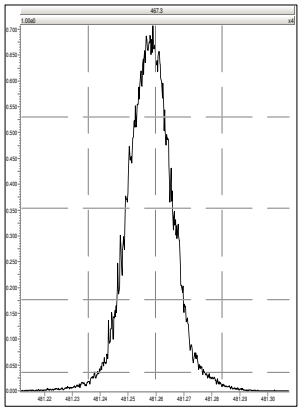
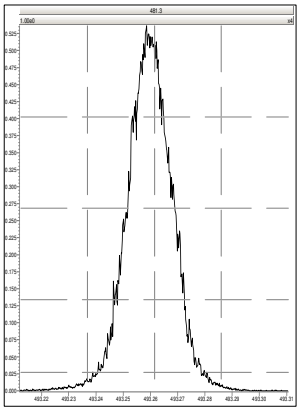
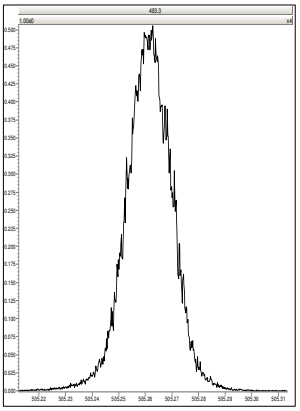


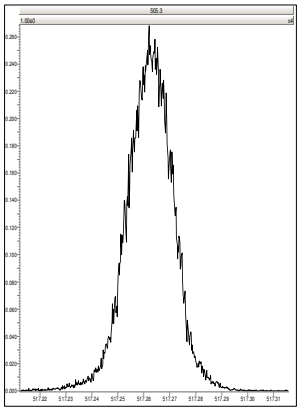
M 492.9696 R 12885



M 504.9696 R 12627



M 516.9697 R 12254



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Resolution Check Report **MassLynx 4.1**

Printed: Friday, March 30, 2018 18:36:05 Eastern Standard Time

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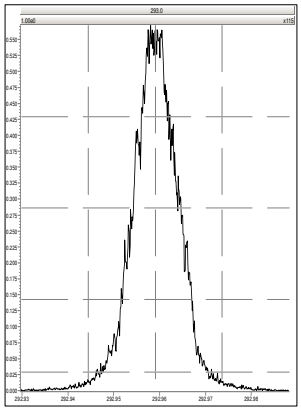
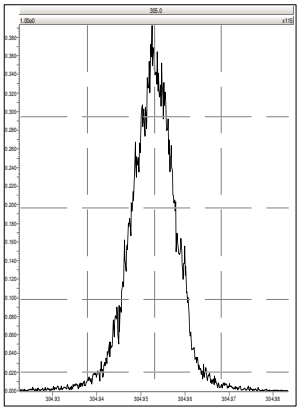


M 304.9824 R 13278



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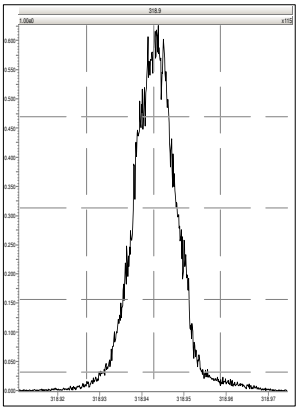

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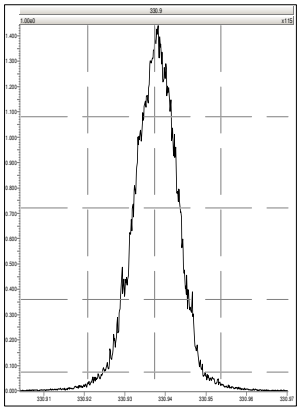

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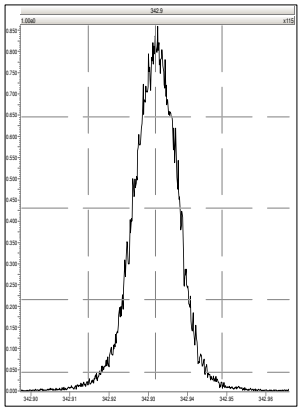
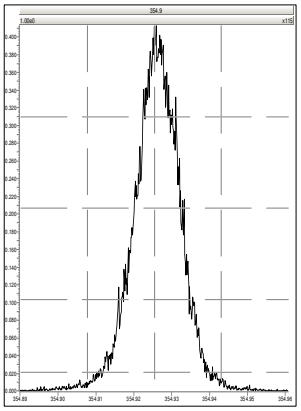
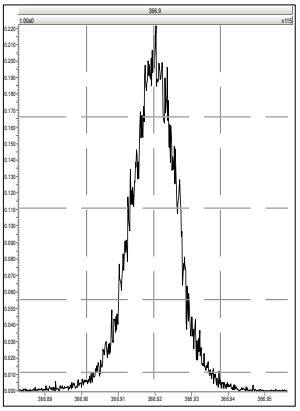


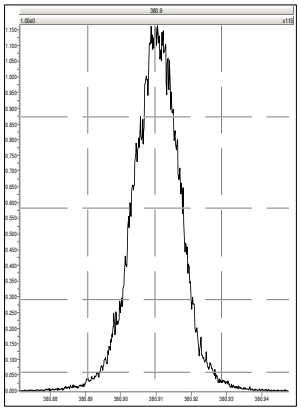
M 354.9792 R 12757



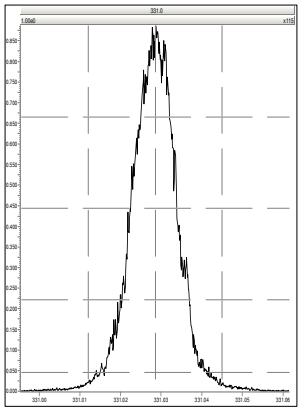
M 366.9792 R 12315



M 380.9760 R 11879



M 330.9792 R 12728



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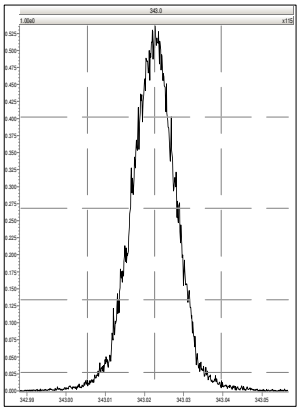

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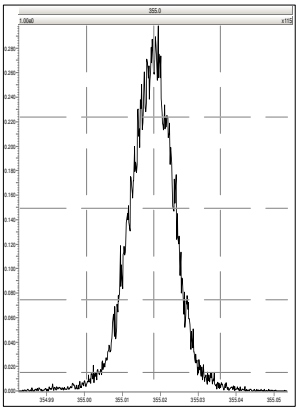

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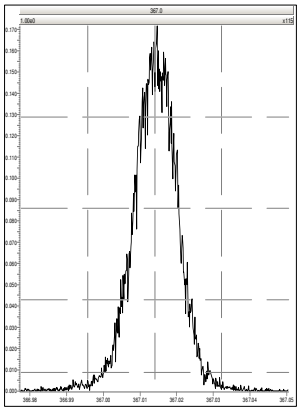

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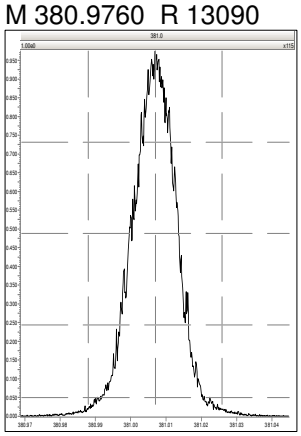

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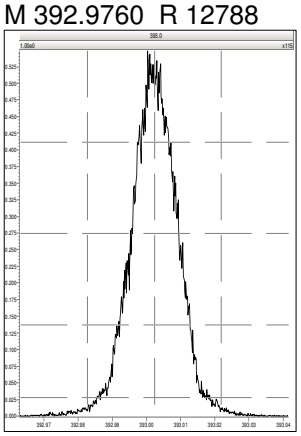
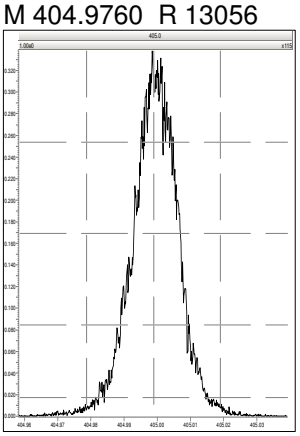
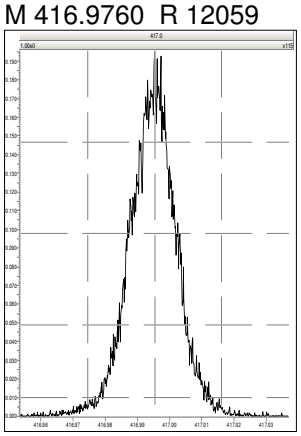


M 404.9760 R 13056



M 416.9760 R 12059



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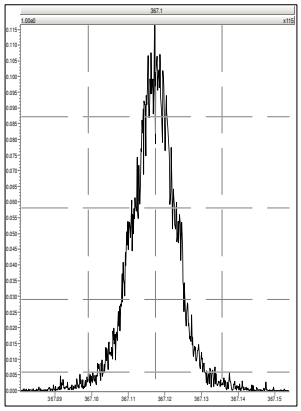
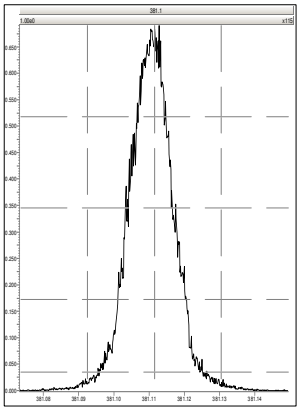
M 366.9792 R 12887



M 380.9760 R 13090



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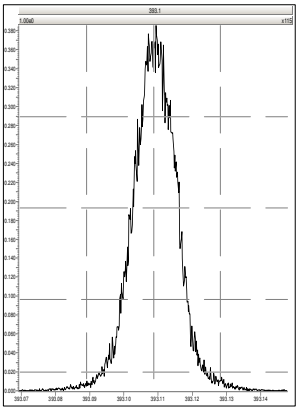

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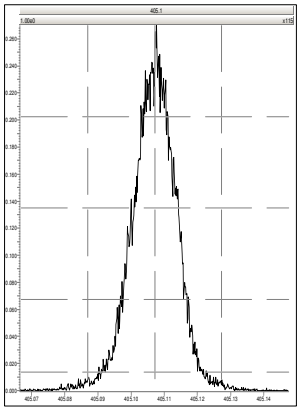

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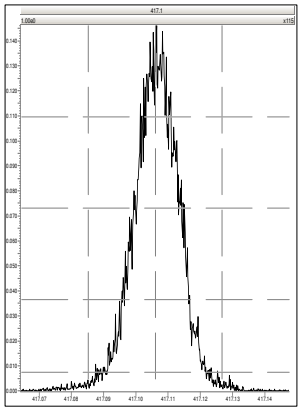
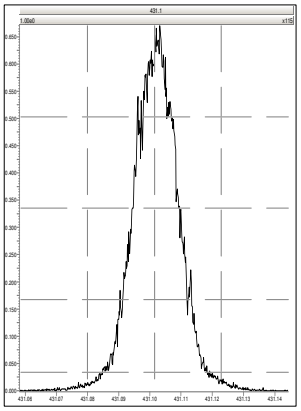


M 430.9728 R 12954



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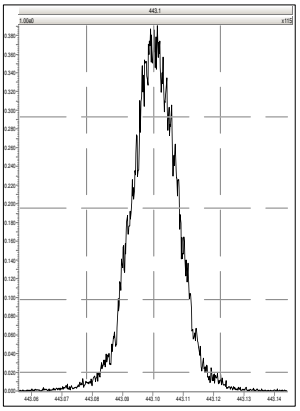

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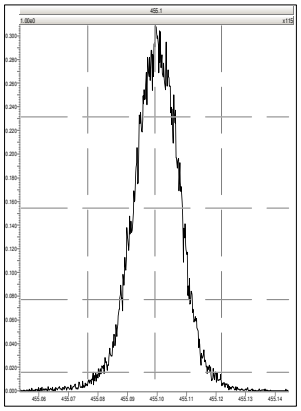

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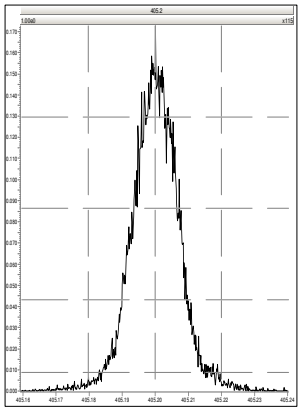

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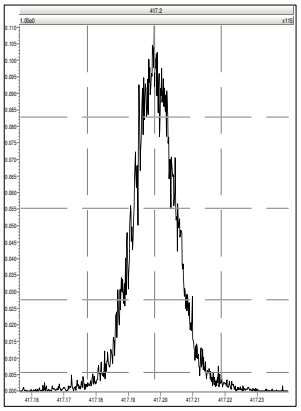

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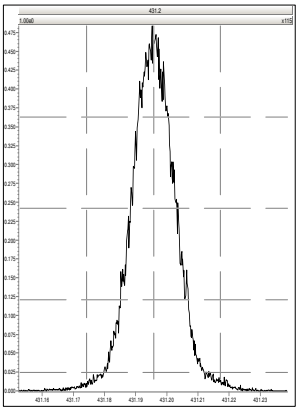

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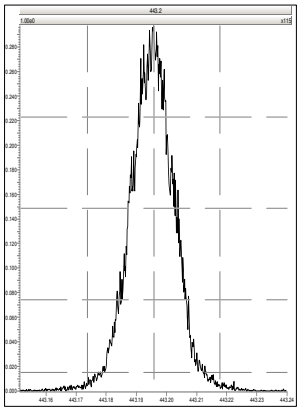

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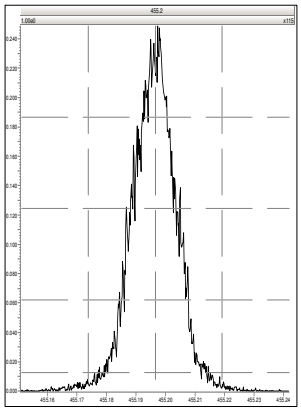

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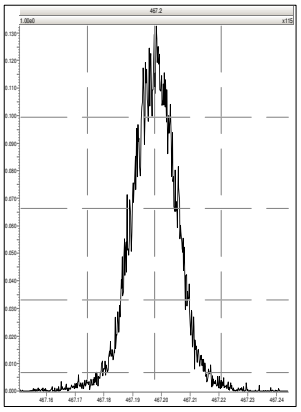
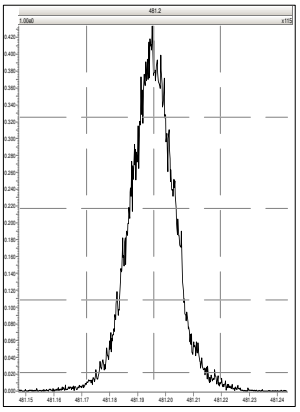


M 480.9696 R 12756



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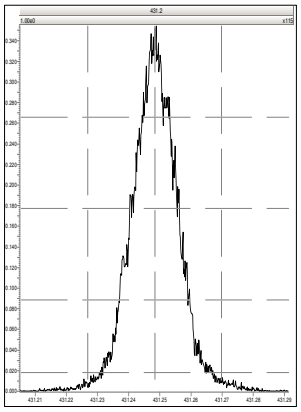

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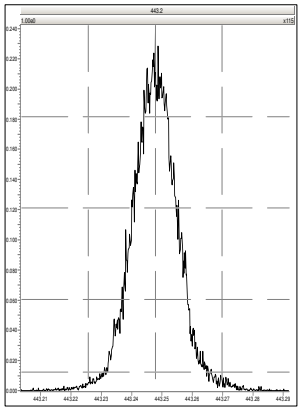
M 442.9728 R 13061



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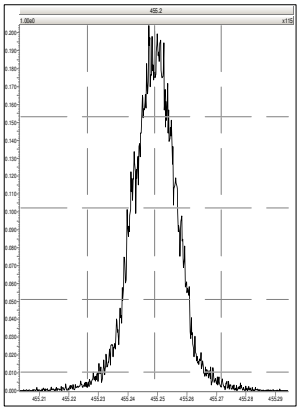

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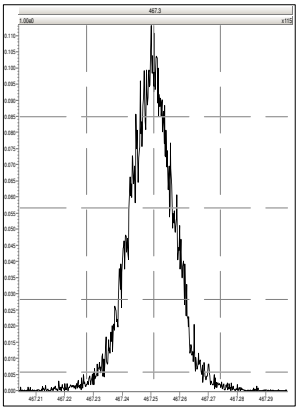

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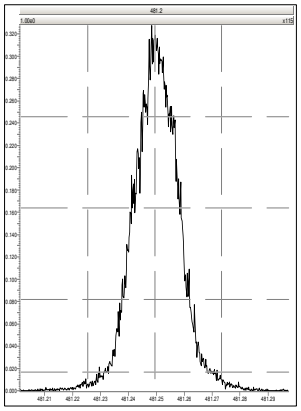

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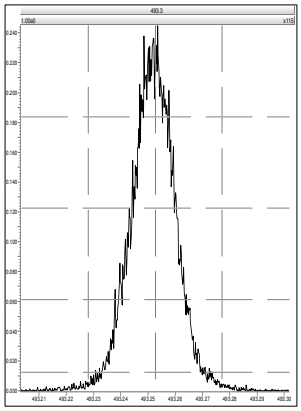
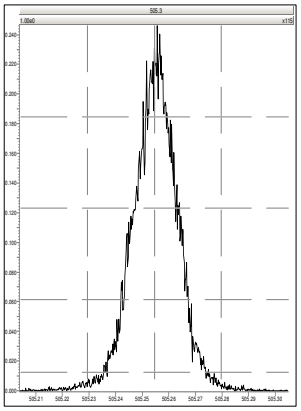
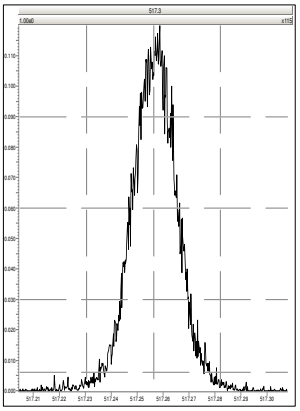


M 504.9696 R 13736



M 516.9697 R 13130



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Quantify Sample Summary Report **MassLynx 4.1**
Method Window Defining Report

Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 08:32:18 Eastern Standard Time
Printed: Monday, April 02, 2018 08:32:58 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\WDM_b22mar18.mdb 23 Mar 2018 09:35:02
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

	Name	RT
1	First TCDF	25.19
2	Last TCDF	31.35
3	First PeCDF	31.33
4	Last PeCDF	34.02
5	First HxCDF	34.51
6	Last HxCDF	36.68
7	First HpCDF	38.06
8	Last HpCDF	39.85
9	OCDF	43.42
10	First TCDD	26.90
11	2378-TCDD	30.40
12	Last TCDD	31.25
13	First PeCDD	32.33
14	Last PeCDD	33.86
15	First HxCDD	34.90
16	Last HxCDD	36.38
17	First HpCDD	38.37
18	Last HpCDD	39.23
19	OCDD	43.15

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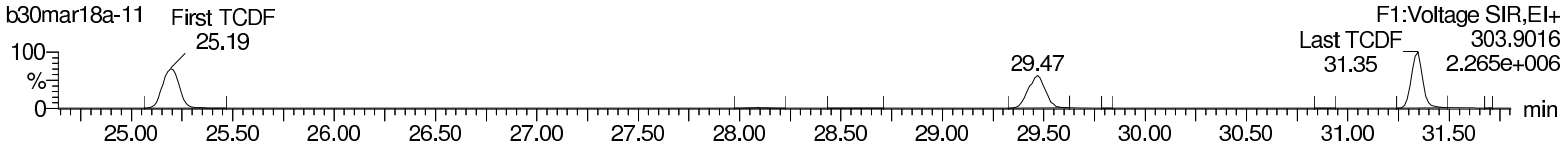
Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 08:32:18 Eastern Standard Time
Printed: Monday, April 02, 2018 08:32:58 Eastern Standard Time

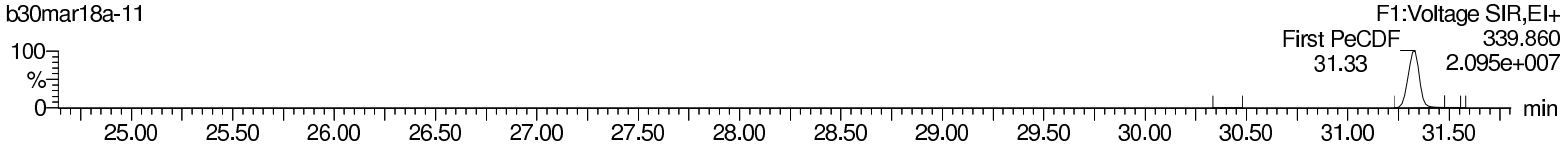
Method: C:\MassLynxBackUp\Default.pro\Methdb\WDM_b22mar18.mdb 23 Mar 2018 09:35:02
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

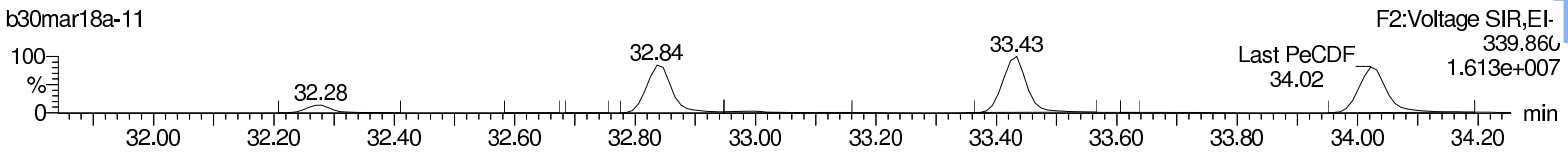
First TCDF



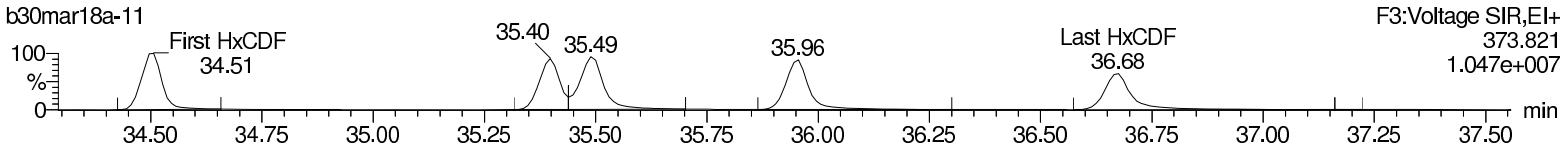
First PeCDF



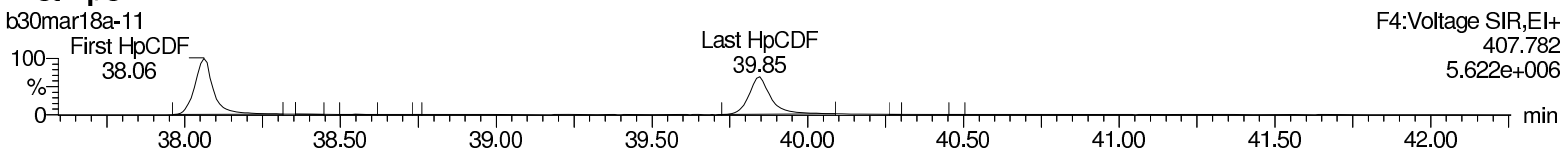
Last PeCDF



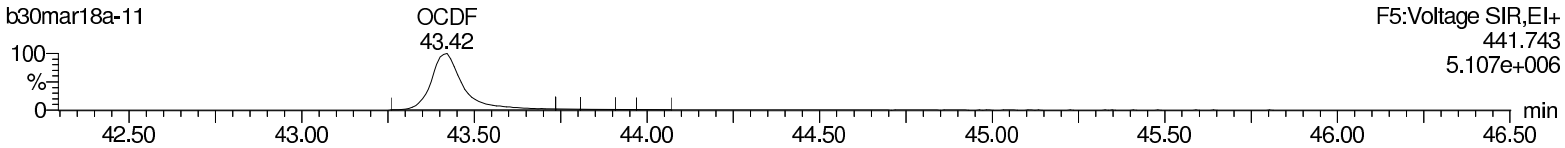
First HxCDF



First HpCDF



OCDF



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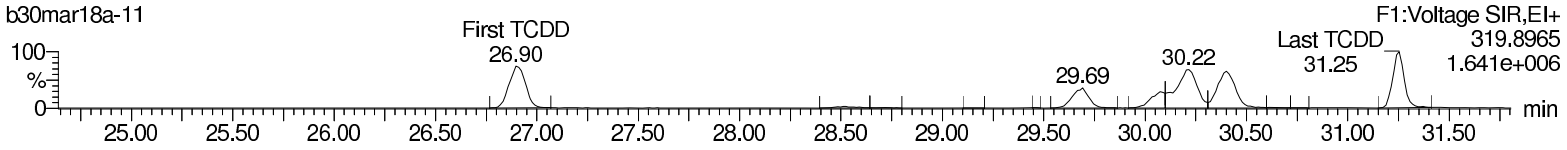
Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 08:32:18 Eastern Standard Time
Printed: Monday, April 02, 2018 08:32:58 Eastern Standard Time

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

First TCDD



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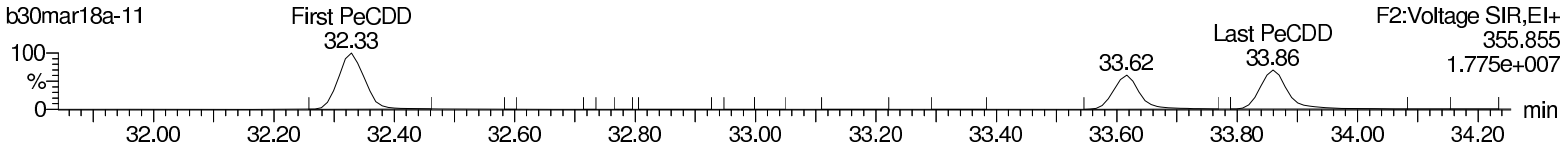

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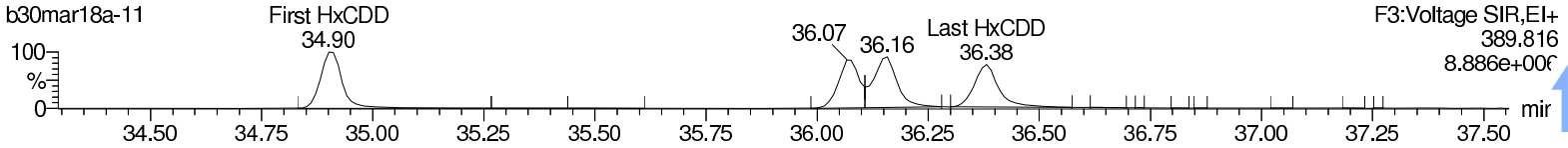
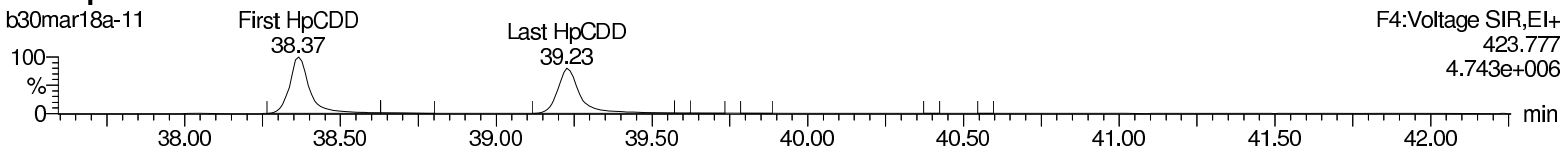
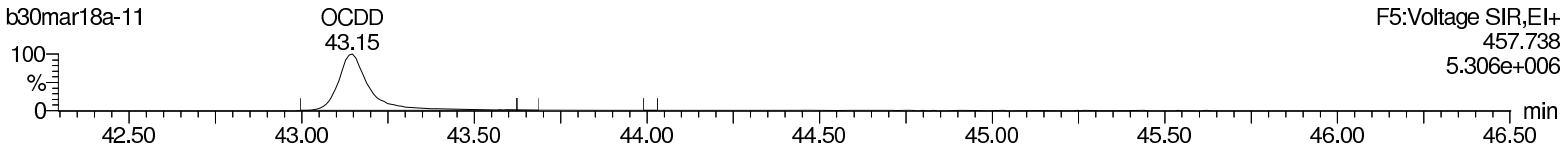


First HpCDD



OCDD



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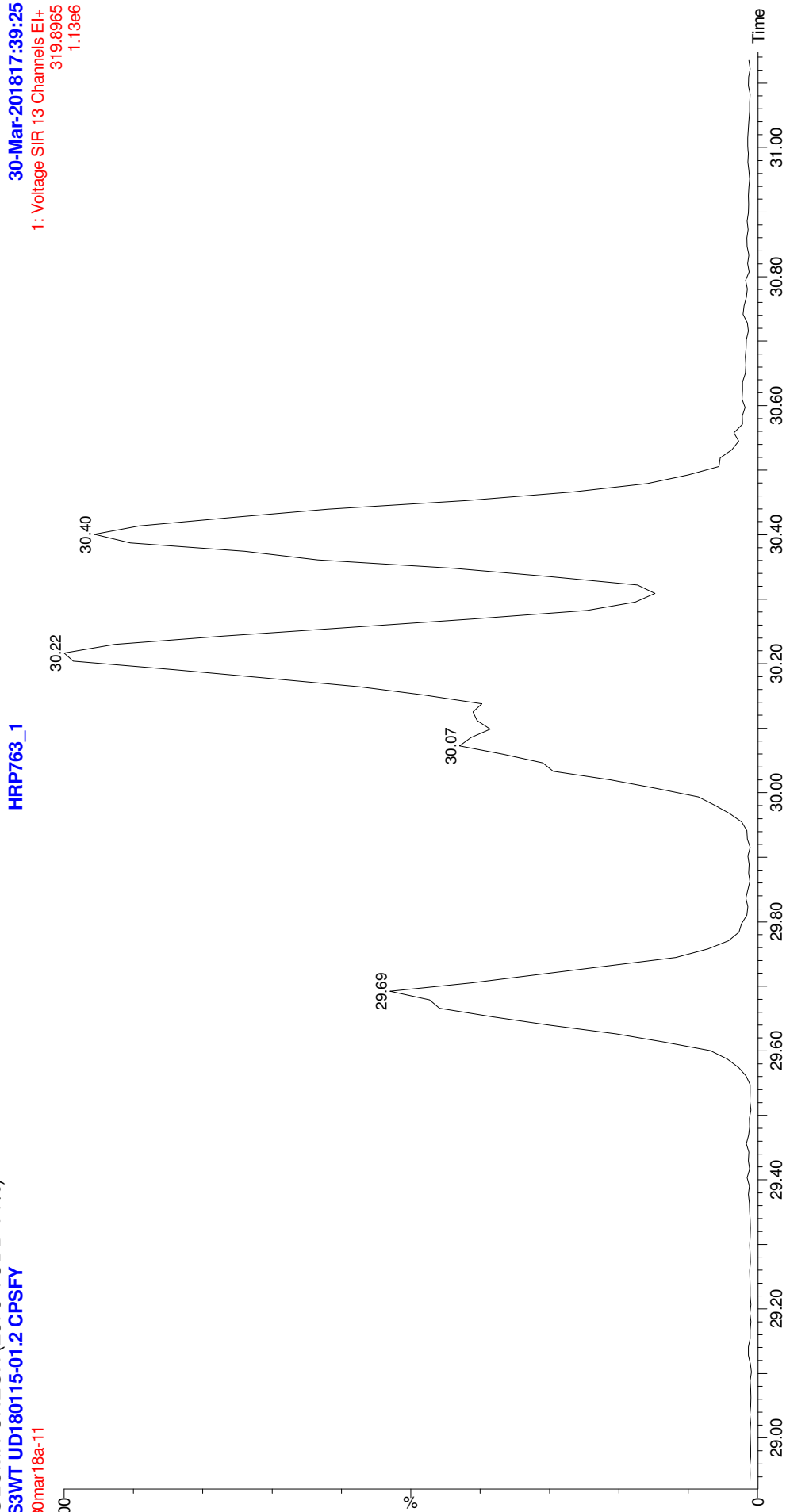

COLUMN CHECK (2378-TCDD 14%)
CS3WT UD180115-01.2 CPSFY
b30mar18a-11

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
Printed: Monday, April 02, 2018 09:06:41 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	1.10e5	1.41e5	2.51e5	30.40	1.001	0.78	NO	10.397	0.0560	0.926	0.891	4.0	1.07e6	3032	352.6	1.32e6	2155	611.6	dd	dd
2	12378-PeCDD	5.32e5	3.43e5	8.75e5	33.62	1.000	1.55	NO	54.950	0.122	0.867	0.789	9.9	1.08e7	9349	1152.0	6.84e6	5884	1163.0	bb	bb
3	123478-HxCDD	4.04e5	3.32e5	7.36e5	36.07	1.000	1.22	NO	53.892	0.134	0.903	0.838	7.8	7.54e6	6150	1226.4	6.20e6	7327	846.0	bd	bd
4	123678-HxCDD	4.88e5	4.13e5	9.01e5	36.16	1.000	1.18	NO	53.010	0.130	0.891	0.840	6.0	7.98e6	6150	1297.2	6.40e6	7327	874.2	db	dd
5	123789-HxCDD	4.25e5	3.91e5	8.16e5	36.38	1.006	1.09	NO	54.893	0.136	0.894	0.814	9.8	6.71e6	6150	1090.9	5.50e6	7327	750.1	bb	dd
6	1234678-HpCDD	3.14e5	2.99e5	6.12e5	39.23	1.000	1.05	NO	45.574	0.172	0.914	1.003	-8.9	3.77e6	5941	633.8	3.69e6	5328	691.7	bd	bb
7	OCDD	5.58e5	6.23e5	1.18e6	43.15	1.000	0.90	NO	101.170	0.222	0.921	0.910	1.2	5.28e6	4877	1083.4	6.06e6	4839	1251.5	bd	bd
8	2378-TCDF	1.27e5	1.68e5	2.95e5	29.47	1.000	0.76	NO	9.205	0.0489	0.848	0.921	-7.9	1.31e6	2729	479.5	1.69e6	3180	531.1	bb	bb
9	12378-PeCDF	6.65e5	4.35e5	1.10e6	32.84	1.000	1.53	NO	46.991	0.0856	0.773	0.822	-6.0	1.36e7	6517	2092.1	9.12e6	8950	1018.8	bd	bd
10	23478-PeCDF	7.42e5	4.88e5	1.23e6	33.43	1.000	1.52	NO	47.475	0.0709	0.880	0.926	-5.0	1.60e7	6517	2461.3	1.03e7	8950	1150.0	bb	bb
11	123478-HxCDF	4.94e5	4.11e5	9.05e5	35.40	1.000	1.20	NO	51.874	0.151	1.036	0.998	3.7	9.45e6	10624	889.7	7.93e6	9384	844.6	bd	bd
12	123678-HxCDF	6.05e5	5.11e5	1.12e6	35.49	1.000	1.18	NO	51.521	0.147	0.962	0.934	3.0	9.80e6	10624	922.7	8.19e6	9384	873.2	db	db
13	234678-HxCDF	5.52e5	4.41e5	9.94e5	35.96	1.000	1.25	NO	51.287	0.160	1.059	1.033	2.6	9.21e6	10624	866.5	7.53e6	9384	802.3	bb	bb
14	123789-HxCDF	4.75e5	3.84e5	8.59e5	36.68	1.000	1.24	NO	53.298	0.220	1.016	0.953	6.6	6.71e6	10624	631.7	5.46e6	9384	582.2	bd	bb
15	1234678-HpCDF	3.85e5	3.92e5	7.77e5	38.06	1.000	0.98	NO	51.315	0.135	1.125	1.097	2.6	5.59e6	5683	983.7	5.57e6	5666	983.9	bb	bd
16	1234789-HpCDF	3.07e5	3.23e5	6.30e5	39.85	1.000	0.95	NO	51.702	0.204	1.147	1.109	3.4	3.76e6	5683	662.5	3.80e6	5666	670.0	bb	bd
17	OCDF	5.49e5	6.41e5	1.19e6	43.42	1.007	0.86	NO	100.594	0.206	0.928	0.922	0.6	5.09e6	4667	1090.0	5.82e6	4472	1301.9	bd	bd
18	13C-2378-TCDD	1.17e6	1.54e6	2.71e6	30.37	1.024	0.76	NO	100.793	0.0922	1.151	1.142	0.8	1.12e7	5871	1913.0	1.47e7	3902	3775.6	bb	bb
19	13C-12378-PeCDD	1.24e6	7.74e5	2.02e6	33.61	1.133	1.61	NO	89.138	0.123	0.857	0.962	-10.9	2.43e7	4183	5816.1	1.55e7	6815	2271.4	bd	bb
20	13C-123478-HxCDD	9.07e5	7.23e5	1.63e6	36.07	0.992	1.25	NO	90.239	0.118	0.927	1.027	-9.8	1.67e7	6674	2503.1	1.32e7	5120	2577.1	bd	bd
21	13C-123678-HxCDD	1.15e6	8.76e5	2.02e6	36.15	0.994	1.31	NO	102.426	0.108	1.151	1.123	2.4	1.75e7	6674	2623.2	1.41e7	5120	2754.4	dd	db
22	13C-1234678-HpCDD	6.77e5	6.63e5	1.34e6	39.22	1.078	1.02	NO	101.158	0.178	0.762	0.753	1.2	8.23e6	6267	1313.6	7.93e6	6822	1161.8	bd	bd
23	13C-OCDD	1.20e6	1.37e6	2.56e6	43.13	1.186	0.88	NO	201.046	0.187	0.729	0.726	0.5	1.12e7	7790	1440.9	1.27e7	5467	2315.1	bd	bd
24	13C-2378-TCDF	1.51e6	1.96e6	3.48e6	29.46	0.993	0.77	NO	110.504	0.126	1.477	1.337	10.5	1.43e7	9985	1428.3	1.87e7	5610	3324.8	bb	bb
25	13C-12378-PeCDF	1.76e6	1.09e6	2.85e6	32.84	1.107	1.62	NO	97.329	0.155	1.209	1.242	-2.7	3.40e7	9481	3581.0	2.17e7	8397	2584.6	bb	bb
26	13C-23478-PeCDF	1.71e6	1.08e6	2.79e6	33.42	1.127	1.58	NO	96.241	0.156	1.187	1.234	-3.8	3.61e7	9481	3805.0	2.28e7	8397	2719.2	bb	bb
27	13C-123478-HxCDF	5.87e5	1.16e6	1.75e6	35.39	0.973	0.51	NO	90.458	0.164	0.994	1.099	-9.5	1.11e7	8923	1248.6	2.18e7	8658	2518.8	bd	bd
28	13C-123678-HxCDF	7.92e5	1.53e6	2.32e6	35.48	0.975	0.52	NO	103.707	0.142	1.319	1.272	3.7	1.25e7	8923	1395.4	2.43e7	8658	2810.6	dd	db
29	13C-234678-HxCDF	6.52e5	1.22e6	1.88e6	35.95	0.988	0.53	NO	98.874	0.167	1.067	1.079	-1.1	1.05e7	8923	1175.8	2.03e7	8658	2350.2	dd	bb
30	13C-123789-HxCDF	5.82e5	1.11e6	1.69e6	36.67	1.008	0.52	NO	97.410	0.182	0.961	0.987	-2.6	8.20e6	8923	919.3	1.62e7	8658	1876.7	bd	bb
31	13C-1234678-HpCDF	4.31e5	9.50e5	1.38e6	38.05	1.046	0.45	NO	92.500	0.129	0.786	0.849	-7.5	5.99e6	5118	1170.5	1.36e7	5591	2437.2	bd	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
Printed: Monday, April 02, 2018 09:06:41 Eastern Standard Time

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	3.39e5	7.60e5	1.10e6	39.84	1.095	0.45	NO	92.555	0.163	0.625	0.675	-7.4	3.87e6	5118	755.5	8.87e6	5591	1587.2	bd	bb
33	13C-1234-TCDD	1.03e6	1.33e6	2.35e6	29.67	0.000	0.77	NO	100.000	0.105	1.000	1.000	0.0	1.01e7	5871	1722.6	1.29e7	3902	3309.5	bb	bb
34	13C-123789-HxCDD	1.03e6	7.28e5	1.76e6	36.37	0.000	1.41	NO	100.000	0.121	1.000	1.000	0.0	1.43e7	6674	2142.3	1.10e7	5120	2151.5	dd	bb
35	37Cl-2378-TCDD	2.61e5		2.61e5	30.41	1.025			9.541	0.0217	1.108	1.161	-4.6	2.48e6	2340	1059.4				bb	

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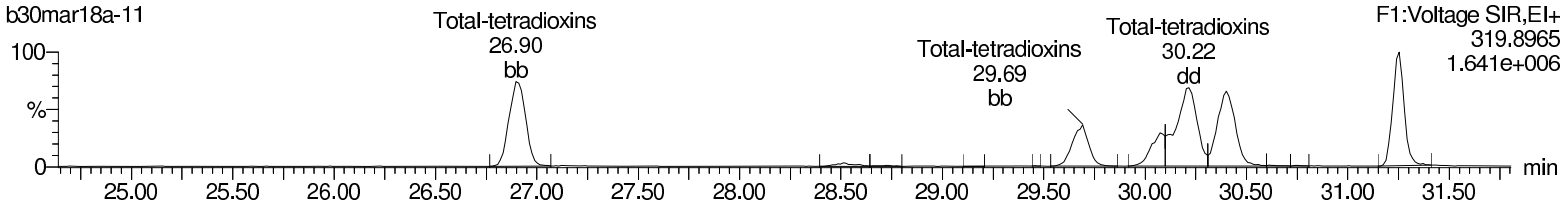
Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
Printed: Monday, April 02, 2018 09:06:41 Eastern Standard Time

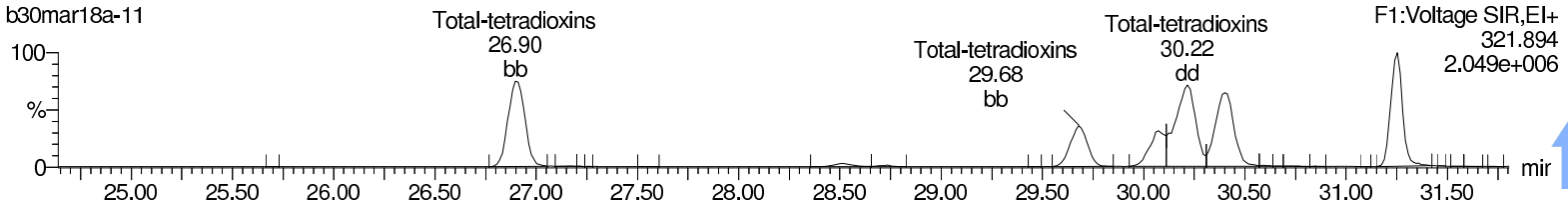
Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

Total-tetradioxins



Total-tetradioxins



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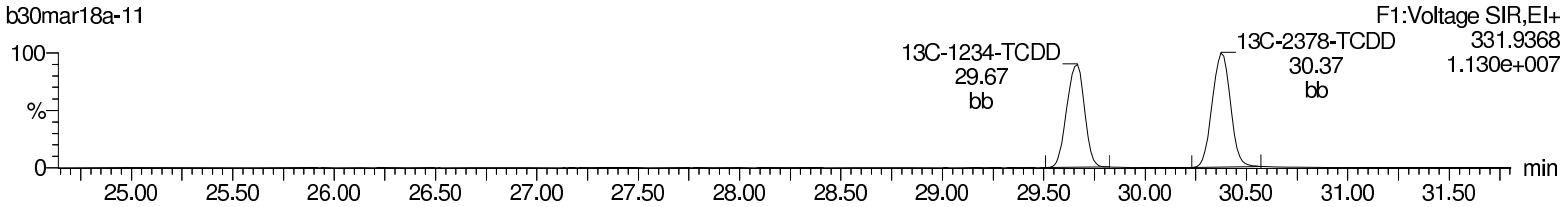

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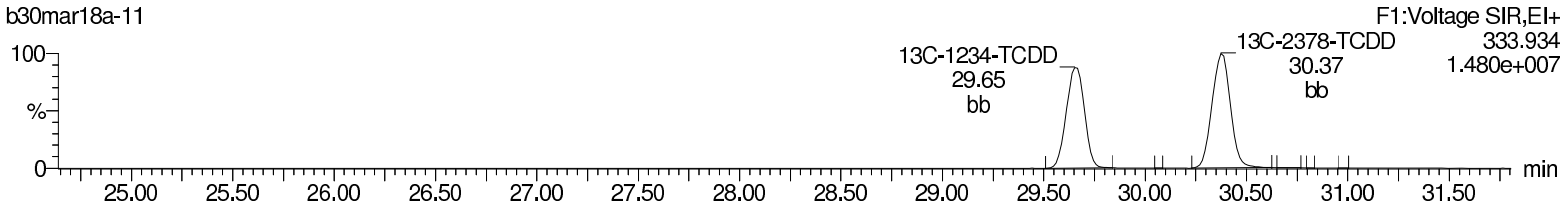

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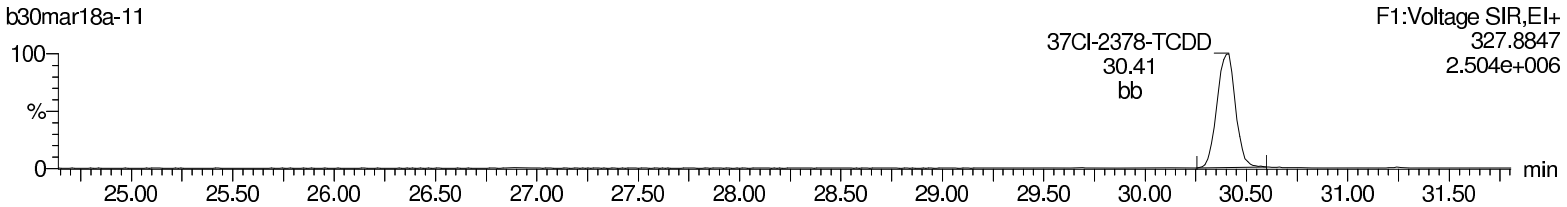
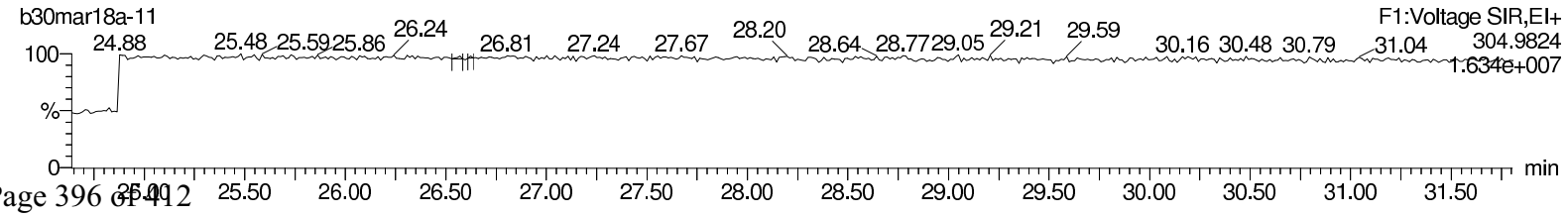


Lock Mass F1

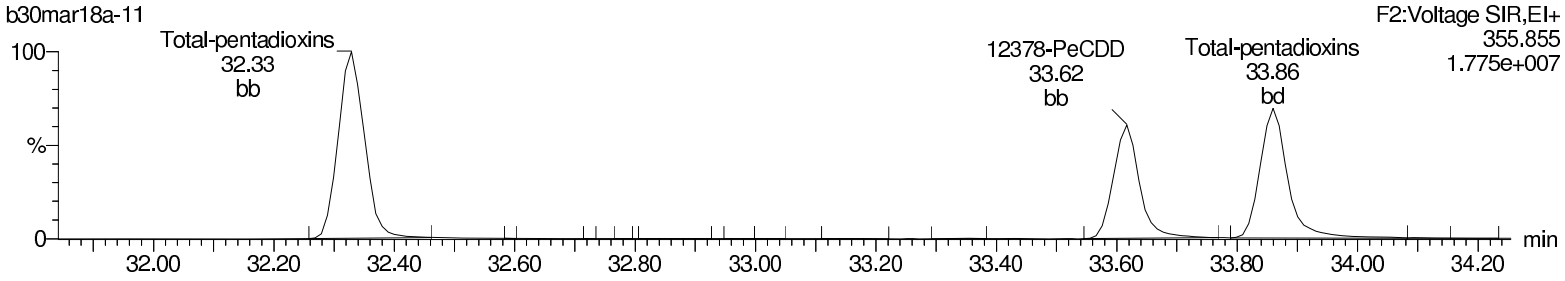


Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

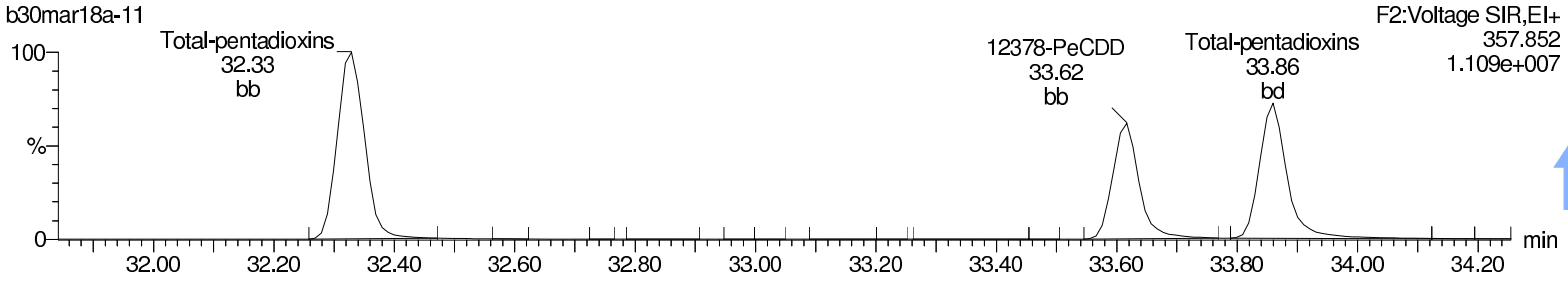
Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
Printed: Monday, April 02, 2018 09:06:41 Eastern Standard Time

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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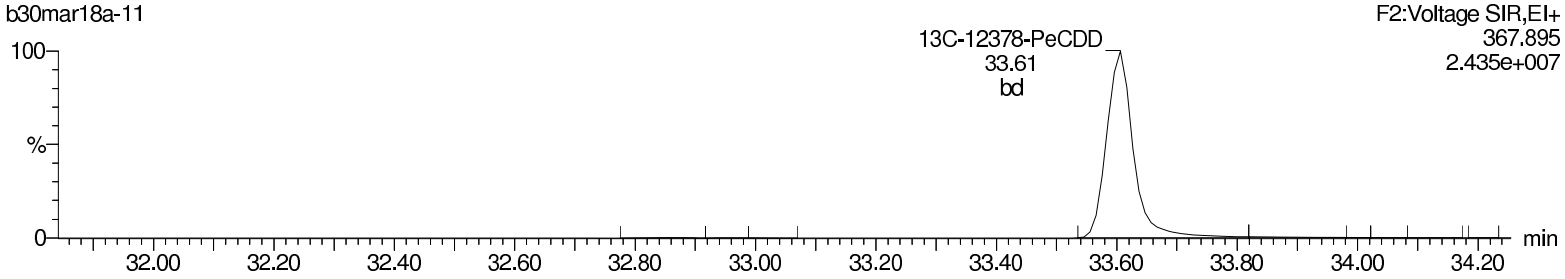
13C-12378-PeCDD



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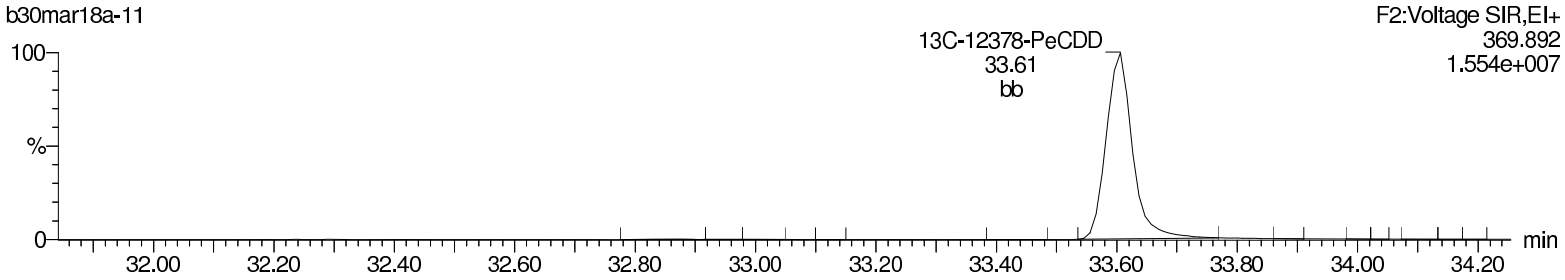

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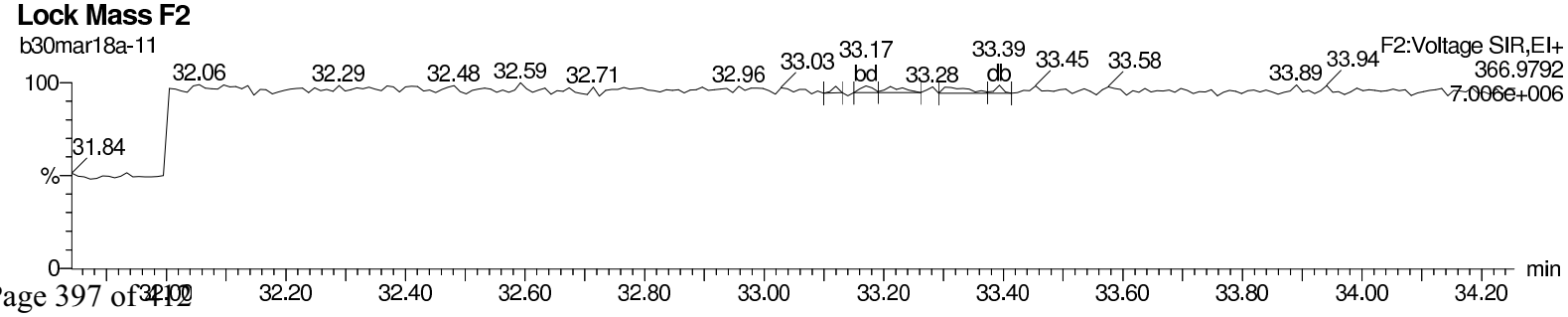

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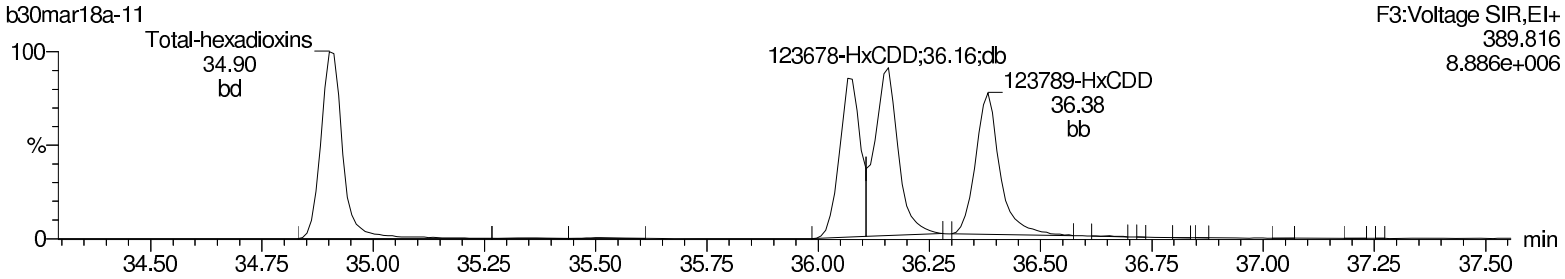
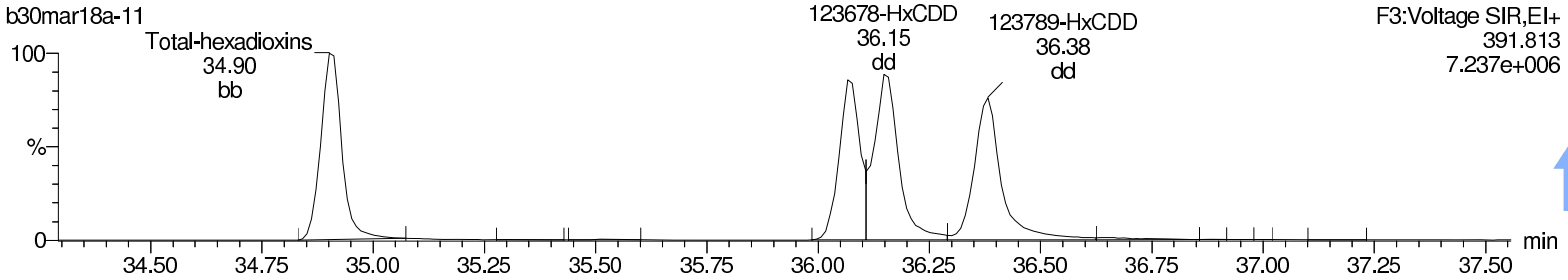
Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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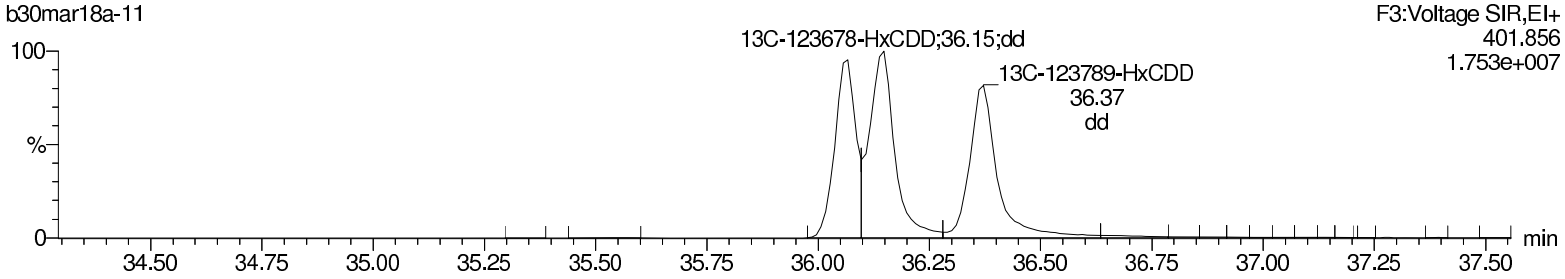

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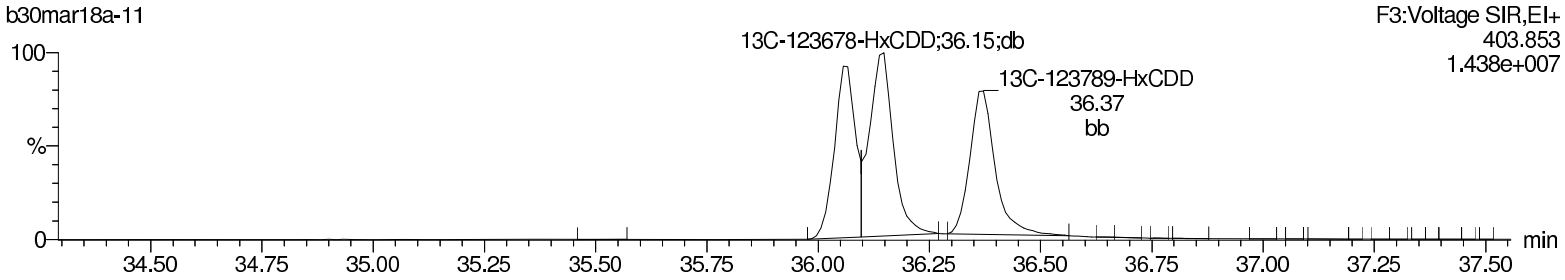

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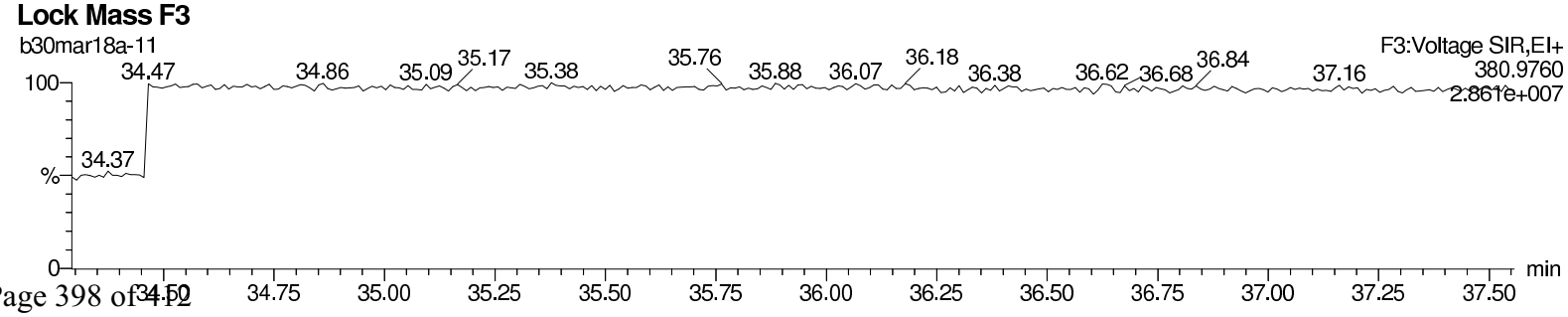

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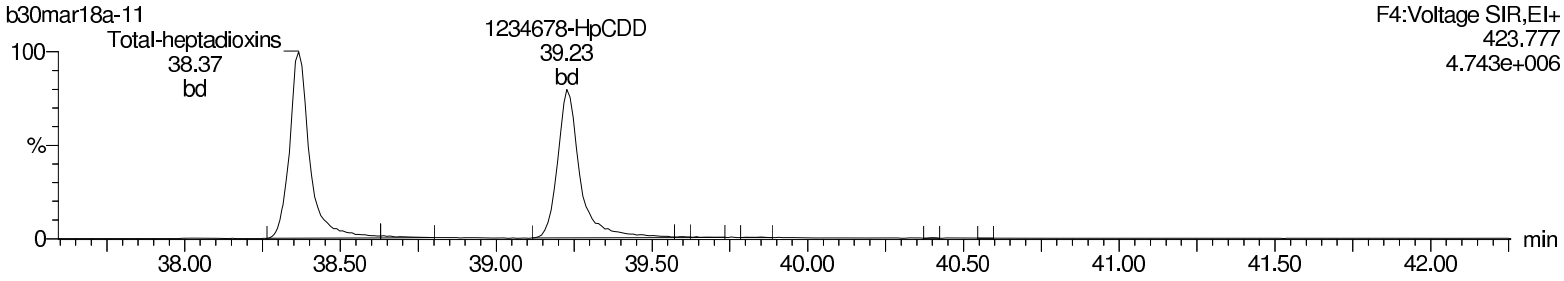

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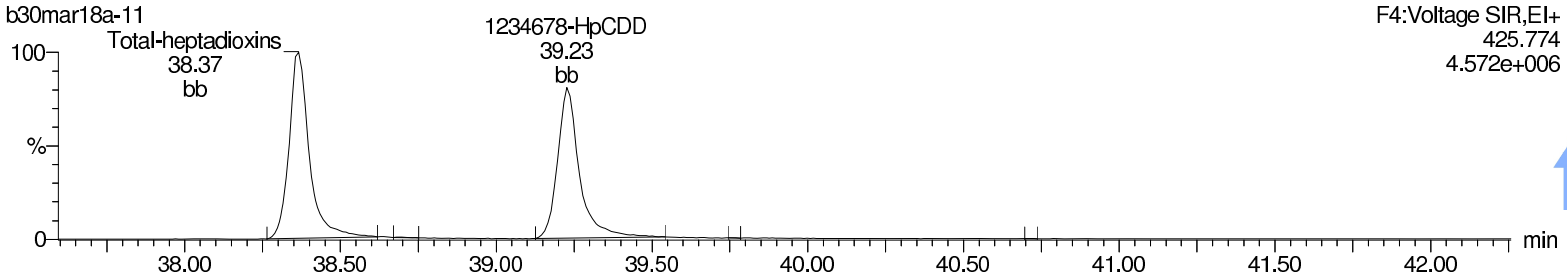

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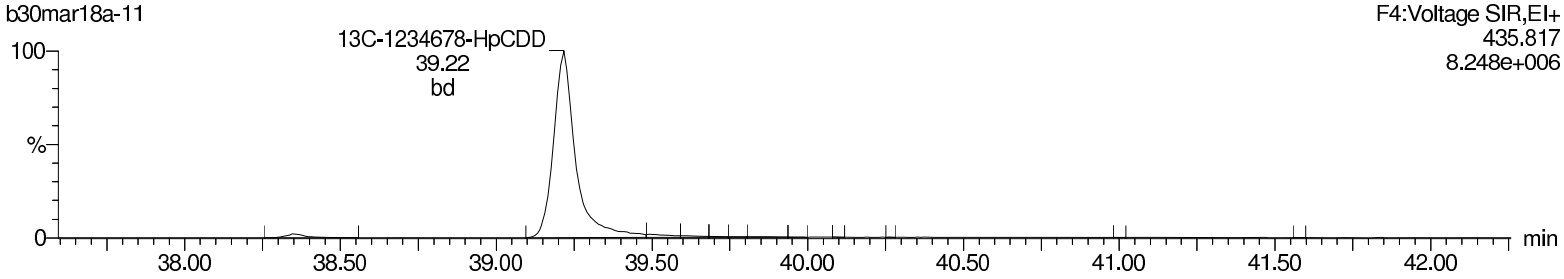

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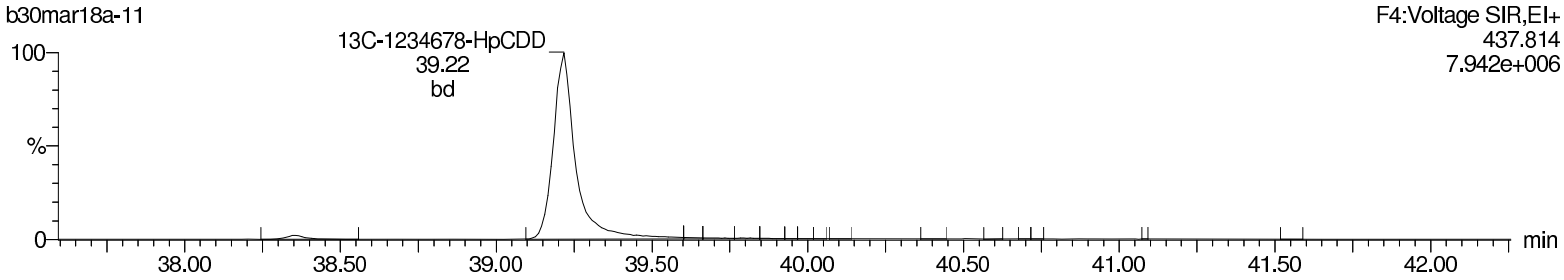

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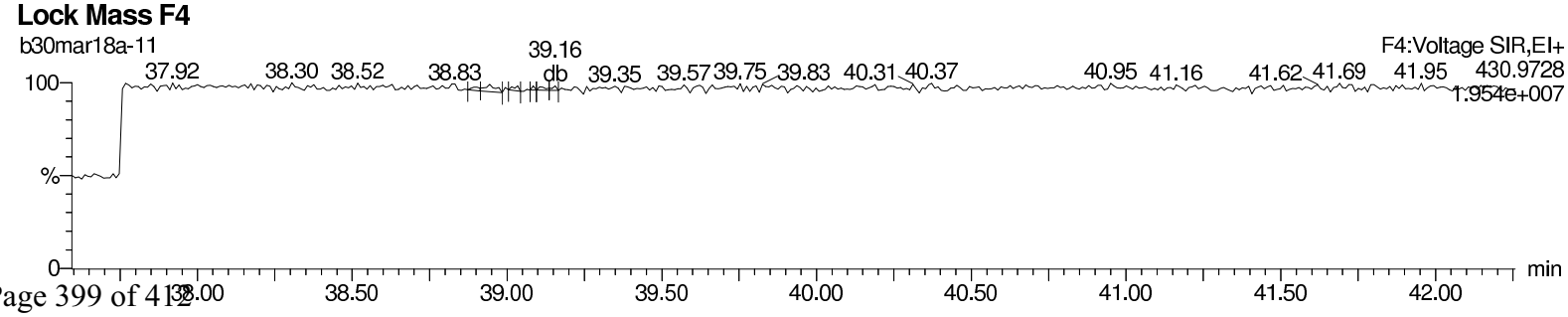

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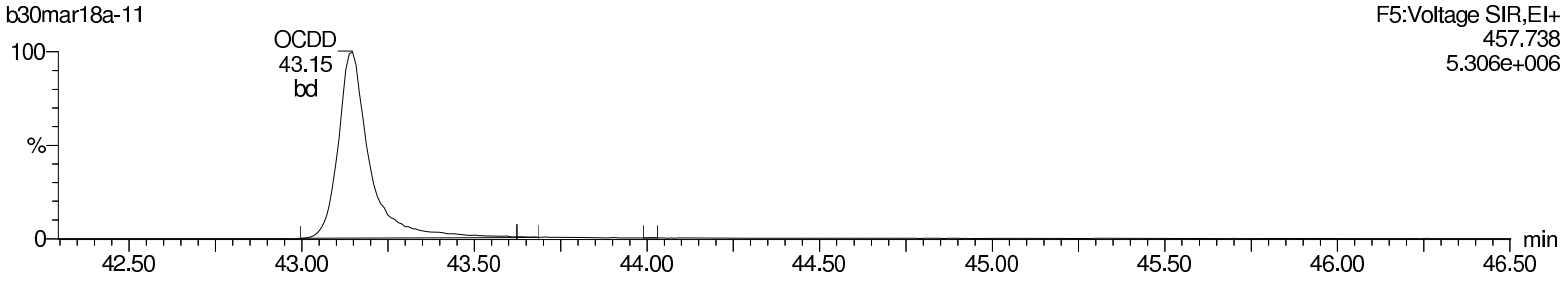

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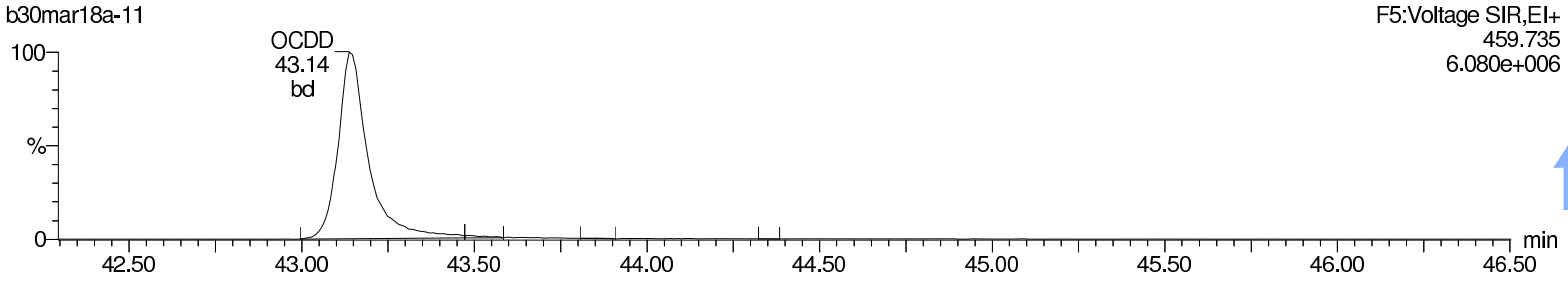

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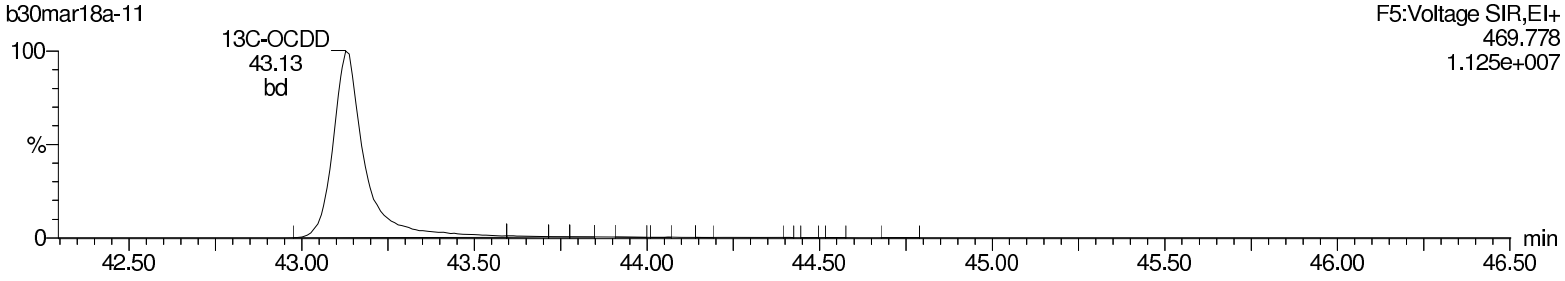

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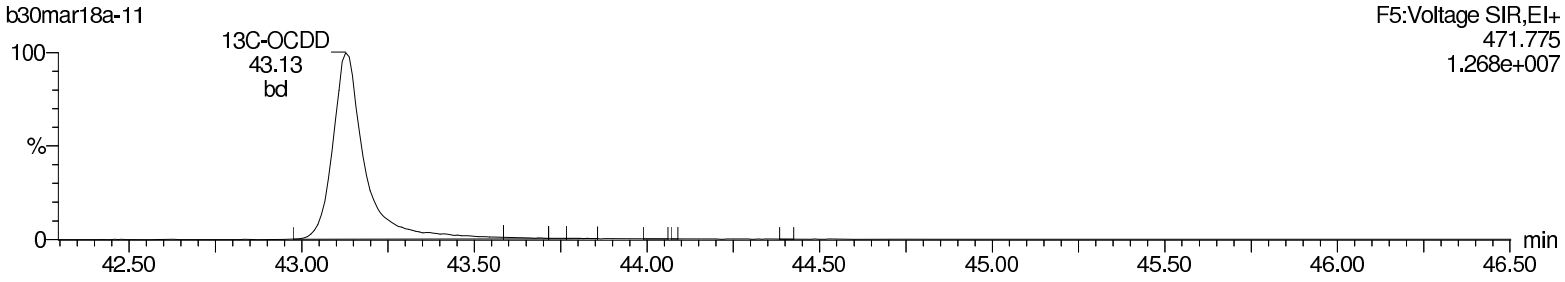

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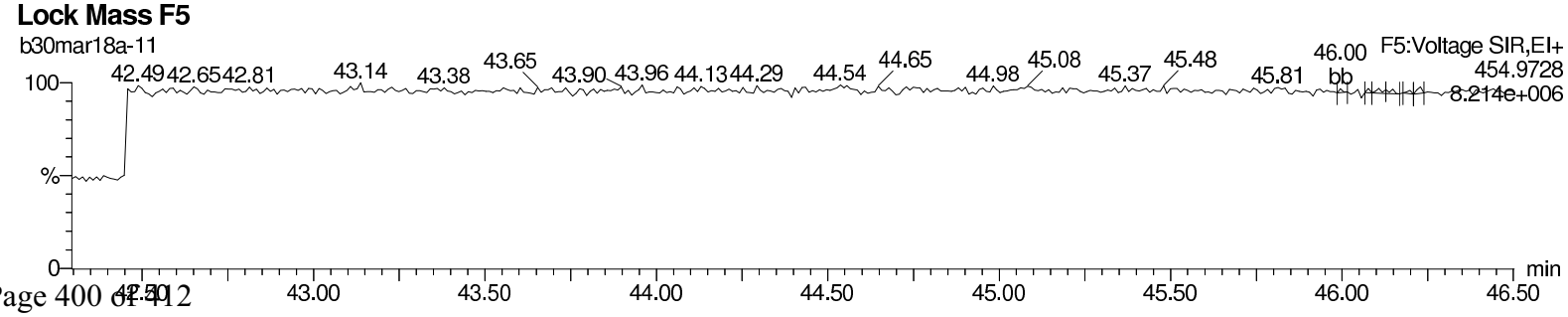

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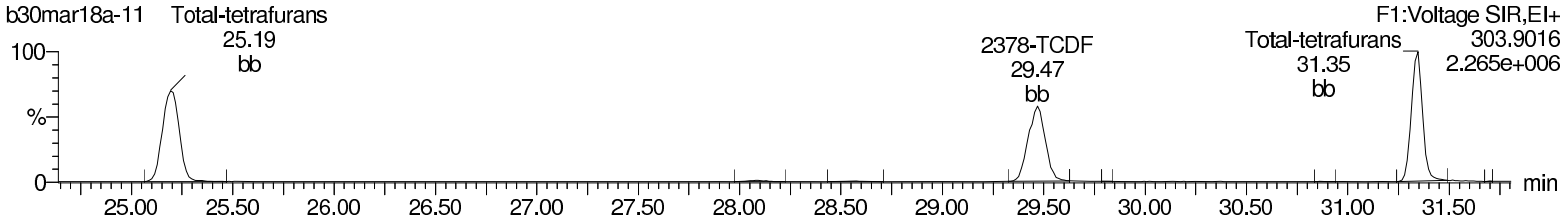
Total-tetrafurans



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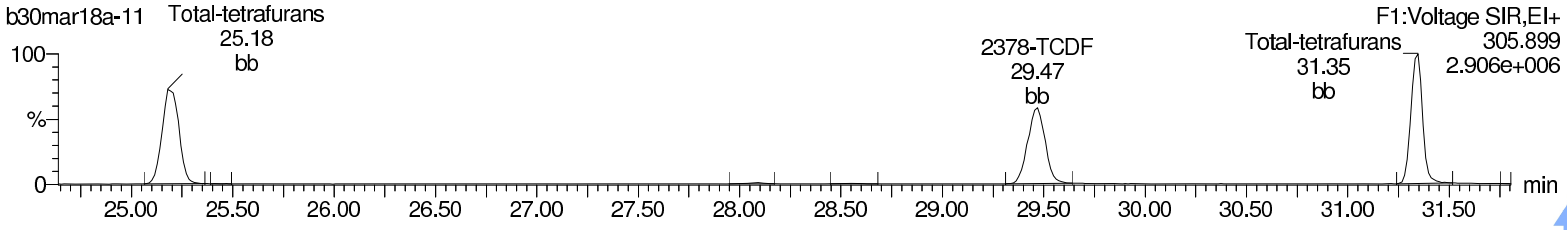

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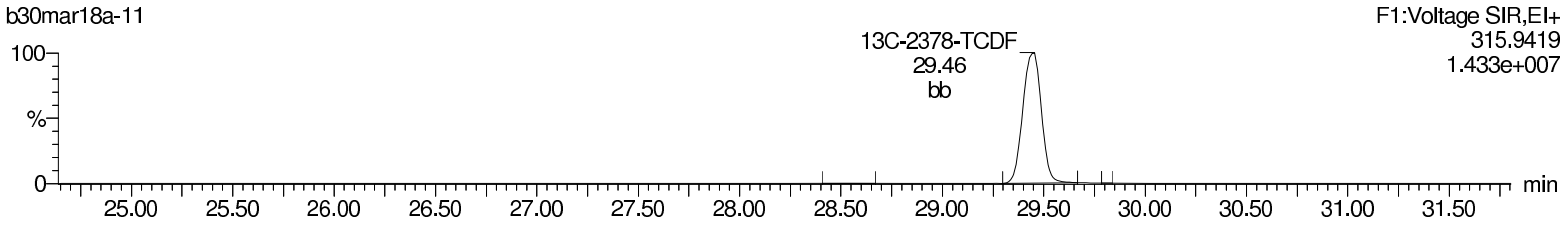

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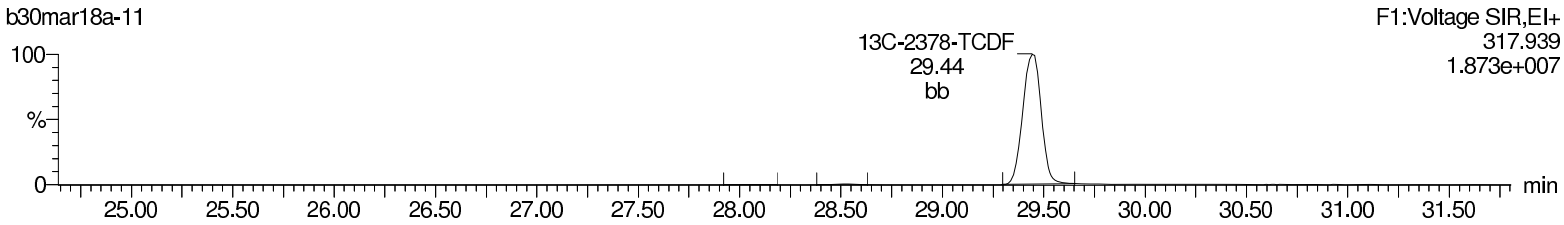

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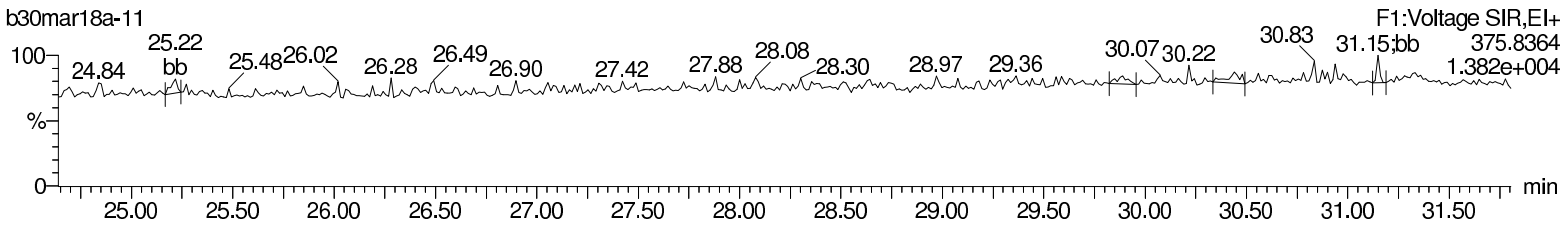

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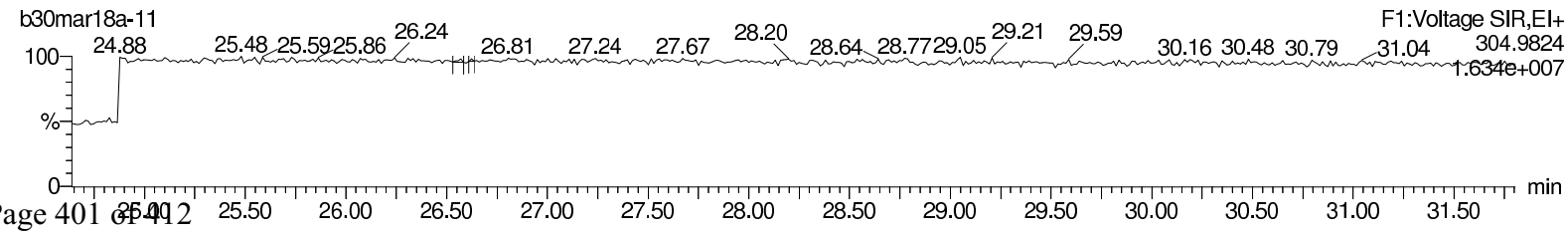

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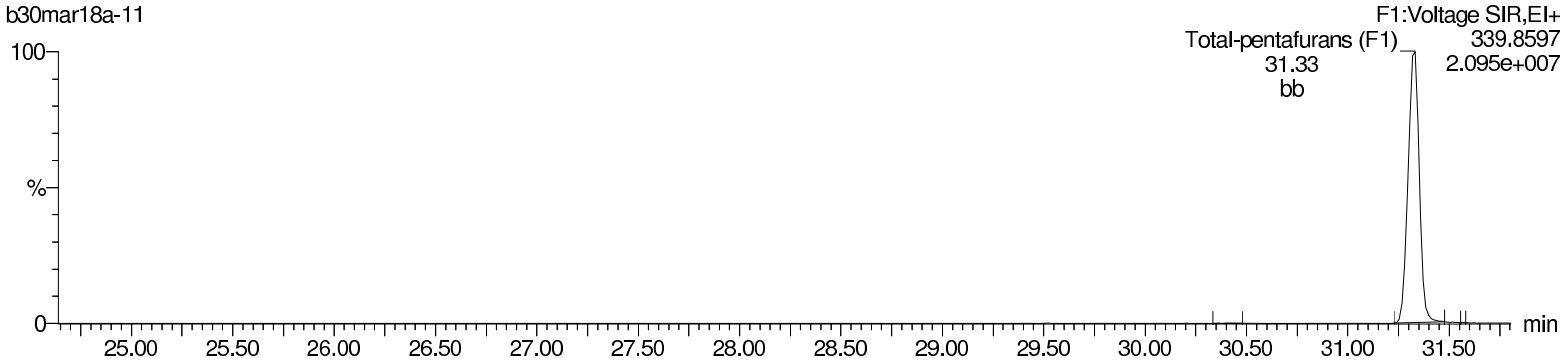
Total-pentafurans (F1)



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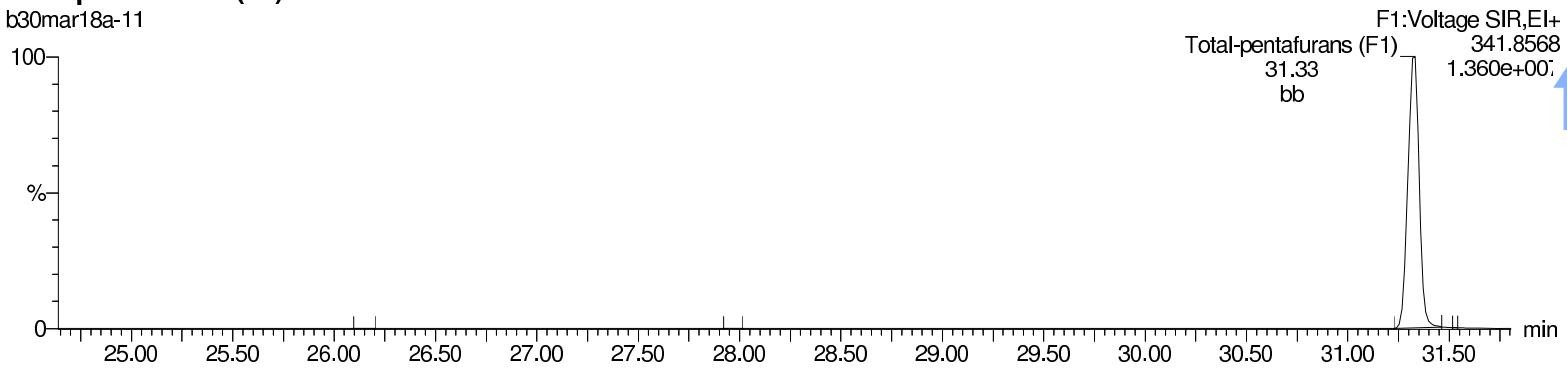

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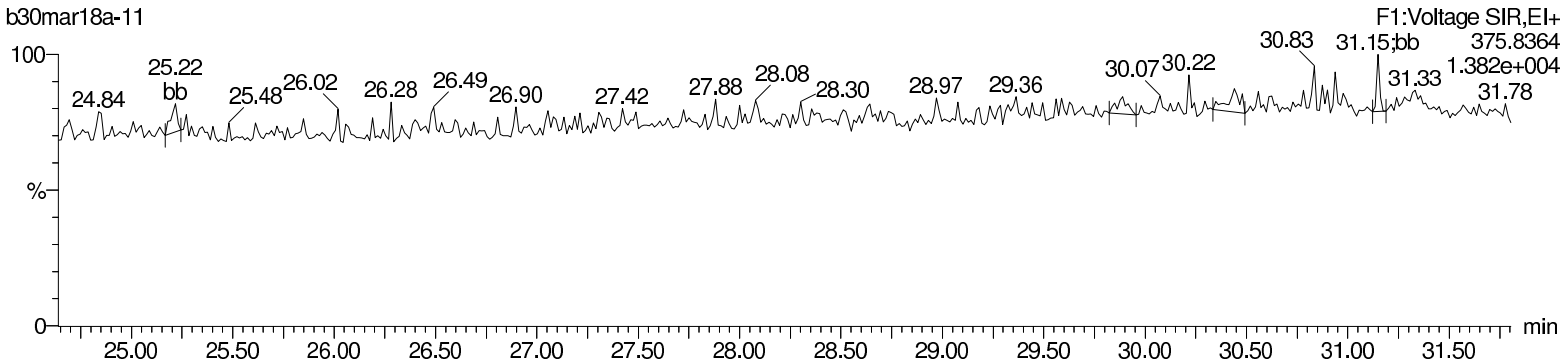

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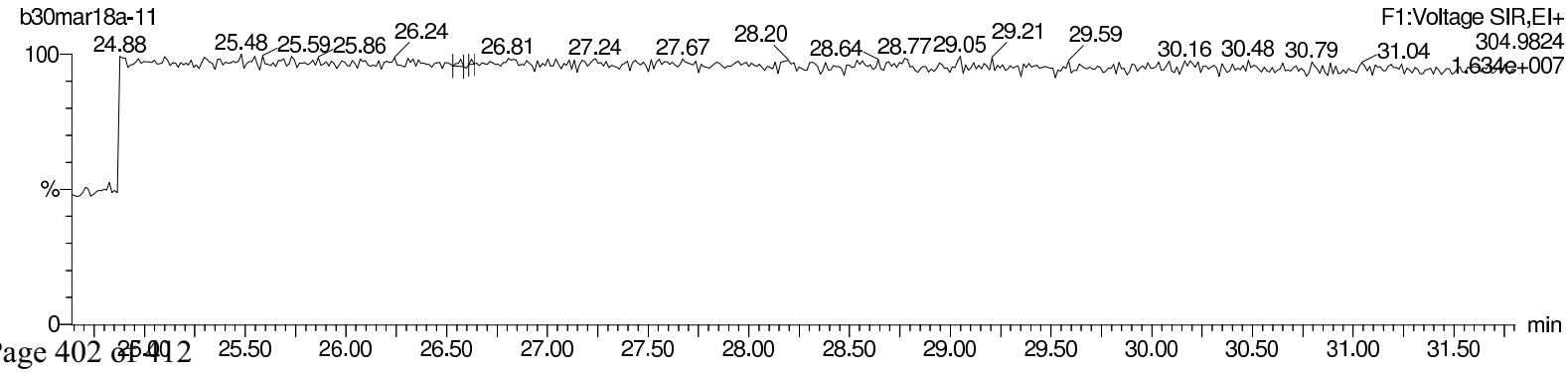

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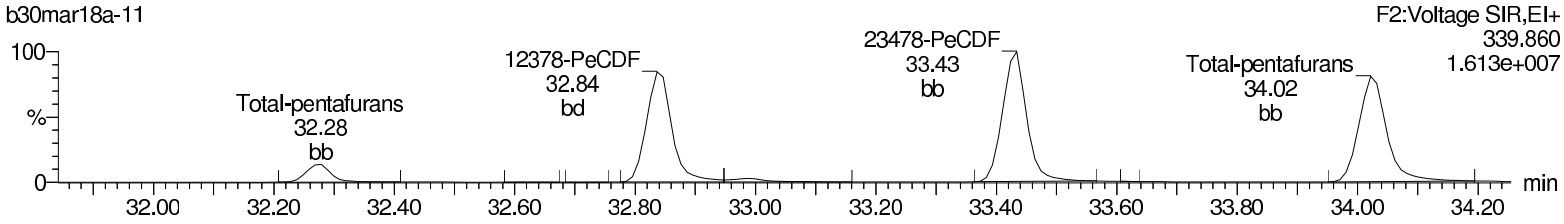

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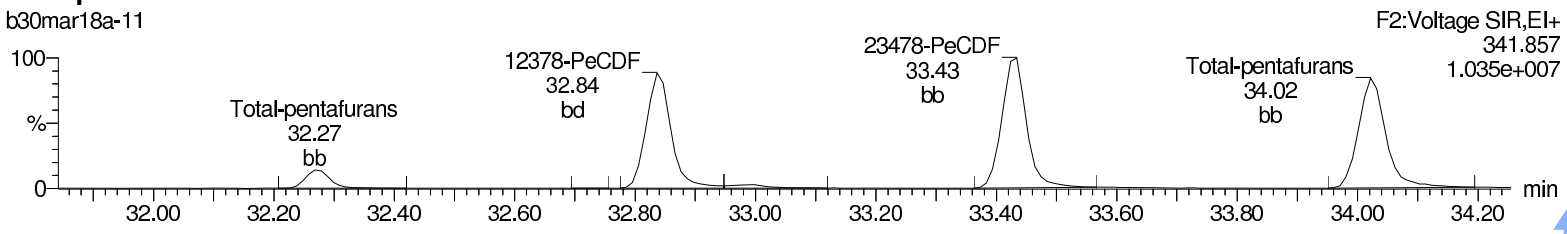

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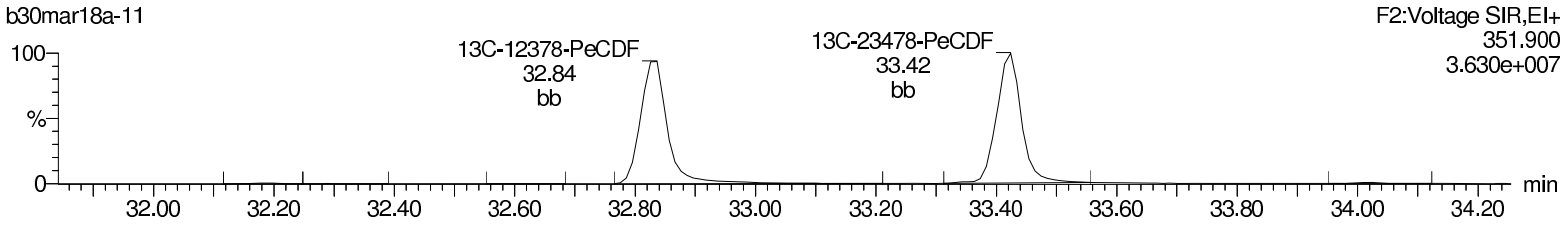

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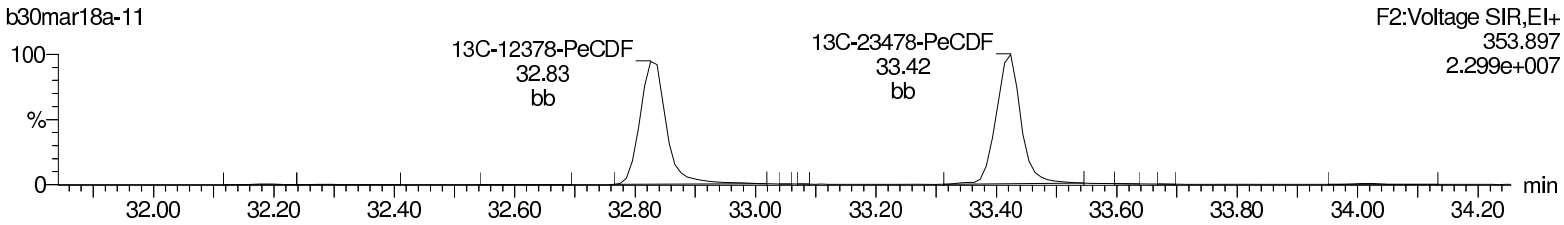

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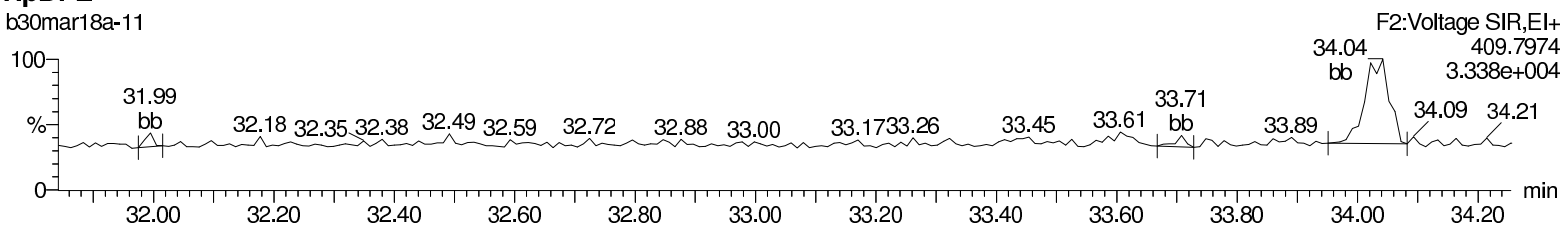

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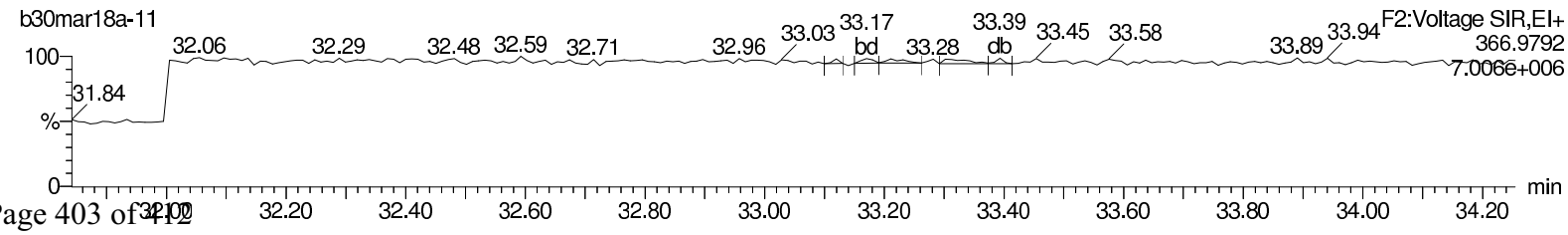

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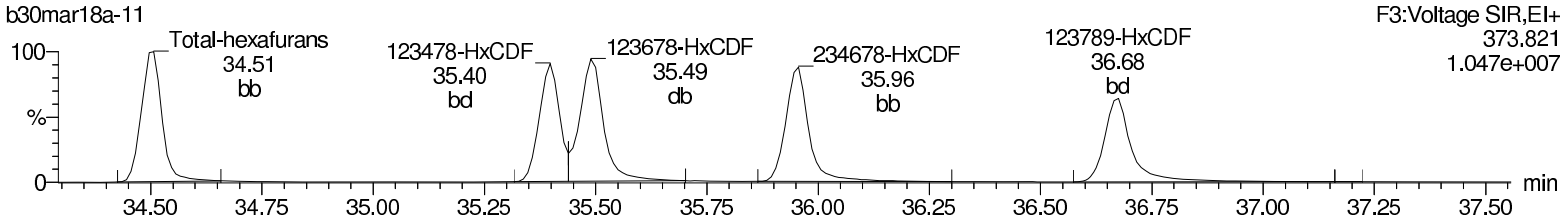
Total-hexafurans



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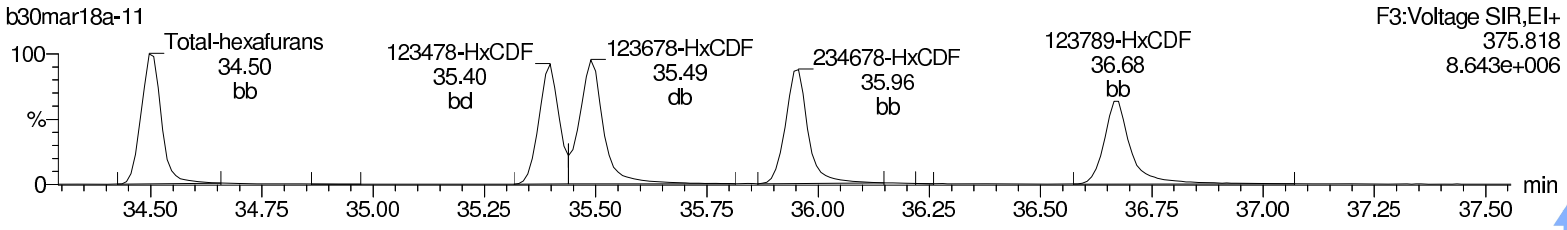

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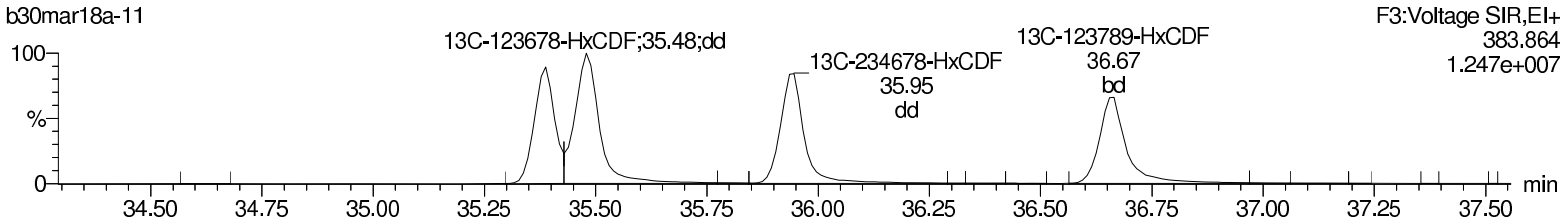

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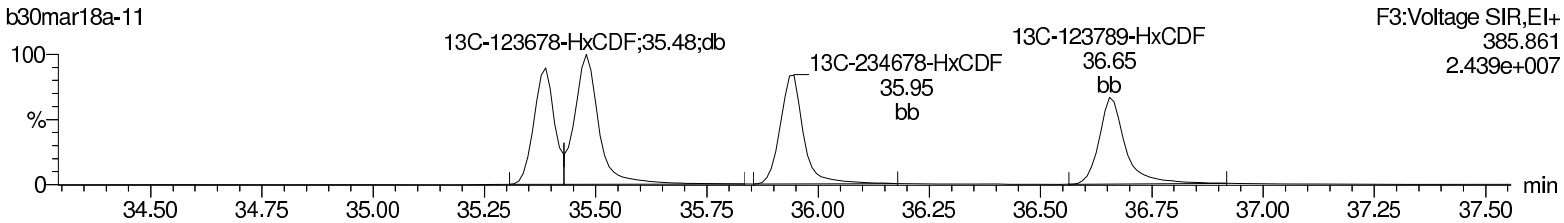

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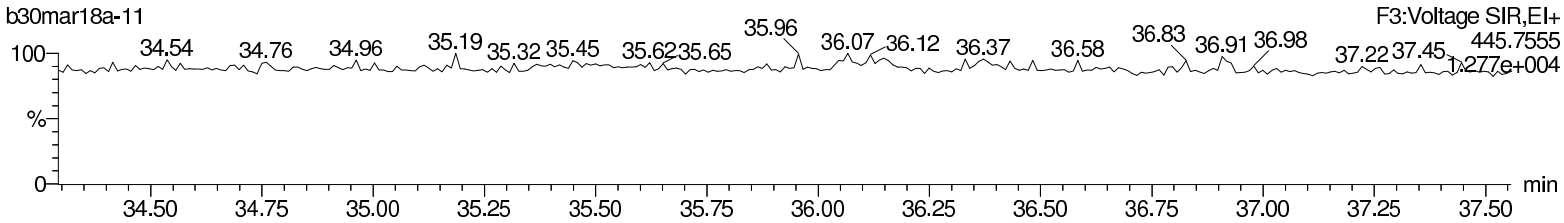

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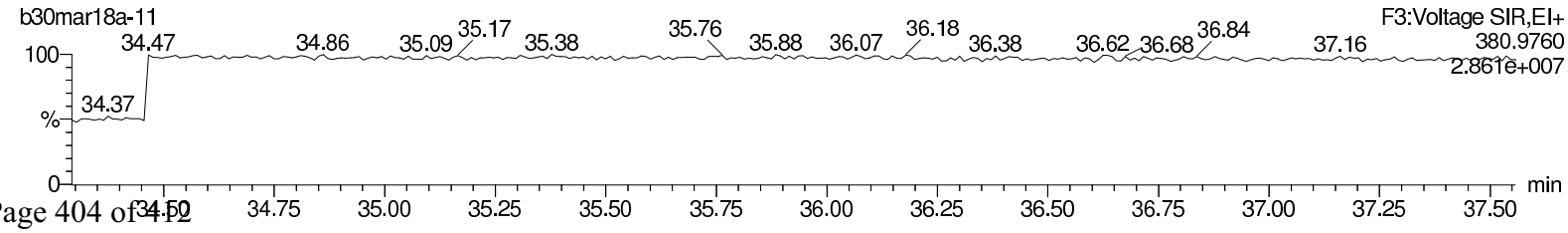

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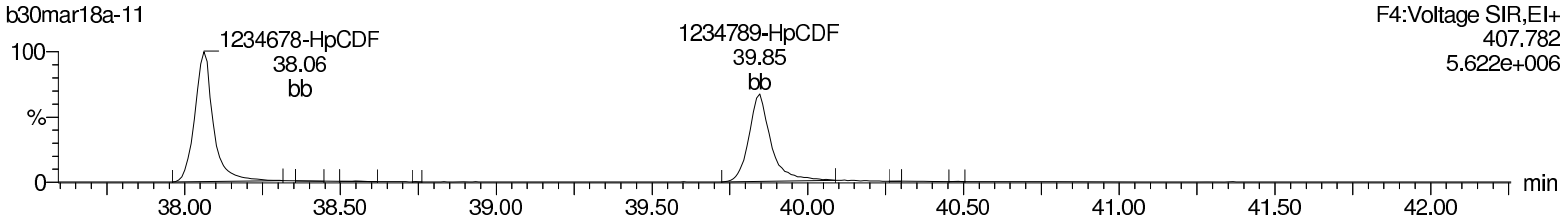
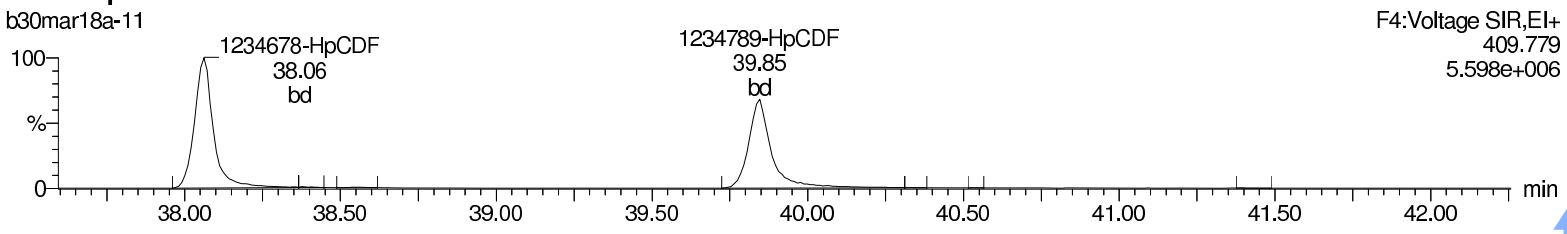
Total-heptafurans



Total-heptafurans



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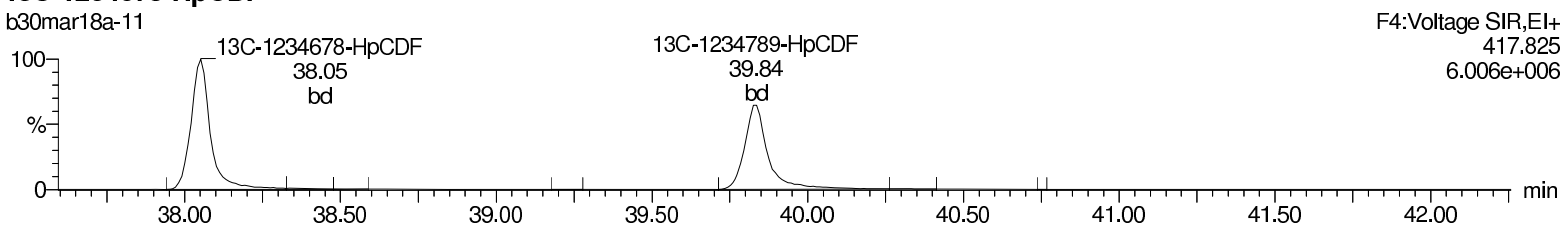

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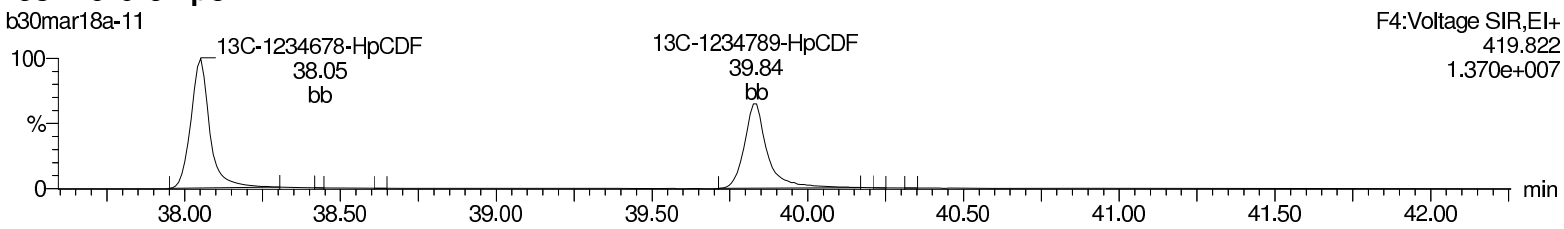

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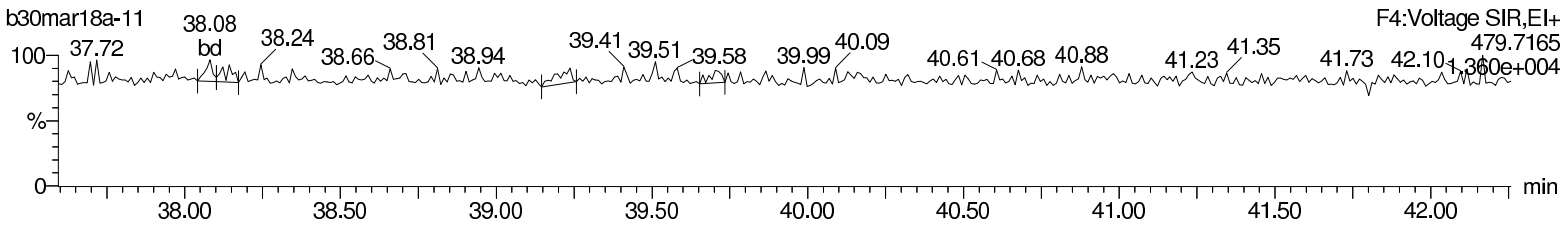

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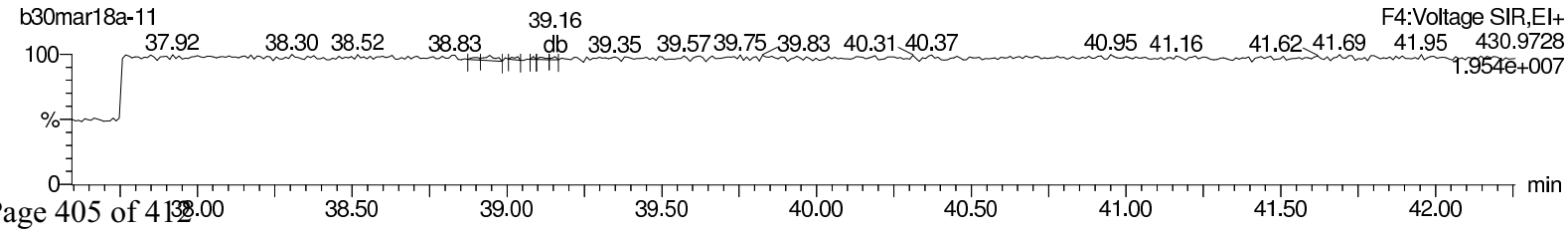

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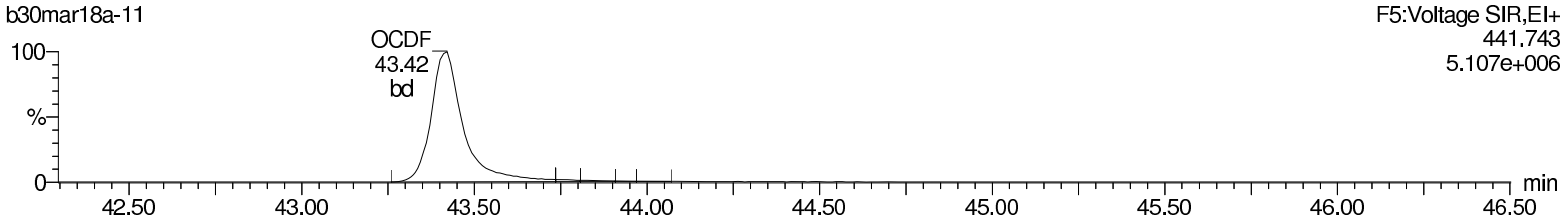
OCDF



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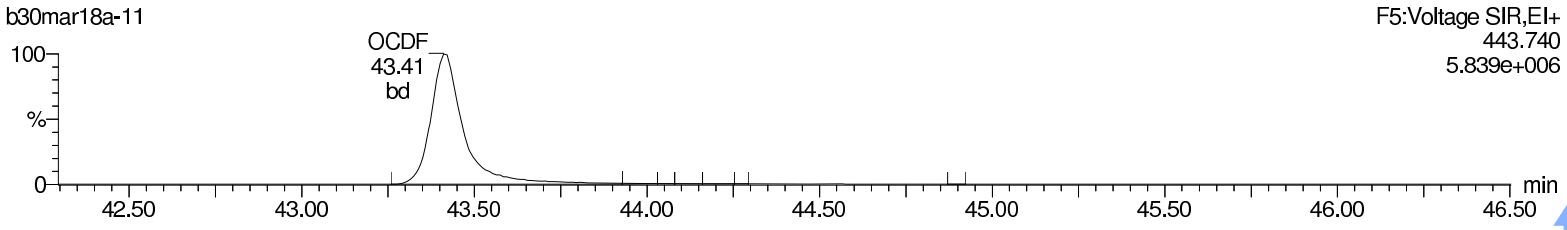

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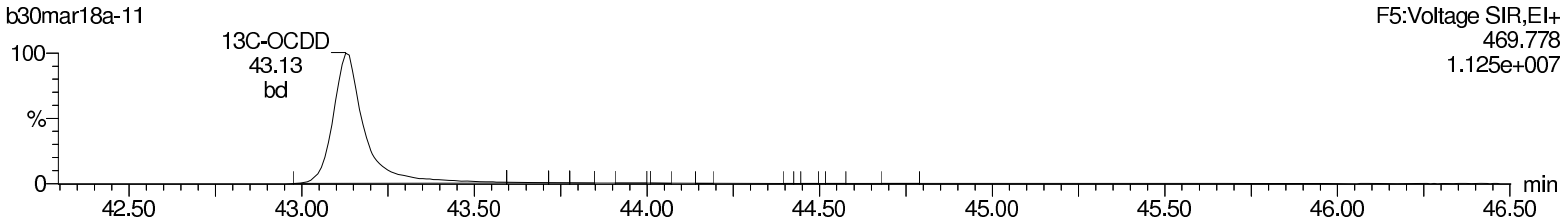
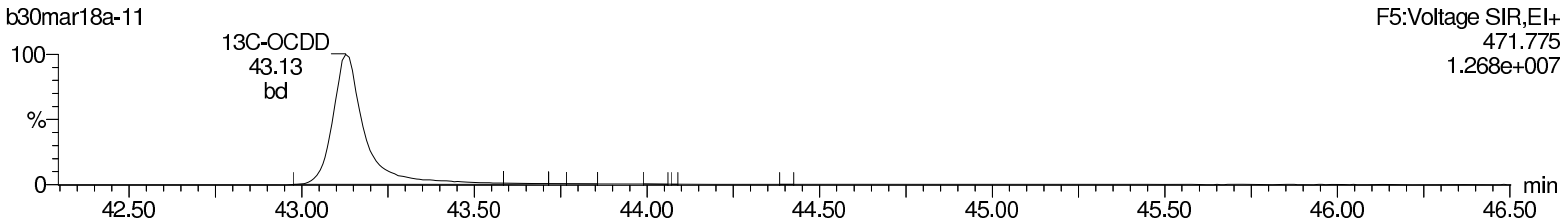


13C-OCDD



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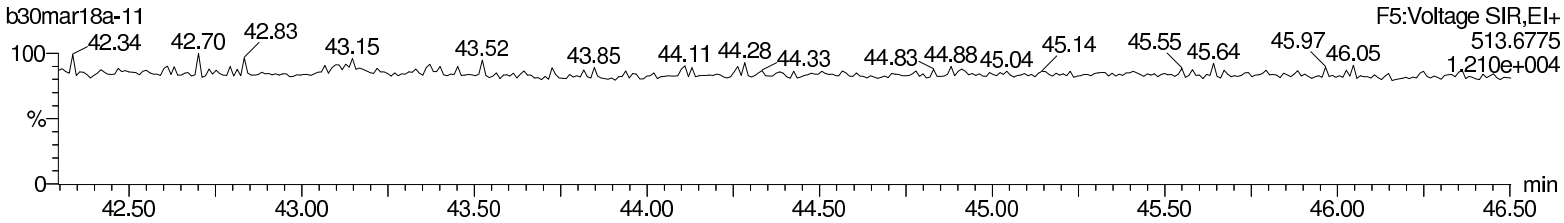

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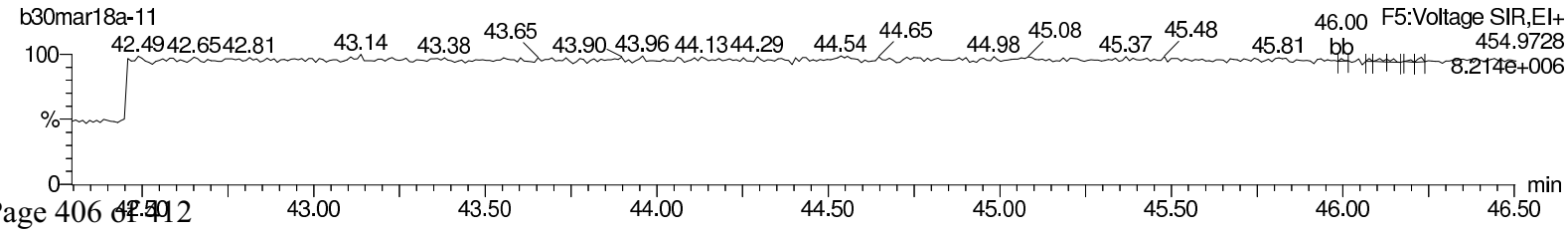

Instrument: HRP763_1

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b30mar18a_2-2	30-MAR-2018 19:23:56	Chris Presnell	13114001-1	37286	1 uL	dioxin_db5ms	10K
b30mar18a_2-3	30-MAR-2018 20:12:26	Chris Presnell	13121001-1	37302	1 uL	dioxin_db5ms	10K
b30mar18a_2-4	30-MAR-2018 21:01:01	Chris Presnell	13123001-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-5	30-MAR-2018 21:49:34	Chris Presnell	13123002-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-6	30-MAR-2018 22:38:08	Chris Presnell	13123003-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-7	30-MAR-2018 23:26:43	Chris Presnell	13123004-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-8	31-MAR-2018 00:15:16	Chris Presnell	13123005-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-9	31-MAR-2018 01:03:50	Chris Presnell	13123006-1	37301	1 uL	dioxin_db5ms	10K
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b30mar18a_2-12	31-MAR-2018 03:29:31	Chris Presnell	13127002-1	37303	1 uL	dioxin_db5ms	10K
b30mar18a_2-13	31-MAR-2018 04:18:06	Chris Presnell	CS3WT UD180115-01.2 CPSG2		1 uL	dioxin_db5ms	10K

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Resolution Check Report **MassLynx 4.1**

Printed: Saturday, March 31, 2018 05:14:45 Eastern Standard Time

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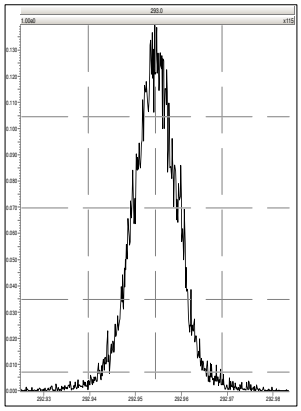

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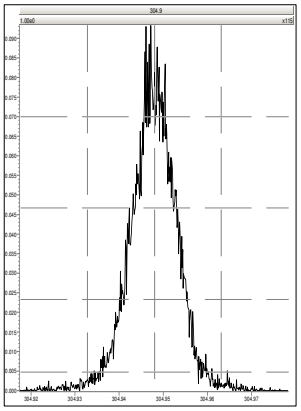

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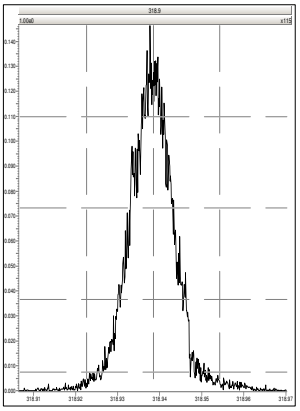

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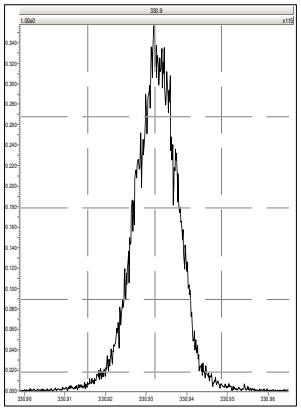

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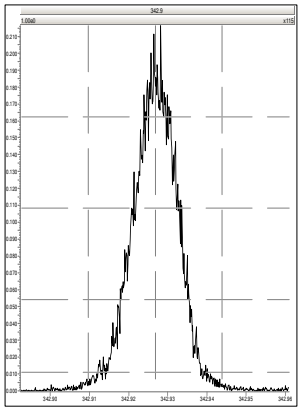

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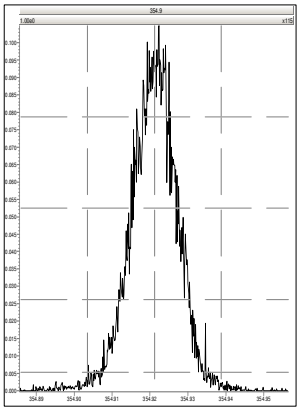

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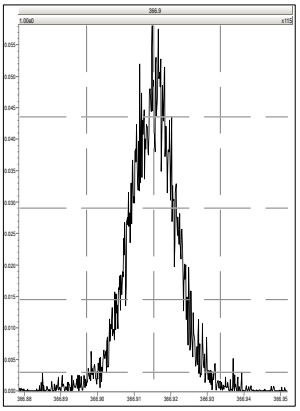

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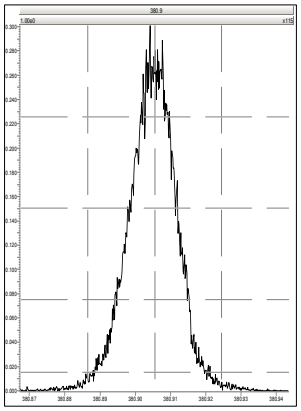

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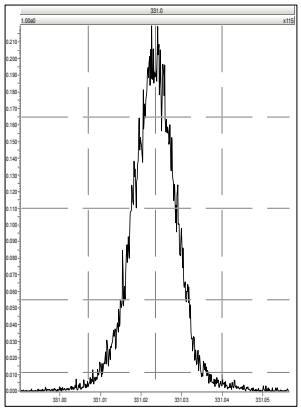

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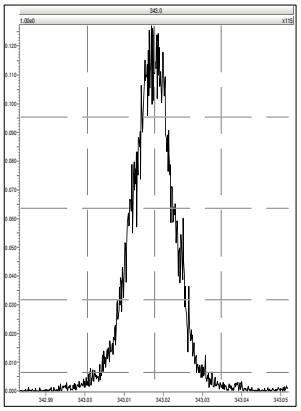

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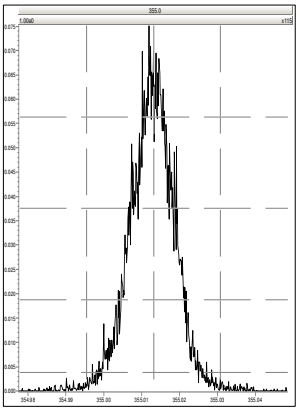

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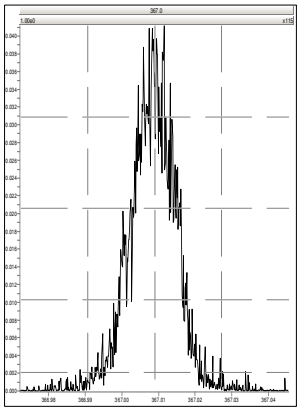

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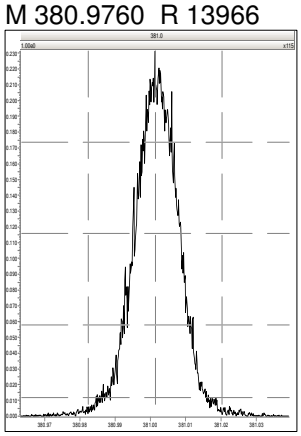

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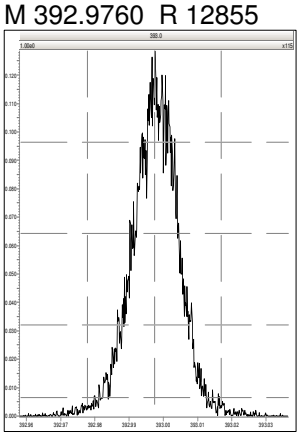

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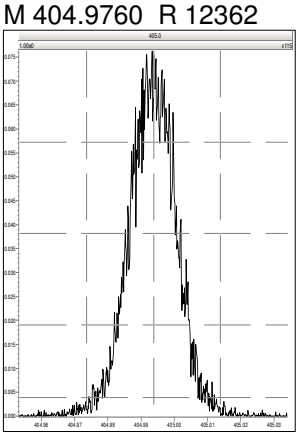

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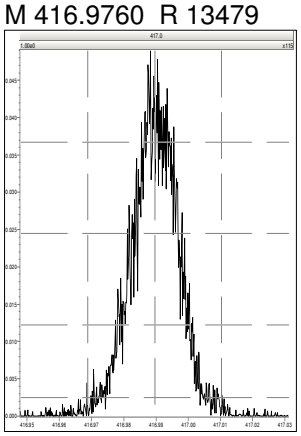

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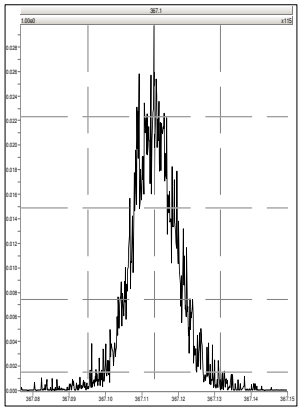

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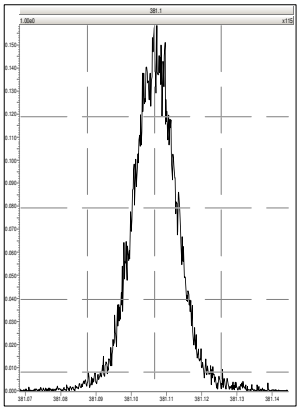

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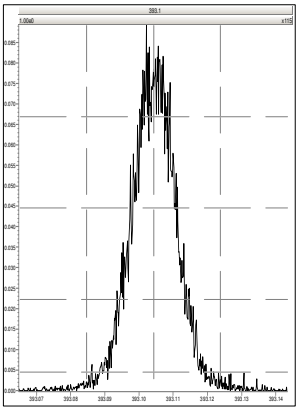

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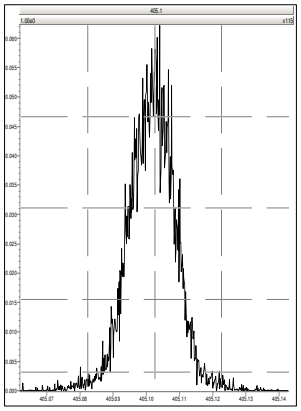

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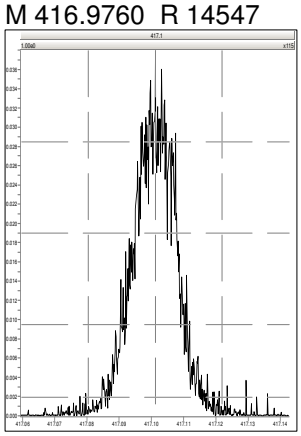

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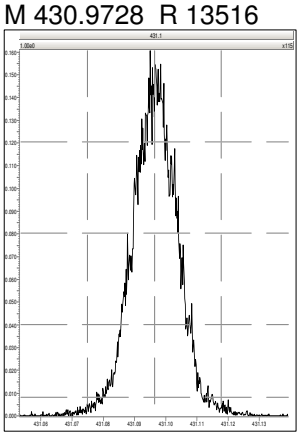

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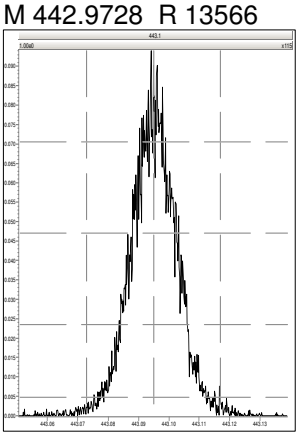

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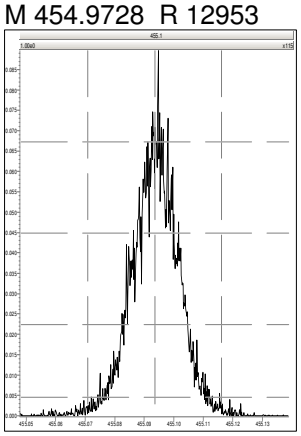

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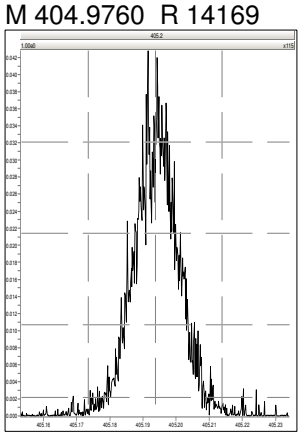

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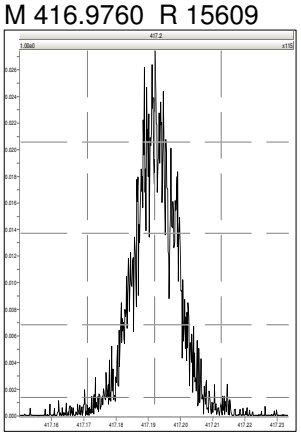

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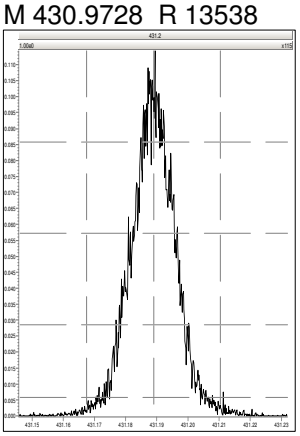

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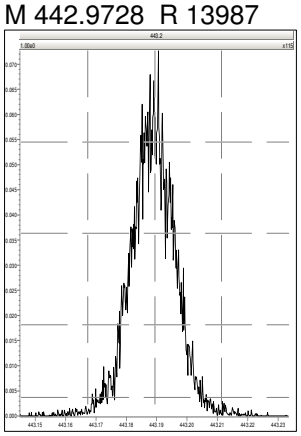

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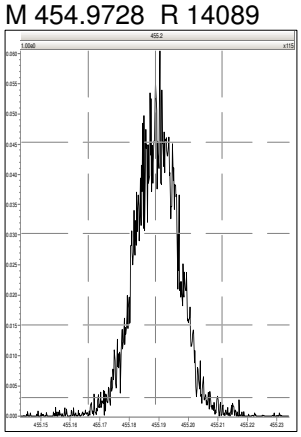

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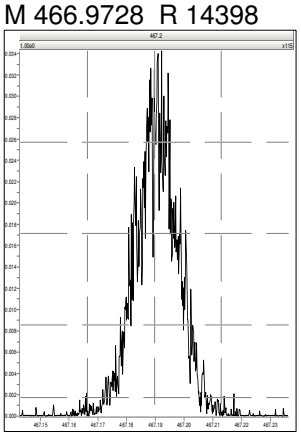

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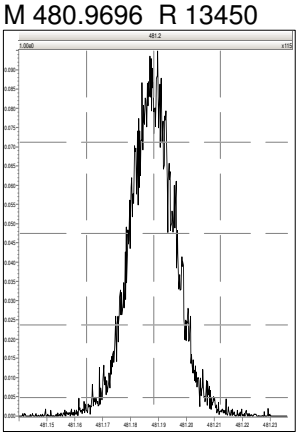

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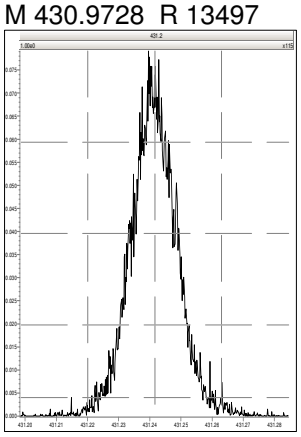

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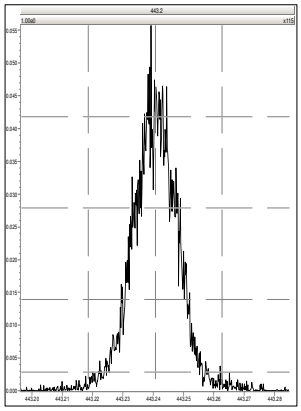

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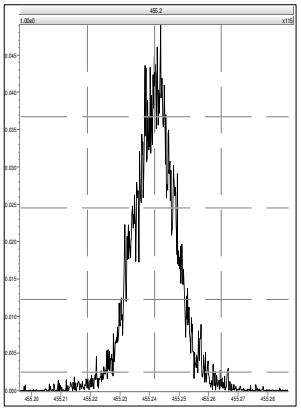

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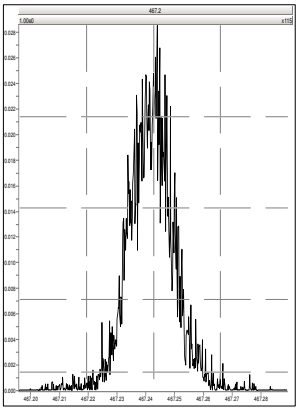

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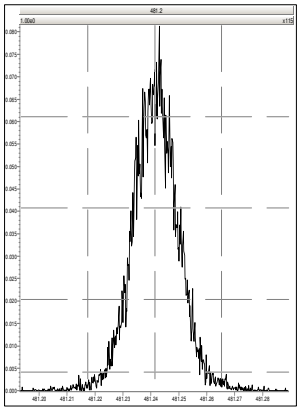

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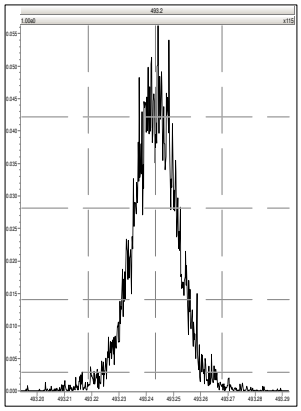

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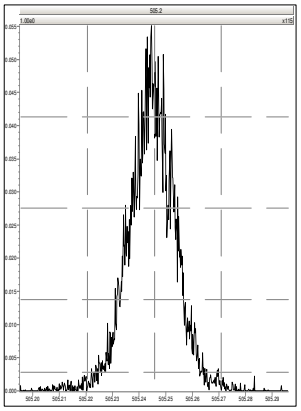

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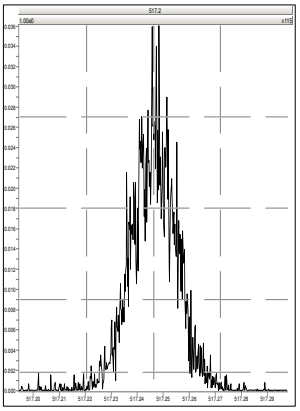

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Miscellaneous

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Supplemental Report 1

The original report has been revised to include the Level IV deliverables package.

WORK ORDER NUMBER: 18-03-1974

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL - Gainesville

Client Project Name: SSFL CH661 / 692670.61.SW

Attention: Randy Dean
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Approved for release on 04/19/2018 by:
Virendra Patel
Project Manager

ResultLink

Email your PM

Eurofins Calscience (Calscience) certifies that the test results provided in this report meet all NELAC Institute requirements for parameters for which accreditation is required or available. Any exceptions to NELAC Institute requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

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Contents

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1974

Contents

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 03/22/18. They were assigned to Work Order 18-03-1974.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

DoD Projects:

The test results contained in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation ADE-1864.

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Sample Summary

Client:	CH2M HILL - Gainesville 3011 S.W. Williston Road Gainesville, FL 32608-3928	Work Order:	18-03-1974
		Project Name:	SSFL CH661 / 692670.61.SW
		PO Number:	
		Date/Time Received:	03/22/18 17:00
		Number of Containers:	49
Attn:	Randy Dean		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
A2BMP0006S005	18-03-1974-1	03/22/18 11:00	7	Aqueous
A2BMP0007S011	18-03-1974-2	03/22/18 11:30	7	Aqueous
EVBMP0002S022	18-03-1974-3	03/22/18 07:50	8	Aqueous
EVBMP0007S010	18-03-1974-4	03/22/18 09:00	7	Aqueous
EVBMP0008S013	18-03-1974-5	03/22/18 09:20	8	Aqueous
EVBMP0009S011	18-03-1974-6	03/22/18 08:50	8	Aqueous
FBQW1853Q001	18-03-1974-7	03/22/18 14:00	4	Aqueous

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QC Association Summary

Work Order: 18-03-1974

Client Sample ID	Method Name	Type	Ext Name	Instrument	MS/MSD/SDP	LCS/LCSD
A2BMP0006S005	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
A2BMP0006S005	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180327SA2	180327LA2
A2BMP0006S005	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180327SA3	180327LA3F
A2BMP0006S005	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1	180328LA1
A2BMP0006S005	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2	180328LA2F
A2BMP0006S005	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD5	I0327TSSL3
A2BMP0007S011	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
A2BMP0007S011	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180327SA2	180327LA2
A2BMP0007S011	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180327SA3	180327LA3F
A2BMP0007S011	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1	180328LA1
A2BMP0007S011	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2	180328LA2F
A2BMP0007S011	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD5	I0327TSSL3
EVBMP0002S022	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
EVBMP0002S022	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180327SA2	180327LA2
EVBMP0002S022	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180327SA3	180327LA3F
EVBMP0002S022	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1	180328LA1
EVBMP0002S022	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2	180328LA2F
EVBMP0002S022	SM 2130 B Turbidity		N/A	TUR 4	I0323TURL1	*4
EVBMP0002S022	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD5	I0327TSSL3
EVBMP0007S010	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
EVBMP0007S010	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180327SA2	180327LA2
EVBMP0007S010	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180327SA3	180327LA3F
EVBMP0007S010	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1	180328LA1
EVBMP0007S010	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2	180328LA2F
EVBMP0007S010	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD5	I0327TSSL3
EVBMP0008S013	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
EVBMP0008S013	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180327SA2	180327LA2
EVBMP0008S013	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180327SA3	180327LA3F
EVBMP0008S013	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1	180328LA1
EVBMP0008S013	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2	180328LA2F
EVBMP0008S013	SM 2130 B Turbidity		N/A	TUR 4	I0323TURL1	*4
EVBMP0008S013	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD5	I0327TSSL3
EVBMP0009S011	ASTM D4464 (M) Particle Size Laser		N/A	LPSA 1	*4	*4
EVBMP0009S011	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180327SA2	180327LA2
EVBMP0009S011	EPA 200.8 ICP/MS Metals		Filtered	ICP/MS 03	180327SA3	180327LA3F
EVBMP0009S011	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1	180328LA1
EVBMP0009S011	EPA 245.1 Mercury, Dissolved		EPA 245.1 Filt.	Mercury 07	180328SA2	180328LA2F
EVBMP0009S011	SM 2130 B Turbidity		N/A	TUR 4	I0323TURL1	*4
EVBMP0009S011	SM 2540 D Total Suspended Solids		N/A	N/A	I0327TSSD5	I0327TSSL3
FBQW1853Q001	EPA 200.8 ICP/MS Metals		N/A	ICP/MS 03	180327SA2	180327LA2
FBQW1853Q001	EPA 245.1 Mercury		EPA 245.1 Total	Mercury 07	180328SA1	180328LA1

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4 = Per the method, no associated matrix QC

Detections Summary

Client:	CH2M HILL - Gainesville 3011 S.W. Williston Road Gainesville, FL 32608-3928	Work Order:	18-03-1974
		Project Name:	SSFL CH661 / 692670.61.SW
		Received:	03/22/18
Attn:	Randy Dean		

Client SampleID / Analyte	Result	Qualifiers	RL	Units	Method	Extraction
A2BMP0006S005 (18-03-1974-1)						
Clay (less than 0.00391mm)	22.43			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	76.28			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	98.71			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	1.29			%	ASTM D4464 (M)	N/A
Copper	0.00216		0.00100	mg/L	EPA 200.8	N/A
Lead	0.00149		0.00100	mg/L	EPA 200.8	N/A
Copper	0.000901	J	0.000140*	mg/L	EPA 200.8	Filtered
Lead	0.000147	J	0.0000898*	mg/L	EPA 200.8	Filtered
Solids, Total Suspended	5.8		1.0	mg/L	SM 2540 D	N/A
A2BMP0007S011 (18-03-1974-2)						
Clay (less than 0.00391mm)	7.26			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	21.83			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	29.09			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	40.57			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	30.32			%	ASTM D4464 (M)	N/A
Medium Sand (0.25 to 0.5mm)	0.018			%	ASTM D4464 (M)	N/A
Copper	0.00200		0.00100	mg/L	EPA 200.8	N/A
Lead	0.00230		0.00100	mg/L	EPA 200.8	N/A
Copper	0.000896	J	0.000140*	mg/L	EPA 200.8	Filtered
Lead	0.000148	J	0.0000898*	mg/L	EPA 200.8	Filtered
Solids, Total Suspended	4.0		1.0	mg/L	SM 2540 D	N/A
EVBMP0002S022 (18-03-1974-3)						
Clay (less than 0.00391mm)	5.32			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	22.59			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	27.91			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	52.71			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	19.38			%	ASTM D4464 (M)	N/A
Copper	0.00569		0.00100	mg/L	EPA 200.8	N/A
Lead	0.00348		0.00100	mg/L	EPA 200.8	N/A
Copper	0.00520		0.00100	mg/L	EPA 200.8	Filtered
Lead	0.000727	J	0.0000898*	mg/L	EPA 200.8	Filtered
Turbidity	8.0		0.10	NTU	SM 2130 B	N/A
Solids, Total Suspended	4.3		1.0	mg/L	SM 2540 D	N/A

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* MDL is shown

Detections Summary

Client:	CH2M HILL - Gainesville	Work Order:	18-03-1974
	3011 S.W. Williston Road	Project Name:	SSFL CH661 / 692670.61.SW
	Gainesville, FL 32608-3928	Received:	03/22/18
Attn:	Randy Dean		

Client SampleID

Analyte	Result	Qualifiers	RL	Units	Method	Extraction
EVBMP0007S010 (18-03-1974-4)						
Clay (less than 0.00391mm)	3.99			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	21.77			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	25.76			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	32.97			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	24.36			%	ASTM D4464 (M)	N/A
Medium Sand (0.25 to 0.5mm)	16.91			%	ASTM D4464 (M)	N/A
Copper	0.00215		0.00100	mg/L	EPA 200.8	N/A
Lead	0.00111		0.00100	mg/L	EPA 200.8	N/A
Copper	0.00169		0.00100	mg/L	EPA 200.8	Filtered
Lead	0.000276	J	0.0000898*	mg/L	EPA 200.8	Filtered
Solids, Total Suspended	2.9		1.0	mg/L	SM 2540 D	N/A
EVBMP0008S013 (18-03-1974-5)						
Clay (less than 0.00391mm)	22.02			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	57.60			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	79.62			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	15.37			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	5.01			%	ASTM D4464 (M)	N/A
Copper	0.00199		0.00100	mg/L	EPA 200.8	N/A
Lead	0.00126		0.00100	mg/L	EPA 200.8	N/A
Copper	0.00128		0.00100	mg/L	EPA 200.8	Filtered
Lead	0.000160	J	0.0000898*	mg/L	EPA 200.8	Filtered
Turbidity	35		1.0	NTU	SM 2130 B	N/A
Solids, Total Suspended	36		1.0	mg/L	SM 2540 D	N/A
EVBMP0009S011 (18-03-1974-6)						
Clay (less than 0.00391mm)	7.52			%	ASTM D4464 (M)	N/A
Silt (0.00391 to 0.0625mm)	34.79			%	ASTM D4464 (M)	N/A
Total Silt and Clay (0 to 0.0625mm)	42.31			%	ASTM D4464 (M)	N/A
Very Fine Sand (0.0625 to 0.125mm)	36.59			%	ASTM D4464 (M)	N/A
Fine Sand (0.125 to 0.25mm)	19.86			%	ASTM D4464 (M)	N/A
Medium Sand (0.25 to 0.5mm)	1.23			%	ASTM D4464 (M)	N/A
Copper	0.00213		0.00100	mg/L	EPA 200.8	N/A
Lead	0.00112		0.00100	mg/L	EPA 200.8	N/A
Copper	0.00164		0.00100	mg/L	EPA 200.8	Filtered
Lead	0.000289	J	0.0000898*	mg/L	EPA 200.8	Filtered
Turbidity	7.3		0.10	NTU	SM 2130 B	N/A
Solids, Total Suspended	1.7		1.0	mg/L	SM 2540 D	N/A
FBQW1853Q001 (18-03-1974-7)						
Copper	0.00103		0.00100	mg/L	EPA 200.8	N/A

* MDL is shown

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Detections Summary

Client:	CH2M HILL - Gainesville 3011 S.W. Williston Road Gainesville, FL 32608-3928	Work Order:	18-03-1974
		Project Name:	SSFL CH661 / 692670.61.SW
		Received:	03/22/18
Attn:	Randy Dean		

Client SampleID

Analyte	Result	Qualifiers	RL	Units	Method	Extraction

Subcontracted analyses, if any, are not included in this summary.

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* MDL is shown

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: N/A
Method: SM 2130 B
Units: NTU

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0002S022	**18-03-1974-3-C**	**03/22/18 07:50**	**Aqueous**	**TUR 4**	**N/A**	**03/23/18 14:35**	**I0323TURL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Turbidity	8.0	0.10	0.044	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0008S013	**18-03-1974-5-C**	**03/22/18 09:20**	**Aqueous**	**TUR 4**	**N/A**	**03/23/18 14:35**	**I0323TURL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Turbidity	35	1.0	0.044	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0009S011	**18-03-1974-6-C**	**03/22/18 08:50**	**Aqueous**	**TUR 4**	**N/A**	**03/23/18 14:35**	**I0323TURL1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Turbidity	7.3	0.10	0.044	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received:	03/22/18
Work Order:	18-03-1974
Preparation:	N/A
Method:	SM 2540 D
Units:	mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0006S005	**18-03-1974-1-F**	**03/22/18 11:00**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 18:00**	**I0327TSSL3**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	5.8	1.0	0.83	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0007S011	**18-03-1974-2-F**	**03/22/18 11:30**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 18:00**	**I0327TSSL3**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	4.0	1.0	0.83	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0002S022	**18-03-1974-3-F**	**03/22/18 07:50**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 18:00**	**I0327TSSL3**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	4.3	1.0	0.83	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0007S010	**18-03-1974-4-F**	**03/22/18 09:00**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 18:00**	**I0327TSSL3**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	2.9	1.0	0.83	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0008S013	**18-03-1974-5-F**	**03/22/18 09:20**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 18:00**	**I0327TSSL3**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	36	1.0	0.83	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0009S011	**18-03-1974-6-F**	**03/22/18 08:50**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 18:00**	**I0327TSSL3**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	1.7	1.0	0.83	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: N/A
Method: SM 2540 D
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-09-010-9010**	**N/A**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 18:00**	**I0327TSSL3**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Solids, Total Suspended	ND	1.0	0.83	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: N/A
Method: EPA 200.8
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0006S005	**18-03-1974-1-A**	**03/22/18 11:00**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:12**	**180327LA2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00216	0.00100	0.000140	1.00	
Lead	0.00149	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0007S011	**18-03-1974-2-A**	**03/22/18 11:30**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:22**	**180327LA2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00200	0.00100	0.000140	1.00	
Lead	0.00230	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0002S022	**18-03-1974-3-A**	**03/22/18 07:50**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:24**	**180327LA2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00569	0.00100	0.000140	1.00	
Lead	0.00348	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0007S010	**18-03-1974-4-A**	**03/22/18 09:00**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:27**	**180327LA2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00215	0.00100	0.000140	1.00	
Lead	0.00111	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0008S013	**18-03-1974-5-A**	**03/22/18 09:20**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:29**	**180327LA2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00199	0.00100	0.000140	1.00	
Lead	0.00126	0.00100	0.0000898	1.00	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: N/A
Method: EPA 200.8
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0009S011	**18-03-1974-6-A**	**03/22/18 08:50**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:31**	**180327LA2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00213	0.00100	0.000140	1.00	
Lead	0.00112	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
FBQW1853Q001	**18-03-1974-7-A**	**03/22/18 14:00**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:34**	**180327LA2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00103	0.00100	0.000140	1.00	
Lead	ND	0.00100	0.0000898	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-094-2272**	**N/A**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 19:54**	**180327LA2**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	ND	0.00100	0.000140	1.00	
Lead	ND	0.00100	0.0000898	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: Filtered
Method: EPA 200.8
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0006S005	**18-03-1974-1-C**	**03/22/18 11:00**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:56**	**180327LA3F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.000901	0.00100	0.000140	1.00	J
Lead	0.000147	0.00100	0.0000898	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0007S011	**18-03-1974-2-C**	**03/22/18 11:30**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:54**	**180327LA3F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.000896	0.00100	0.000140	1.00	J
Lead	0.000148	0.00100	0.0000898	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0002S022	**18-03-1974-3-C**	**03/22/18 07:50**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:59**	**180327LA3F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00520	0.00100	0.000140	1.00	
Lead	0.000727	0.00100	0.0000898	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0007S010	**18-03-1974-4-C**	**03/22/18 09:00**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 21:01**	**180327LA3F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00169	0.00100	0.000140	1.00	
Lead	0.000276	0.00100	0.0000898	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0008S013	**18-03-1974-5-C**	**03/22/18 09:20**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 21:04**	**180327LA3F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00128	0.00100	0.000140	1.00	
Lead	0.000160	0.00100	0.0000898	1.00	J

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: Filtered
Method: EPA 200.8
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0009S011	**18-03-1974-6-C**	**03/22/18 08:50**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 21:06**	**180327LA3F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	0.00164	0.00100	0.000140	1.00	
Lead	0.000289	0.00100	0.0000898	1.00	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-900-199**	**N/A**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:36**	**180327LA3F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	ND	0.00100	0.000128	1.00	
Copper	ND	0.00100	0.000140	1.00	
Lead	ND	0.00100	0.0000898	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: EPA 245.1 Total
Method: EPA 245.1
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0006S005	**18-03-1974-1-A**	**03/22/18 11:00**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:55**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0007S011	**18-03-1974-2-A**	**03/22/18 11:30**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:57**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0002S022	**18-03-1974-3-A**	**03/22/18 07:50**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:59**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0007S010	**18-03-1974-4-A**	**03/22/18 09:00**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:02**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0008S013	**18-03-1974-5-A**	**03/22/18 09:20**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:48**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0009S011	**18-03-1974-6-A**	**03/22/18 08:50**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:04**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: EPA 245.1 Total
Method: EPA 245.1
Units: mg/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
FBQW1853Q001	**18-03-1974-7-A**	**03/22/18 14:00**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:11**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-484-23**	**N/A**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:43**	**180328LA1**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: EPA 245.1 Filt.
Method: EPA 245.1
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0006S005	**18-03-1974-1-C**	**03/22/18 11:00**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:29**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0007S011	**18-03-1974-2-C**	**03/22/18 11:30**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:31**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0002S022	**18-03-1974-3-C**	**03/22/18 07:50**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:38**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0007S010	**18-03-1974-4-C**	**03/22/18 09:00**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:40**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0008S013	**18-03-1974-5-C**	**03/22/18 09:20**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:43**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0009S011	**18-03-1974-6-C**	**03/22/18 08:50**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:45**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: EPA 245.1 Filt.
Method: EPA 245.1
Units: mg/L

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-16-520-20**	**N/A**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:15**	**180328LA2F**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.000200	0.0000453	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: N/A
Method: ASTM D4464 (M)
Units: %

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0006S005	**18-03-1974-1-F**	**03/22/18 11:00**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 19:07**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	22.43	
Silt (0.00391 to 0.0625mm)	76.28	
Total Silt and Clay (0 to 0.0625mm)	98.71	
Very Fine Sand (0.0625 to 0.125mm)	1.29	
Fine Sand (0.125 to 0.25mm)	ND	
Medium Sand (0.25 to 0.5mm)	ND	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
A2BMP0007S011	**18-03-1974-2-F**	**03/22/18 11:30**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 19:16**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	7.26	
Silt (0.00391 to 0.0625mm)	21.83	
Total Silt and Clay (0 to 0.0625mm)	29.09	
Very Fine Sand (0.0625 to 0.125mm)	40.57	
Fine Sand (0.125 to 0.25mm)	30.32	
Medium Sand (0.25 to 0.5mm)	0.018	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0002S022	**18-03-1974-3-F**	**03/22/18 07:50**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 19:22**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	5.32	
Silt (0.00391 to 0.0625mm)	22.59	
Total Silt and Clay (0 to 0.0625mm)	27.91	
Very Fine Sand (0.0625 to 0.125mm)	52.71	
Fine Sand (0.125 to 0.25mm)	19.38	
Medium Sand (0.25 to 0.5mm)	ND	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: N/A
Method: ASTM D4464 (M)
Units: %

Project: SSFL CH661 / 692670.61.SW

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0007S010	**18-03-1974-4-F**	**03/22/18 09:00**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 19:41**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	3.99	
Silt (0.00391 to 0.0625mm)	21.77	
Total Silt and Clay (0 to 0.0625mm)	25.76	
Very Fine Sand (0.0625 to 0.125mm)	32.97	
Fine Sand (0.125 to 0.25mm)	24.36	
Medium Sand (0.25 to 0.5mm)	16.91	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0008S013	**18-03-1974-5-F**	**03/22/18 09:20**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 20:00**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	22.02	
Silt (0.00391 to 0.0625mm)	57.60	
Total Silt and Clay (0 to 0.0625mm)	79.62	
Very Fine Sand (0.0625 to 0.125mm)	15.37	
Fine Sand (0.125 to 0.25mm)	5.01	
Medium Sand (0.25 to 0.5mm)	ND	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EVBMP0009S011	**18-03-1974-6-F**	**03/22/18 08:50**	**Aqueous**	**LPSA 1**	**N/A**	**03/26/18 20:09**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	7.52	
Silt (0.00391 to 0.0625mm)	34.79	
Total Silt and Clay (0 to 0.0625mm)	42.31	
Very Fine Sand (0.0625 to 0.125mm)	36.59	
Fine Sand (0.125 to 0.25mm)	19.86	
Medium Sand (0.25 to 0.5mm)	1.23	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Quality Control - Spike/Spike Duplicate

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: N/A
Method: EPA 200.8

Project: SSFL CH661 / 692670.61.SW

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
A2BMP0006S005	**Sample**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:12**	**180327SA2**
A2BMP0006S005	**Matrix Spike**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:07**	**180327SA2**
A2BMP0006S005	**Matrix Spike Duplicate**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:09**	**180327SA2**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Cadmium	ND	0.1000	0.1145	114	0.1131	113	80-120	1	0-20	
Copper	0.002159	0.1000	0.1094	107	0.1096	107	80-120	0	0-20	
Lead	0.001491	0.1000	0.1161	115	0.1160	114	80-120	0	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - Spike/Spike Duplicate

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: Filtered
Method: EPA 200.8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
A2BMP0007S011	**Sample**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:54**	**180327SA3**
A2BMP0007S011	**Matrix Spike**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:41**	**180327SA3**
A2BMP0007S011	**Matrix Spike Duplicate**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:44**	**180327SA3**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Cadmium	ND	0.1000	0.1039	104	0.1068	107	80-120	3	0-20	
Copper	ND	0.1000	0.09776	98	0.09965	100	80-120	2	0-20	
Lead	ND	0.1000	0.1023	102	0.1048	105	80-120	2	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - Spike/Spike Duplicate

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: EPA 245.1 Total
Method: EPA 245.1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
EVBMP0008S013	**Sample**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:48**	**180328SA1**
EVBMP0008S013	**Matrix Spike**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:50**	**180328SA1**
EVBMP0008S013	**Matrix Spike Duplicate**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:53**	**180328SA1**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	ND	0.01000	0.008656	87	0.009065	91	75-125	5	0-20	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Quality Control - Spike/Spike Duplicate

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: EPA 245.1 Filt.
Method: EPA 245.1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
18-03-1723-1	**Sample**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:20**	**180328SA2**
18-03-1723-1	**Matrix Spike**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:22**	**180328SA2**
18-03-1723-1	**Matrix Spike Duplicate**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:24**	**180328SA2**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	ND	0.01000	0.009170	92	0.009109	91	57-141	1	0-10	

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RPD: Relative Percent Difference. CL: Control Limits

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Quality Control - Sample Duplicate

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: N/A
Method: SM 2130 B

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
18-03-1999-1	**Sample**	**Aqueous**	**TUR 4**	**N/A**	**03/23/18 14:21**	**I0323TURL1**
18-03-1999-1	**Sample Duplicate**	**Aqueous**	**TUR 4**	**N/A**	**03/23/18 14:22**	**I0323TURL1**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Turbidity	4.530	4.210	7	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - Sample Duplicate

CH2M HILL - Gainesville		Date Received:	03/22/18
3011 S.W. Williston Road		Work Order:	18-03-1974
Gainesville, FL 32608-3928		Preparation:	N/A
		Method:	SM 2540 D
Project: SSFL CH661 / 692670.61.SW			Page 2 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
A2BMP0007S011	**Sample**	**Aqueous**	**N/A**	**03/27/18 00:00**	**03/27/18 18:00**	**I0327TSSD5**
A2BMP0007S011	**Sample Duplicate**	**Aqueous**	**N/A**	**03/27/18 00:00**	**03/27/18 18:00**	**I0327TSSD5**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Solids, Total Suspended	4.000	4.000	0	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - LCS/LCSD

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: N/A
Method: SM 2540 D

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-09-010-9010	**LCS**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 18:00**	**I0327TSSL3**
099-09-010-9010	**LCSD**	**Aqueous**	**N/A**	**03/27/18**	**03/27/18 18:00**	**I0327TSSL3**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Solids, Total Suspended	100.0	92.00	92	95.00	95	80-120	3	0-20	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Quality Control - LCS

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: N/A
Method: EPA 200.8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-16-094-2272	**LCS**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 19:57**	**180327LA2**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Cadmium	0.1000	0.1067	107	80-120	
Copper	0.1000	0.09992	100	80-120	
Lead	0.1000	0.1044	104	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - LCS

CH2M HILL - Gainesville
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Project: SSFL CH661 / 692670.61.SW

Date Received: 03/22/18
Work Order: 18-03-1974
Preparation: Filtered
Method: EPA 200.8

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-12-900-199	**LCS**	**Aqueous**	**ICP/MS 03**	**03/27/18**	**03/27/18 20:39**	**180327LA3F**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Cadmium	0.1000	0.1058	106	80-120	
Copper	0.1000	0.09756	98	80-120	
Lead	0.1000	0.1049	105	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - LCS

CH2M HILL - Gainesville		Date Received:	03/22/18
3011 S.W. Williston Road		Work Order:	18-03-1974
Gainesville, FL 32608-3928		Preparation:	EPA 245.1 Total
		Method:	EPA 245.1
Project: SSFL CH661 / 692670.61.SW			Page 4 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-16-484-23	**LCS**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 15:46**	**180328LA1**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Mercury	0.01000	0.009463	95	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - LCS

CH2M HILL - Gainesville		Date Received:	03/22/18
3011 S.W. Williston Road		Work Order:	18-03-1974
Gainesville, FL 32608-3928		Preparation:	EPA 245.1 Filt.
		Method:	EPA 245.1
Project: SSFL CH661 / 692670.61.SW			Page 5 of 5

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-16-520-20	**LCS**	**Aqueous**	**Mercury 07**	**03/28/18**	**03/28/18 16:18**	**180328LA2F**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Mercury	0.01000	0.009503	95	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

Sample Analysis Summary Report

Work Order: 18-03-1974

Method	Extraction	Chemist ID	Instrument	Analytical Location
ASTM D4464 (M)	N/A	1106	LPSA 1	1
EPA 200.8	N/A	598	ICP/MS 03	1
EPA 200.8	Filtered	598	ICP/MS 03	1
EPA 245.1	EPA 245.1 Total	868	Mercury 07	1
EPA 245.1	EPA 245.1 Filt.	868	Mercury 07	1
SM 2130 B	N/A	1086	TUR 4	1
SM 2540 D	N/A	1136	N/A	1

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Glossary of Terms and Qualifiers

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Chain of Custody Record

COC Number: CALS03221801

JACOBS ch2m

3/22/2018 1:49:30 PM

18-03-1974

Project Name	SSFL	**Location**	Santa Susana Field Lab
Project	CH661 PO 100067108373		
Project Number	692670.61.SW	**Task Order**	661
Project Manager	Randy Dean		
Sample Manager	Jamie Beckett	530 570 5084	
Turnaround Time	10 Days		
PO Number	100067108373		

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
A2BMP0006S005	22-Mar-18 11:00	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
				Total Containers:		7						
A2BMP0007S011	22-Mar-18 11:30	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
				Total Containers:		7						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by	BRYAN BENSON	3/22/18
Relinquished by		3/22/18 1700
Received by	C.C	3/22/18 1500
Relinquished by		3/22/18 1700
Received by		3/22/18 1700

Shipping Details

Shipment Method: FedEx

Airbill No:

Lab Name: CalScience

Lab Phone: (949) 870-8766

On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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1974

Chain of Custody Record

COC Number: CALS03221801

JACOBS ch2m

3/22/2018 1:49:30 PM

Project Name	SSFL	**Location**	Santa Susana Field Lab
Project	CH661 PO 100067108373		
Project Number	692670.61.SW	**Task Order**	661
Project Manager	Randy Dean		
Sample Manager	Jamie Beckett		530 570 5084
Turnaround Time	10 Days		
PO Number	100067108373		

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B																			
EVBMP0002S022	22-Mar-18 7:50	N	Water																												
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
				Total Containers:		8																									
EVBMP0007S010	22-Mar-18 9:00	N	Water																												
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
				Total Containers:		7																									

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by	BRYAN DENON	3/22/18
Relinquished by		3/22/18 1500
Received by	E.C	3/22/18 1500
Relinquished by		3/22/18 1900
Received by		3/22/18 1700

Shipping Details

Shipment Method: FedEx

Airbill No:

Lab Name: CalScience

Lab Phone: (949) 870-8766

On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

Return to Contents

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Chain of Custody Record

COC Number: CALS03221801

JACOBS ch2m

3/22/2018 1:49:30 PM

Project Name SSFL **Location** Santa Susana Field Lab
Project CH661 PO 100067108373
Project Number 692670.61.SW **Task Order** 661
Project Manager Randy Dean
Sample Manager Jamie Beckett 530 570 5084
Turnaround Time 10 Days
PO Number 100067108373

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
EVBMP0008S013	22-Mar-18 9:20	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		8						
EVBMP0009S011	22-Mar-18 8:50	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		8						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by	D Dawson	3/22/18
Relinquished by		3/22/18 1500
Received by	E-C	3/22/18 1500
Relinquished by		3/22/18 1700
Received by		3/22/18 1700

Shipping Details

Shipment Method: FedEx
Airbill No:
Lab Name: CalScience
Lab Phone: (949) 870-8766
On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

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(530) 229-3273

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Chain of Custody Record

COC Number: **CALS03221801**

JACOBS ch2m

3/22/2018 1:49:30 PM

Project Name SSFL
Location Santa Susana Field Lab
Project CH661 PO 100067108373
Project Number 692670.61.SW
Task Order 661
Project Manager Randy Dean
Sample Manager Jamie Beckett 530 570 5084
Turnaround Time 10 Days
PO Number 100067108373

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
FBQW1853Q001	22-Mar-18 14:00	EB	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
				Total Containers:		**4**						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by	Bryan Denson	3/22/18
Relinquished by	[signature]	3/22/18 1500
Received by	[signature]	3/22/18 1515
Relinquished by	[signature]	3/22/18 1718
Received by	[signature]	3/22/18 1700

Shipping Details

Shipment Method: FedEx
Airbill No:
Lab Name: CalScience
Lab Phone: (949) 870-8766
On Ice: yes / no **Cooler Temp** ________

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

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WORK ORDER NUMBER: 18-03- 1974

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 3

CLIENT: CH2M

DATE: 03/22/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.7 °C (w/ CF): 2.9 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 804

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 804

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1140

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☑ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOAh ☐ VOA**na**$_2$ ☐ 100PJ ☐ 100PJ**na**$_2$ ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH<2) (2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☑ 500PB

☑ 1AGB (2) ☐ 1AGB**na**$_2$ ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☑ 1PB (2) ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na**$_2$ = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 1140

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: LRG

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WORK ORDER NUMBER: 18-03-1974

SAMPLE RECEIPT CHECKLIST

COOLER 2 OF 3

CLIENT: CH2M

DATE: 03/22/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.5 °C (w/ CF): 2.7 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 804

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 804

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1140

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☑ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH<2) (2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☑ 500PB

☑ 1AGB (2) ☐ 1AGB**na$_2$** ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☑ 1PB (3) ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 1148

Reviewed by: 1129

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WORK ORDER NUMBER: 18-03-1974

SAMPLE RECEIPT CHECKLIST

COOLER 3 OF 3

CLIENT: CH2M

DATE: 03/22/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.6 °C (w/ CF): 2.8 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 804

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 804

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1146

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH✓2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☐ 500PB

☑ 1AGB (2) ☐ 1AGB**na$_2$** ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☐ 1PB ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 1140

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: 657

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Subcontractor Analysis Report

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

1. Cape Fear Analytical - Wilmington,NC
   EPA 1613B

Subcontract analyses pending and will be sent as a supplemental report package.

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Case Narrative

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1974

CONDITION UPON RECEIPT:

Eurofins Calscience received seven aqueous samples on March 22nd, 2018. A total of 49 containers were received in good condition at temperatures of 2.7°C, 2.8°C, and 2.9°C, which were within the recommended temperature criteria of 0°C – 6°C.

Client Sample ID	Lab Sample ID	Date & Time Sampled	Date & Time Received
A2BMP0006S005	18-03-1974-1	03/22/18 11:00	03/22/18 17:00
A2BMP0007S011	18-03-1974-2	03/22/18 11:30	03/22/18 17:00
EVBMP0002S022	18-03-1974-3	03/22/18 07:50	03/22/18 17:00
EVBMP0007S010	18-03-1974-4	03/22/18 09:00	03/22/18 17:00
EVBMP0008S013	18-03-1974-5	03/22/18 09:20	03/22/18 17:00
EVBMP0009S011	18-03-1974-6	03/22/18 08:50	03/22/18 17:00
FBQW1853Q001	18-03-1974-7	03/22/18 14:00	03/22/18 17:00

DATA SUMMARY:

As per the chain of custody (COC), the samples were analyzed using one or more of the following methodologies:

- ASTM D4464 (M) Particle Size Laser
- EPA 200.8 ICP/MS Metals (Filtered)
- EPA 200.8 ICP/MS Metals (Total)
- EPA 245.1 Mercury (Filtered)
- EPA 245.1 Mercury (Total)
- SM 2130 B Turbidity
- SM 2540 D Total Suspended Solids

Additionally, the samples were subcontracted to Cape Fear Analytical for Dioxins/Furans by EPA 1613B. This data package only narrates the analytical data performed by Eurofins Calscience.

The samples were analyzed within the suggested EPA holding time for the requested methods unless otherwise noted.

Sample results were reported down to the MDL. A "J" flag was applied to the data where an analyte was detected at a concentration between the RL and MDL, indicating an estimated value.

Any dilutions made to the sample(s) and/or QC will be noted in the following narrative. Reporting limits have been adjusted accordingly.

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Case Narrative

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1974

Manual integrations made to the data will be noted in the following narrative. The before and amended chromatograms have been included in the data package.

All samples and analytical QC are within acceptance criteria unless otherwise noted.

ASTM D4464 (M) Particle Size Laser:

Samples -1 through -6 were analyzed for Particle Size by ASTM D4464 (M) on 03/26/18 on LPSA 1.

Initial and Daily Performance Verification:

All values were within acceptance criteria.

Sample and QC:

Sample -3 was used as the sample duplicate for quality control.

EPA 200.8 ICP/MS Metals (Filtered):

Samples -1 through -6 were analyzed for dissolved Metals by EPA 200.8. The samples were prepared and analyzed on 03/27/18 in batch #s 180327LA3F / 180327SA3 on ICP/MS 03.

Initial Calibration, Initial Calibration Verification and Initial Calibration Blank:

All values were within acceptance criteria.

Continuing Calibration Verification and Continuing Calibration Blank:

All values were within acceptance criteria.

ICS A/AB:

All values were within acceptance criteria.

Sample and QC:

Sample -2 was used for the MS/MSD. The method blank was non-detect; the LCS and MS/MSD were within acceptance criteria for all project-specific analytes.

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Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1974

EPA 200.8 ICP/MS Metals (Total):

Samples -1 through -7 were analyzed for total Metals by EPA 200.8. The samples were prepared and analyzed on 03/27/18 in batch #s 180327LA2 / 180327SA2 on ICP/MS 03.

Initial Calibration, Initial Calibration Verification and Initial Calibration Blank:

All values were within acceptance criteria.

Continuing Calibration Verification and Continuing Calibration Blank:

All values were within acceptance criteria.

ICS A/AB:

All values were within acceptance criteria.

Sample and QC:

Sample -1 was used for the MS/MSD. The method blank was non-detect for project-specific analytes; the LCS and MS/MSD were within acceptance criteria for all project-specific analytes.

EPA 245.1 Mercury (Filtered):

Samples -1 through -6 were analyzed for dissolved Mercury by EPA 245.1. The samples were prepared and analyzed on 03/28/18 in batch #s 180328LA2F / 180328SA2 on Mercury 07.

Initial Calibration, Initial Calibration Verification and Initial Calibration Blank:

All values were within acceptance criteria.

Continuing Calibration Verification and Continuing Calibration Blank:

All values were within acceptance criteria.

Sample and QC:

The method blank was non-detected and the LCS was within acceptance criteria.

A non-client sample was used for the MS/MSD; refer the MS/MSD summary form for further information.

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7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1974

EPA 245.1 Mercury (Total):

Samples -1 through -7 were analyzed for total Mercury by EPA 245.1. The samples were prepared and analyzed on 03/28/18 in batch #s 180328LA1 / 180328SA1 on Mercury 07.

Initial Calibration, Initial Calibration Verification and Initial Calibration Blank:

All values were within acceptance criteria.

Continuing Calibration Verification and Continuing Calibration Blank:

All values were within acceptance criteria.

Sample and QC:

Sample -5 was used for the MS/MSD. The method blank was non-detected; the LCS and MS/MSD were within acceptance criteria.

SM 2130 B Turbidity:

Samples -3, -5 and -6 were analyzed for Turbidity by SM 2130 B on 03/23/18 in batch # I0323TURL1 on TUR 04.

Calibration/Verification:

All values were within acceptance criteria.

Sample and QC:

The LCS was within acceptance criteria.

A non-client sample was used as the sample duplicate for quality control; refer to the duplicate analysis summary form for further information.

SM 2540 D Total Suspended Solids:

Samples -1 through -6 were analyzed for Total Suspended Solids by SM 2540 D. The samples were prepared and analyzed on 03/27/18 in batch #s I0327TSSL3 / I0327TSSD5.

Balance Calibration/Verification:

All values were within acceptance criteria.

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Case Narrative

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1974

Sample and QC:

Sample -2 was used for the MS/MSD. The method blank was non-detect; the LCS/LCSD and MS/MSD were within acceptance criteria.

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SM 2130 B

Turbidity

RAW DATA

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RAW DATA SHEET
FOR METHOD: SM 2130 B

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,086
INSTRUMENT:	TUR 4	D/T ANALYZED:	2018-03-23 14:35
EXTRACTION :	N/A	REVIEWED BY:	1,086
D/T EXTRACTED:		D/T REVIEWED:	2018-04-02 12:13

DATA FILE: NONE

 # 3 **CLIENT SAMPLE NUMBER: EVBMP0002S022**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0323TURL1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	NTU	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Turbidity	8.03	1.00	8.03	0.10	

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RAW DATA SHEET
FOR METHOD: SM 2130 B

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,086
INSTRUMENT:	TUR 4	D/T ANALYZED:	2018-03-23 14:35
EXTRACTION :	N/A	REVIEWED BY:	1,086
D/T EXTRACTED:		D/T REVIEWED:	2018-04-02 12:13

DATA FILE: NONE

 # 5 **CLIENT SAMPLE NUMBER: EVBMP0008S013**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0323TURL1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	NTU	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Turbidity	35.1	1.00	35.1	1.0	

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RAW DATA SHEET
FOR METHOD: SM 2130 B

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,086
INSTRUMENT:	TUR 4	D/T ANALYZED:	2018-03-23 14:35
EXTRACTION :	N/A	REVIEWED BY:	1,086
D/T EXTRACTED:		D/T REVIEWED:	2018-04-02 12:13

DATA FILE: NONE

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0009S011**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0323TURL1	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	NTU	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Turbidity	7.33	1.00	7.33	0.10	

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DUPLICATE REPORT
FOR METHOD: SM 2130 B

DUP SAMPLE ID: 18-03-1999-1
DUP BATCH : I0323TURL1
INSTRUMENTS:
SAMPLE: TUR 4
DUP SAMPLE: TUR 4

EXTRACTION : N/A
D/T EXTRACTED :
SAMPLE:
DUP SAMPLE:

ANALYZED BY: 1,086
D/T ANALYZED
SAMPLE: 2018-03-23 14:21
DUP SAMPLE: 2018-03-23 14:22
REVIEWED BY: 793
D/T REVIEWED 2018-04-05 10:30

COMPOUND	SAMPLE CONC	DUP CONC	% RPD	CONTROL LIMIT	STATUS	QUALIFIERS
Turbidity	4.530	4.210	7	0-25	PASS	

Data Files:

TYPE	DATA FILE	DATA FILE PATH
SDP		

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Turbidity Logbook

METHOD	MATRIX	ANALYSIS DATE	ANALYST(S)	BATCH NUMBER 1086 ~~0304~~/02/18	CONC UNIT	INSTRUMENT ID
☑ SM 2130 B ☐ EPA 180.1	Aqueous	03/23/18	1151/1139	LCS: I 0323TUR ~~B1~~ L1 Sample Duplicate: D1	NTU	☐ TUR 03 ☑ Other TUR4

	STANDARD ID #	NOMINAL CONC	RECORDED CONC	CONTROL LIMIT	CEL ID #	INITIAL CONC	FINAL CONC	DIL FACTOR	RPD	CONTROL LIMITS
STD-1	~~G001~~ - 082 - 19	0.020	0.020	0.00 - 0.040	Sample: 18-03-1999-1E	4.53	4.5	1	7	0 – 25
STD-2	↓ 20	10	9.97	9.9 - 10.1	Duplicate: ↓ 1E	4.21	4.2	1		
STD-3	↓ 21	1000	1001	990 - 1010						

	STANDARD ID # 1151 03/23/18	NOMINAL CONC	RECOVERED CONC	% REC	CONTROL LIMIT	COMMENT	Instruction:
LCS	GS03 2318 ~~AA~~ X	100	95.1	95	95 - 105	p-121	CEL ID consists of Work Order Number and Bottle/Vial ID

CEL ID #	SAMPLE INITIAL V (mL)	SAMPLE FINAL V (mL)	SAMPLE DF	INITIAL CONC	FINAL CONC	FINAL RL	QUAL	COMMENTS
Duplicate 18-03-1999 - 1E	30	30	1	4.21	4.2	0.10		1422
18-03-1999 - 1E	↓	↓	↓	4.53	4.5	↓		1421
↓ 2E				1.48	1.5	↓		1423
18-03-2042 - 1E				41.0	41	1.0		1424
2E				11.5	12	↓		1425
3E				2.83	2.8	0.10		1426
↓ 4E				86.5	86	1.0		1427
18-03-1974 - 3C				8.03	8.0	0.10		1428
4C				7.00	7.0	↓		1429
5C				35.1	35	1.0		1430
↓ 6C	↓	↓	↓	7.33	7.3	0.10		1431
1151 03/23/18 GS03 2318 ~~AA~~ X	30	30	1	95.1	95	1.0		1425

NOTES: V = VOLUME; DF = DILUTION FACTOR; CONC = CONCENTRATION; RL = REPORTING LIMIT; QUAL = QUALIFIER

BATCH TIME
Time (24 Hr): 1435
Initials: ~~1088~~ 1086 | 1086 03/26/18

Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
GS	032318	I	CN	Pipet P-106,120	GSD32018A	4.0mL	H_2O	54 ppm	03/23/18	1024	
GS	↓	J	↓	↓	↓ B	2.0mL	↓	0.2ppm IW	↓	↓	
GS	032318	K	NO_3	P-120	GS030618A	0.15 mL	H_2O	300mL	1.00PPM ICAL	09/06/18	1068
GS		L		P-001		0.0625mL		250mL	0.50 PPM ICAL		
GS		M		↓		0.025mL		↓	0.20 PPM ICAL		
GS		N		↓		0.0125mL			0.10 PPM ICAL		
GS		O			GS032318K	12.5mL			0.050 PPM ICAL		
GS		P	↓	P-001	GS030618C	0.0625mL		↓	0.50PPM ICAL	↓	
GS		Q	NO_2	P-001	GS030618E	0.030mL		300mL	0.10 PPM ICAL	04/06/18	
GS		R		↓	↓	0.0125mL		250mL	0.050 PPM ICAL		
GS		S			GS032318Q	62.5mL		↓	0.025 PPM ICAL		
GS		T			↓	50.0mL			0.020 PPM ICAL		
GS		U			↓	25mL		↓	0.010 PPM ICAL		
GS	↓	V	↓	P-119	~~GS030618H~~ ~~GS030618H~~	~~3.75mL~~ ~~0.012~~	↓	300mL	0.025PPM ICAL	↓	
GS	032318 1068 03/23/18	W	Cr^{6+}	P-120	GS031718C	0.50mL	H_2O	100mL	0.50ppm CCV	03/23/18	1141
GS	032318	~~AA~~X	Tubidity	P-121	G007-092-23	2.50mL	H_2O	100 mL	10 n.t.u	03/24/18	1151/1139
GS	032318	Y	$KMnO_4$	~~P-119~~ 1068 03/23/18 P-120	GS020318C	0.50mL	H_2O	100mL	0.50PPM ICAL	03/23/18	1068
GS	↓	Z	↓	P-120	↓	1.00mL	↓	100mL	1.00PPM ICAL	03/23/18	1068

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Pipet Tips - 10 mL	Rheaton	851358	1605896	NA	100/box	1 Box	07/31/17	1064	07/31/17	1064	
2	~~Pipet Tips - 1-200 µL~~ 1064 07/31/17											
3	1000 µL	MLP	3950-11	17070462	N/A	1000/Bag	1 Bag					
4	Transfer Pipet	VWR	16001-188	20150706		500	Box					
5	Kim wipes	Kimtech				3 box	Box					
6	Specimen Cups	VWR	25384148	106283KS	N/A	500	Box					
7	COD STD Vials	Bioscience	174318	7053031-07	12/2018	50	G	07/31/17	1067			
8				08								
9				09								
10				10						10/26/17	1141	
11				11								
12				12						08/24/17	1141	
13				13								
14				14								
15				15						09/16/17	1141	
16	Clorox (Bleach)	Clorox	N/A	N/A	08/02/18	1.89L	P	08/02/17	735	08/02/17	735	
17	8.0 oz cups	VWR	89107-310	41787	N/A	500	Box	08/04/17	1064	08/04/17	1064	
18	Specimen cups	VWR	25384248	106250KS		500	Box					
19	0.02NTU Turbidity standard	ProCal HF Scientific	39957	70645	06/2019	20ml	G	08/07/17	650	08/08/17	650	
20	10.0NTU					125ml	P					
21	1000 NTU					20ml	G					
22	0.02NTU Turbidity standard				06/2019	20ml	G			01/30/18	1064	
23	10.0 NTU					125ml	P					
24	1000NTU					20ml	G					
25	pH 7.00	Fisher	SB107-500	172189	04/2019	500ml	P	08/07/17	650			

COMMENTS:

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SM 2540 D

Total Suspended Solids

RAW DATA

Return to Contents

RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 18:00
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:52

DATA FILE: NONE

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0006S005**

LCS/MB BATCH:	I0327TSSL3	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD5	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	5.75	1.00	5.75	1.0	

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RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 18:00
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:52

DATA FILE: NONE

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0007S011**

LCS/MB BATCH:	I0327TSSL3	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD5	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	4.00	1.00	4.00	1.0	

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RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 18:00
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:52

DATA FILE: NONE

 # 3 **CLIENT SAMPLE NUMBER: EVBMP0002S022**

LCS/MB BATCH:	I0327TSSL3	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD5	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	4.29	1.00	4.29	1.0	

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RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 18:00
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:52
DATA FILE:	NONE		

 # 4 **CLIENT SAMPLE NUMBER: EVBMP0007S010**

LCS/MB BATCH:	I0327TSSL3	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD5	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	2.86	1.00	2.86	1.0	

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RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 18:00
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:52
DATA FILE:	NONE		

 # 5 **CLIENT SAMPLE NUMBER: EVBMP0008S013**

LCS/MB BATCH:	I0327TSSL3	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD5	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	36.3	1.00	36.3	1.0	

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RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 18:00
EXTRACTION :	N/A	REVIEWED BY:	1,075
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-30 09:52

DATA FILE: NONE

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0009S011**

LCS/MB BATCH:	I0327TSSL3	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:	I0327TSSD5	FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	1.71	1.00	1.71	1.0	

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METHOD BLANK ASSOCIATION SUMMARY
FOR METHOD: SM 2540 D

MB SAMPLE ID:	**099-09-010-9011**	ANALYZED BY:	1,136
MB BATCH ID:	I0327TSSL3	D/T ANALYZED:	2018-03-27 18:00
INSTRUMENT:	N/A	REVIEWED BY:	1,136
EXTRACTION:	N/A	D/T REVIEWED:	2018-03-29 15:02
D/T EXTRACTED:	2018-03-27 00:00	MATRIX:	Water

DATA FILE: NONE

CLIENT WORK ORDER: 18-03-1974

S#	RUN TYPE	CLIENT SAMPLE ID	D/T ANALYZED	DATA FILE
1		A2BMP0006S005	2018-03-27 18:00	NONE
2		A2BMP0007S011	2018-03-27 18:00	NONE
3		EVBMP0002S022	2018-03-27 18:00	NONE
4		EVBMP0007S010	2018-03-27 18:00	NONE
5		EVBMP0008S013	2018-03-27 18:00	NONE
6		EVBMP0009S011	2018-03-27 18:00	NONE

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RAW DATA SHEET
FOR METHOD: SM 2540 D

WORK ORDER:	**099-09-010**	ANALYZED BY:	1,136
INSTRUMENT:	N/A	D/T ANALYZED:	2018-03-27 18:00
EXTRACTION :	N/A	REVIEWED BY:	1,136
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-29 15:00

DATA FILE: NONE

 # MB **CLIENT SAMPLE NUMBER: Method Blank**

LCS/MB BATCH:	I0327TSSL3	SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Solids, Total Suspended	0.000	1.00	ND	1.0	

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LCS / LCSD QUALITY CONTROL SHEET
FOR METHOD: SM 2540 D

LCS/LCSD SAMPLE ID: **099-09-010-9010**
LCS/LCSD BATCH: I0327TSSL3
INSTRUMENTS:
LCS: N/A
LCSD: N/A

EXTRACTION: N/A
D/T EXTRACTED:
LCS: 2018-03-27 00:00
LCSD: 2018-03-27 00:00

ANALYZED BY: 1,136
D/T ANALYZED:
LCS: 2018-03-27 18:00
LCSD: 2018-03-27 18:00
REVIEWED BY: 1,136
D/T REVIEWED: 2018-03-29 15:00

COMMENT:

COMPOUND	ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	% REC CL	RPD	RPD CL	STATUS	QUALIFIERS
Solids, Total Suspended	100.0	92.00	92	95.00	95	80-120	3	0-20	PASS	

Data Files:

TYPE	DATA FILE	DATA FILE PATH
LCS	NONE	
LCSD	NONE	

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DUPLICATE REPORT
FOR METHOD: SM 2540 D

DUP SAMPLE ID: **18-03-1974-2**
DUP BATCH : I0327TSSD5
INSTRUMENTS:
SAMPLE: N/A
DUP SAMPLE: N/A

EXTRACTION : N/A
D/T EXTRACTED :
SAMPLE: 2018-03-27 00:00
DUP SAMPLE: 2018-03-27 00:00

ANALYZED BY: 1,136
D/T ANALYZED
SAMPLE: 2018-03-27 18:00
DUP SAMPLE: 2018-03-27 18:00
REVIEWED BY: 1,075
D/T REVIEWED 2018-03-30 09:52

COMPOUND	SAMPLE CONC	DUP CONC	% RPD	CONTROL LIMIT	STATUS	QUALIFIERS
Solids, Total Suspended	4.000	4.000	0	0-20	PASS	

Data Files:

TYPE	DATA FILE	DATA FILE PATH
SDP	NONE	

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Logsheet Saved: 3/28/2018 5:12 PM

Batch IDs:	B3	Date		Method	Thermometer ID:	Oven:	ID: IO-8		
I0327TSS	L3	Prep	03/27/18	SM 2540D	IO-8A		Time	Temp oC	Filter Batch ID
	D5	Analysis	03/27/18	Matrix	Correction Factor:	Start	1300	104	G008-1-23
	D6	Analyst(s)	1136	Aqueous	2.5	End	1800	104	

Level II reviewer: 305

ECI ID		Hot Plate	Container ID	Container Mass (g)	Balance ID	Initial Sample (mL)	Cycle 1 Time In: 1400 Mass (g)	Cycle 1 Time Out: 1500	Cycle 2 Time In: 1600 Mass (g)	Cycle 2 Time Out: 1700	Cycle 3 Time In: NA Mass (g)	Cycle 3 Time Out: NA	Final Mass Change Within Limit?	Initial Conc. mg/L	Final Conc.	RL	Qualifier	Comments:
MB		NA	295	0.4161	71	1000	0.4153		0.4152				TRUE	-0.90	ND	1.0		<.0025 g residue
LCS		NA	296	0.4180	71	100	0.4272		0.4272				TRUE	92.00	92	1.0		
LCSD		NA	297	0.4140	71	100	0.4235		0.4235				TRUE	95.00	95	1.0		
Dup 1	18-03-1974-2F	NA	298	0.4128	71	200	0.4136		0.4136				TRUE	4.00	4.0	1.0		<.0025 g residue
	18-03-1974-2F	NA	299	0.4158	71	200	0.4166		0.4166				TRUE	4.00	4.0	1.0		<.0025 g residue
	1F	NA	301	0.3880	71	400	0.3903		0.3903				TRUE	5.75	5.8	1.0		<.0025 g residue
	3F	NA	302	0.3867	71	210	0.3876		0.3876				TRUE	4.29	4.3	1.0		<.0025 g residue
	4F	NA	303	0.3912	71	350	0.3922		0.3922				TRUE	2.86	2.9	1.0		<.0025 g residue
	5F	NA	304	0.3940	71	350	0.4067		0.4067				TRUE	36.29	36	1.0		
	6F	NA	305	0.3884	71	350	0.3890		0.3890				TRUE	1.71	1.7	1.0		<.0025 g residue
	18-03-1845-1F	NA	306	0.3952	71	500	0.3972		0.3971				TRUE	3.80	3.8	1.0		<.0025 g residue
	2F	NA	307	0.3894	71	1000	0.3895		0.3895				TRUE	0.10	ND	1.0		<.0025 g residue
	3F	NA	308	0.3907	71	500	0.3919		0.3919				TRUE	2.40	2.4	1.0		<.0025 g residue
	4F	NA	309	0.3892	71	200	0.3893		0.3893				TRUE	0.50	ND	1.0		<.0025 g residue
Dup 2	18-03-1957-3E	NA	310	0.3913	71	200	0.3978		0.3978				TRUE	32.50	32	1.0		
~~Dup 2~~	18-03-1957-3E	NA	311	0.3883	71	200	0.3949		0.3949				TRUE	33.00	33	1.0		
	18-03-1845-5F	NA	312	0.3908	71	1000	0.3945		0.3945				TRUE	3.70	3.7	1.0		
	6F	NA	313	0.3882	71	300	0.3975		0.3975				TRUE	31.00	31	1.0		
	7F	NA	314	0.3926	71	150	0.4226		0.4226				TRUE	200.00	200	1.0		
	8F	NA	315	0.3915	71	1000	0.3947		0.3946				TRUE	3.10	3.1	1.0		
	18-03-1957-1B	NA	316	0.3877	71	300	0.3920		0.3920				TRUE	14.33	14	1.0		
	2B	NA	317	0.3882	71	300	0.3930		0.3930				TRUE	16.00	16	1.0		
	4E	NA	318	0.3818	71	400	0.3862		0.3862				TRUE	11.00	11	1.0		
	5E	NA	319	0.3873	71	300	0.3911		0.3911				TRUE	12.67	13	1.0		
	6J	NA	320	0.3896	71	300	0.3959		0.3959				TRUE	21.00	21	1.0		

Quality Control					
		%Rec	Passing?	RPD	Passing?
LCS ID	LCS	92%	Yes	3%	Yes
GS102717K	LCSD	95%	Yes		
LCS Concentration	Dup 1			0%	Yes
100 mg/L	Dup 2			2%	Yes

Reporting Limits	
Concentration	RL
Conc < 1,000	1
1,000 ≤ Conc < 10,000	10
10,000 ≤ Conc < 100,000	100
Conc ≥ 100,000	1000

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BALANCE CALIBRATION CHECK LOG

Eurofins Calscience

Date performed: 03/27/18 Initials: 1009

ID	Class 2 Weight (g)	Reading (g)	Acceptance Range	Pass? (circle one)	Comment (If not passed, note removal or corrective action)
83	1	1.00	0.98 - 1.02	(Y) N	IO Lab
	100	99.99	98.00 - 102.00	(Y) N	
62	0.002	0.0019	0.00180 - 0.00220	(Y) N	IO Lab
	1	0.9993	0.99900 - 1.00100	(Y) N	
	100	99.9941	99.90000 - 100.10000	(Y) N	
11	1	1.00	0.98 - 1.02	(Y) N	IO Lab
	100	99.99	98.00 - 102.00	(Y) N	
55	1	1.00	0.98 - 1.02	(Y) N	IO Lab
	100	99.97	98.00 - 102.00	(Y) N	
	500	499.93	498.00 - 502.00	(Y) N	
25	1		0.98 - 1.02	Y N	IO Lab
	100		98.00 - 102.00	Y N	
	500		498.00 - 502.00	Y N	
71	0.002	0.0019	0.0018 - 0.0022	(Y) N	BOD Room
	1	0.9993	0.9990 - 1.0010	(Y) N	
	100	99.9935	99.9000 - 100.1000	(Y) N	
63	0.1	0.10	0.09 - 0.11	(Y) N	BOD Room
	100	99.99	98.00 - 102.00	(Y) N	
73	0.1	0.10	0.09 - 0.11	(Y) N	Oil & Grease Room
	1	1.00	0.98 - 1.02	(Y) N	
	100	99.99	98.00 - 102.00	(Y) N	
72	0.002	0.0019	0.0018 - 0.0022	(Y) N	Oil & Grease Room
	1	0.9993	0.9990 - 1.0010	(Y) N	
	100	99.9936	99.9000 - 100.1000	(Y) N	
84	1	1.00	0.98 - 1.02	(Y) N	Oil & Grease Room
	100	99.99	98.00 - 102.00	(Y) N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

Comments:

WT SET ID USED: 2 mg	1000118069	**COMMENT:**
WT SET ID USED: 10 mg - 100 g	4000013239	
WT SET ID USED: 500 g	69073	

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Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
GS	021718	L	TKN/NH_3	P-120	GS020118A	0.50mL	H_2O	1L	0.50PPM	03/01/18	1068
GS	↓	M	↓	↓	↓	0.10mL	↓	↓	0.10PPM	↓	↓
GS	↓	N	↓	↓	GS020118B	10mL	↓	↓	LCS 10.0PPM	↓	↓
GS	↓	O	↓	↓	↓	20mL	↓	↓	LCS 20.0PPM	↓	↓
GS	021718	P	COD 2nd 021718 Balance #62 ~~#119~~		G007-90-21	0.850g	H_2O	1L	20000ppmCCV	08/17/18	1141
GS	021718	Q	COD	Balance #62 ~~#119~~	G007-90-20	0.850g	H_2O	1L	20000ppmLCS	08/17/18	1141
GS	021718	R	COD	P-119	GS021718P	50mL	H_2O	1L	1000ppmCCV	08/17/18	1141
GS	021718	S	COD	P-119	GS021718Q	50mL	H_2O	1L	1000ppm LCS	08/17/18	1141
GS	021718	T	$I2^{6+}$	P-119	GS042317M	0.50mL	H_2O	100mL	0.50ppmCCV	08/17/18	1141
GS	021918	A	TSS (LCS)	balance 71	G007.58-2	0.100g	H_2O	1000mL	100ppm	08/19/18	1009
GS	021918	B	Fe^{2+}	P-120	GSC91117Y	0.50mL	H_2O	100mL	2.0ppmCCV	02/19/18	1141
GS	021918	C	TOC	P-023	GSC12918M	10mL	H_2O	1L	10ppmCCV	08/19/18	1141
GS	↓	D	↓	↓	GSC12918N	10mL	H_2O	1L	10ppm LCS	08/19/18	1141
GS	022018	A	COD	Balance #62	G007-90-21	4.25g	H_2O	250mL	20,000ppmCCV	08/20/18	1141
GS	↓	B	COD	Balance #62	G007-90-20	4.25g	H_2O	250mL	20,000ppmLCS	08/20/18	1141
GS	↓	C	COD	P-119 1141 022018	GSC2+2018A	25mL	H_2O	500mL	1,000ppmCCV	08/20/18	1141
GS	↓	D	COD	P-119	GSC220183	25mL	H_2O	500mL	1,000ppmLCS	08/20/18	1141
GS											1068 02/20/18

Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Sulfuric Acid	EMD	54132	SX1247-2	11/02/19	2.5L	G	11/02/16	685	11/02/16	685	
2	Infusorial Earth	Fisher	122-3	160676	11/04/21	3 Kg	P	11/04/16	1009	11/04/16	1009	
3	Sulfuric Acid	EMD	SX1247-2	~~SX1247-2~~	11/23/15	2.5L	G	11/04/16	1068	11/23/16	990	
4	conductivity Calibration Solution	VWR	23198-015	72912	07/2017	473mL	Bottle	11/04/16	1068	01/24/17	1086	
5	↓	↓	↓	↓	↓	↓	↓	↓	↓			
6												
7	↓	↓	↓	↓	↓	↓	↓	↓	↓			
8	Transfer Pipets 3mL	VWR	16001-188	07152016	N/A	500pcs	Box	11/07/16	685	11/07/16	685	
9	Boiling Stones	Saint-Gobain	09191210	D1069103	N/A	450g	P Jar	11/07/16	685	11/07/16	685	
10	10mL Syringes	BD	305462	5231435	↓	100pcs	Box	↓	↓	↓	↓	
11	50mL Centrifuge Tube	Fisher	05-539-9	25116013	N/A	500pcs	Box	✓	✓	✓	✓	
12	4.5oz Container Cups	VWR	25384-148	102336KS	↓	↓	↓					
13	Test tubes	Evergreen	214-2070-010	16245	N/A	1000pcs	Box	✓	✓	✓	✓	
14	8oz Snap Cups	VWR	89107-310	41955	N/A	500cs	↓	✓	✓	✓	✓	
15	Test tubes	Evergreen	214-2070010	16245	N/A	1000pcs	Box	✓	✓	✓	✓	
16	Superior Pipet tips 0.5-5mL	Socorex	312.058	W8513602	N/A	500pcs	Box	✓	✓	✓	✓	
17	✓ 685 11/07/16 ↓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
18	HydrohydroLogix (Blue 1000µL) pipet tips	MBP 685 ~~3950-11~~	3950-11 tic2716038	16271638	✓	1000pcs ✓	~~P~~	11/10/16	✓ 11/10/16	✓	✓	
19	Clorox (Bleach)	Clorox	N/A	N/A	11/10/17	1.89L	P	~~11/10/17~~	735	11/10/16	735	
20	0.45µm Syringe Filter	Merck	SLHV033NK	R6EA50999	N/A	1000pcs	Box	11/10/16	1068	11/10/16	1068	
21	Specimen Container	VWR	25384-148	102336KS	N/A	500	Box	11/10/16	1068	11/10/16	1068	
22	10mL, Tip for pipete	Wheaton	8.51358	1581567	N/A	2 cases	Box	11/14/16	735	11/14/16	735	
23	5mL Pipette	Wheton	W851362	160800W36	N/A	1 case	Box	11/14/16	735	11/14/16	735	
24	1000uL Pipet tips	MBP	3950-11	16271638	NA	1000 pcs	Bag	11/14/16	735	11/14/16	735	
25	3mL Graduated Transfer Pipets	VWR	16001-188	05032016	NA	3 BOX	BOX	11/14/16	735	11/14/16	735	

COMMENTS:

EPA 200.8 ICP/MS Metals

Total

RAW DATA

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EPA 200.8 ICP/MS Metals

Total

INITIAL CALIBRATION

ICV/ICB

CCV/CCB

ICSA/B

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Instrument Tuning

Work Order No.: 18-03-1974
Instrument ID: ICP/MS 03
Tuning Date: 03/27/18

Analyte	Exact Mass (amu)	Measured Mass (amu)	Mass Calibration		Mass Calibration DAC Value	Resolution DAC Value	Measured Peak Width (amu)	Resolution Check	
			Acceptance Criteria (amu)	Pass/Fail (P/F)				Acceptance Criteria (amu)	Pass/Fail (P/F)
C	12.000	12.025	± 0.100	P	2773	2064	0.704	< 0.900	P
Mg	23.985	23.975	± 0.100	P	5713	2056	0.739	< 0.900	P
Mg 25	24.986	25.025	± 0.100	P	5917	1996	0.743	< 0.900	P
Mg 26	25.983	25.975	± 0.100	P	6207	2076	0.720	< 0.900	P
Rh	102.905	102.925	± 0.100	P	24945	1899	0.699	< 0.900	P
Ce	139.905	139.875	± 0.100	P	33963	1839	0.698	< 0.900	P
Pb 206	205.975	205.975	± 0.100	P	50072	1705	0.687	< 0.900	P
Pb 207	206.976	206.975	± 0.100	P	50378	1768	0.716	< 0.900	P
Pb	207.977	208.025	± 0.100	P	50551	1696	0.687	< 0.900	P
U	238.050	238.025	± 0.100	P	57919	1668	0.688	< 0.900	P

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Tuning Filename: C:\Elandata\Tuning\Default.tun

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial Calibration Verification

Work Order No.: 18-03-1974

Instrument ID: ICP/MS 03

Concentration Unit: µg/L

Analyte	Initial Calibration Verification					
		ICV-1		ICV-2		Control
	True	Observed	%REC	Observed	%REC	Limit
Copper	100.000000	100.821688	101	103.807807	104	90 - 110
Cadmium	100.000000	104.790273	105	104.613204	105	90 - 110
Lead	100.000000	103.931915	104	103.917919	104	90 - 110

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ICV-1 Filename: W:\dataset\2018\180327B1\ICV-1 - MS021218B.016

ICV-2 Filename: W:\dataset\2018\180327B1\ICV-1 - MS021218B.221

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Interference Check

Work Order No.: 18-03-1974
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

Analyte	Interference Check					
	ICS-A		ICS-AB			
	Observed	Control Limit	True	Observed	%REC	Control Limit
Copper	0.098743	< 2.000000	20.000000	20.043472	100	80 - 120
Cadmium	0.064760	< 2.000000	10.000000	9.998683	100	80 - 120
Lead	0.016017	< 2.000000				

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ICS-A-1 Filename: W:\dataset\2018\180327B1\ICS-A - MS092817B.022
ICS-AB-1 Filename: W:\dataset\2018\180327B1\ICS-AB - MS092817C.023

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Continuing Calibration Verification

Work Order No.: 18-03-1974
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

	Continuing Calibration Verification									
		CCV-1		CCV-2		CCV-3		CCV-4		Control
Analyte	True	Observed	%REC	Observed	%REC	Observed	%REC	Observed	%REC	Limit
Copper	100.000000	98.860918	99	99.743642	100	98.849901	99	98.211127	98	90 - 110
Cadmium	100.000000	102.739239	103	102.915174	103	102.710804	103	101.843280	102	90 - 110
Lead	100.000000	100.972036	101	99.547251	100	101.671391	102	100.481535	100	90 - 110

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CCV-1 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.225
CCV-2 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.238
CCV-3 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.251
CCV-4 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.264

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1974

Instrument ID: ICP/MS 03

Concentration Unit: µg/L

Test Method: EPA 200.8

	Initial and Continuing Calibration Blanks						
Analyte	**ICB-1**	**ICB-2**	**CCB-1**	**CCB-2**	**CCB-3**	**CCB-4**	**RL (No PF)**
Copper	-0.001116	0.003939	0.009418	-0.001215	0.008042	0.003649	1.000000
Cadmium	0.018666	0.004786	0.000963	0.004026	-0.012113	-0.006331	1.000000
Lead	-0.000552	0.003892	-0.002287	-0.002063	-0.003047	-0.002067	1.000000

Preparation Factor (PF): 1 L/L

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ICB-1 Filename: W:\dataset\2018\180327B1\ICB.019

ICB-2 Filename: W:\dataset\2018\180327B1\ICB.224

CCB-1 Filename: W:\dataset\2018\180327B1\CCB.227

CCB-2 Filename: W:\dataset\2018\180327B1\CCB.240

CCB-3 Filename: W:\dataset\2018\180327B1\CCB.253

CCB-4 Filename: W:\dataset\2018\180327B1\CCB.266

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Internal Standard Summary

Work Order No.: 18-03-1974

Instrument ID: ICP/MS 03

Test Method: EPA 200.8 Control Limit: 60-125%

Sample	Analysis	IS-3		IS-4		IS-5	
CEL ID Number	Date/Time	Analyte	%RI	Analyte	%RI	Analyte	%RI
180327-ba-2	03/27/2018 19:54:55	Gallium	100	Indium	101	Bismuth	100
180327-la-2	03/27/2018 19:57:23	Gallium	98	Indium	99	Bismuth	98
18-03-1974-1 ms	03/27/2018 20:07:14	Gallium	99	Indium	98	Bismuth	98
18-03-1974-1 msd	03/27/2018 20:09:43	Gallium	98	Indium	99	Bismuth	98
18-03-1974-1	03/27/2018 20:12:10	Gallium	100	Indium	99	Bismuth	99
18-03-1974-2	03/27/2018 20:22:07	Gallium	96	Indium	100	Bismuth	99
18-03-1974-3	03/27/2018 20:24:34	Gallium	98	Indium	99	Bismuth	99
18-03-1974-4	03/27/2018 20:27:02	Gallium	97	Indium	99	Bismuth	99
18-03-1974-5	03/27/2018 20:29:29	Gallium	100	Indium	98	Bismuth	98
18-03-1974-6	03/27/2018 20:31:57	Gallium	99	Indium	98	Bismuth	99
18-03-1974-7	03/27/2018 20:34:24	Gallium	96	Indium	98	Bismuth	98
180327-ba-3	03/27/2018 20:36:53	Gallium	99	Indium	100	Bismuth	99
180327-la-3	03/27/2018 20:39:21	Gallium	97	Indium	97	Bismuth	98
18-03-1974-f-2 ms	03/27/2018 20:41:48	Gallium	96	Indium	97	Bismuth	97
18-03-1974-f-2 msd	03/27/2018 20:44:16	Gallium	97	Indium	98	Bismuth	97
18-03-1974-f-2	03/27/2018 20:54:11	Gallium	96	Indium	99	Bismuth	98
18-03-1974-f-1	03/27/2018 20:56:39	Gallium	97	Indium	98	Bismuth	97
18-03-1974-f-3	03/27/2018 20:59:06	Gallium	96	Indium	98	Bismuth	97
18-03-1974-f-4	03/27/2018 21:01:34	Gallium	97	Indium	98	Bismuth	98
18-03-1974-f-5	03/27/2018 21:04:02	Gallium	97	Indium	97	Bismuth	96
18-03-1974-f-6	03/27/2018 21:06:29	Gallium	99	Indium	98	Bismuth	98

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Instrument Tuning Report

Instrument Name: ICP-MS-03 US26INS00050
Analyst Name: UFLE
Sample Date/Time: Tuesday, March 27, 2018 09:40:20
File Name: Default.tun
File Path: C:\Elandata\Tuning\Default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
C	12.000	12.025	2773	2064	0.704	
Mg	23.985	23.975	5713	2056	0.739	
Mg 25	24.986	25.025	5917	1996	0.743	
Mg 26	25.983	25.975	6207	2076	0.720	
Rh	102.905	102.925	24945	1899	0.699	
Ce	139.905	139.875	33963	1839	0.698	
Pb 206	205.975	205.975	50072	1705	0.687	
Pb 207	206.976	206.975	50378	1768	0.716	
Pb	207.977	208.025	50551	1696	0.687	
U	238.050	238.025	57919	1668	0.688	

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Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Tuesday, March 27, 2018 09:57:05
Sample Description:
Method File: C:\elandata\Method\CEL\Cel-Daily Performance-2.mth
Dataset File: W:\dataset\2018\180327B1\Daily Performance Check.003
Tuning File: C:\Elandata\Tuning\Default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Pulse

Acq. Dead Time(ns): 55
Current Dead Time (ns): 55

Instrument Name: ICP/MS 3
User Name: UFLE

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	80443.4	80443.355	480.980	0.6
	In	114.9	499036.5	499036.548	5846.940	1.2
	Pb	208.0	219427.3	219427.314	1249.249	0.6
⌈	Ce++	70.0	6518.7	0.011	0.000	2.7
| >	Ce	139.9	587188.4	587188.372	7390.117	1.3
⌊	CeO	155.9	15865.8	0.027	0.000	1.2
	Bkgd	220.0	51.8	51.833	8.608	16.6

Current Optimization File Data

Current Value	Description
0.92	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
16.00	Plasma Gas Flow
6.50	Lens Voltage
1600.00	ICP RF Power
-1800.00	Analog Stage Voltage
1050.00	Pulse Stage Voltage
-3.00	Quadrupole Rod Offset Std [QRO]
-8.00	Cell Rod Offset Std [CRO]
22.00	Discriminator Threshold
-20.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.90	RPq
0.92	DRC Mode NEB
-16.00	DRC Mode QRO
-3.00	DRC Mode CRO
-37.00	DRC Mode CPV
0.00	Cell Gas A
3.00	Cell Gas B
200.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
350.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	13	21	5.0	6708.0

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Mg	24	21	4.5	87062.1
In	115	21	6.5	505297.9
Ce	140	21	6.5	597866.9
Pb	208	21	8.5	218523.0
U	238	21	9.0	460687.1

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: Blank

Autosampler Position: 2

Sample Date/Time: Tuesday, March 27, 2018 10:30:54

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\Blank.013

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		47189.830		ppb	0.500	
9	Be		54.333		ppb	16.599	
45	Sc	>	4982270.966		ppb	3.629	
10	B		154.668		ppb	9.706	
23	Na		309.529		ppb	16.624	
25	Mg		577.161		ppb	9.445	
27	Al		5474.315		ppb	1.441	
39	K		8443.921		ppb	1.898	
43	Ca		274.290		ppb	6.831	
44	Ca		39926.534		ppb	0.437	
45	Sc-1	>	4982270.966		ppb	3.629	
47	Ti		156.001		ppb	15.115	
49	Ti		162.668		ppb	3.756	
51	V		2493.845		ppb	9.675	
52	Cr		8871.660		ppb	0.773	
55	Mn		645.356		ppb	3.787	
54	Fe		31470.175		ppb	1.576	
57	Fe		11706.205		ppb	3.479	
59	Co		206.002		ppb	10.680	
60	Ni		209.336		ppb	13.421	
63	Cu		399.779		ppb	2.208	
65	Cu		183.806		ppb	20.707	
71	Ga	>	1433439.379		ppb	1.707	
75	As		7420.493		ppb	1.538	
75	As-1		-332.758		ppb	23.260	
78	Se		7727.417		ppb	1.775	
82	Se		2.919		ppb	741.926	
88	Sr		156.668		ppb	3.900	
66	Zn		1515.460		ppb	0.936	
68	Zn		1992.885		ppb	4.061	
95	Mo		380.008		ppb	16.941	
115	In-1	>	1105309.653		ppb	0.780	
107	Ag		114.001		ppb	1.754	
111	Cd		28.617		ppb	100.970	
118	Sn		685.359		ppb	8.328	
121	Sb		128.668		ppb	14.359	
135	Ba		89.334		ppb	5.634	
165	Ho		1307419.809		ppb	3.374	
159	Tb		1408994.867		ppb	2.898	
203	Tl		89.334		ppb	10.341	
207	Pb		586.007		ppb	3.464	
209	Bi	>	731930.875		ppb	2.006	

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: STD-1 - MS021518A

Autosampler Position: 3

Sample Date/Time: Tuesday, March 27, 2018 10:33:22

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\STD-1 - MS021518A.014

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		45718.020		ppb	1.521	47189.830
9	Be		72554.078	200.000000	ppb	1.390	54.333
45	Sc	>	4932291.153		ppb	2.626	4982270.966
10	B		54947.689	500.000000	ppb	3.452	154.668
23	Na		367308.582	10200.000000	ppb	2.443	309.529
25	Mg		5329005.961	10200.000000	ppb	1.403	577.161
27	Al		1131317.035	200.000000	ppb	3.216	5474.315
39	K		1291623.882	10200.000000	ppb	0.468	8443.921
43	Ca		150654.731	10200.000000	ppb	2.411	274.290
44	Ca		1942646.163	10200.000000	ppb	3.327	39926.534
45	Sc-1	>	4932291.153		ppb	2.626	4982270.966
47	Ti		135454.977	200.000000	ppb	3.093	156.001
49	Ti		116120.120	200.000000	ppb	3.354	162.668
51	V		1917524.382	200.000000	ppb	1.799	2493.845
52	Cr		1728806.014	200.000000	ppb	1.233	8871.660
55	Mn		2639553.937	200.000000	ppb	0.766	645.356
54	Fe		6850818.905	10200.000000	ppb	1.764	31470.175
57	Fe		2888950.088	10200.000000	ppb	0.592	11706.205
59	Co		2336121.750	200.000000	ppb	1.430	206.002
60	Ni		503844.308	200.000000	ppb	1.721	209.336
63	Cu		1095952.380	200.000000	ppb	2.464	399.779
65	Cu		503460.022	200.000000	ppb	2.601	183.806
71	Ga	>	1385716.288		ppb	1.075	1433439.379
75	As		332138.120	200.000000	ppb	1.938	7420.493
75	As-1		360901.503	200.000000	ppb	2.176	-332.758
78	Se		95640.867	200.000000	ppb	2.255	7727.417
82	Se		45603.043	200.000000	ppb	2.756	2.919
88	Sr		4114857.564	200.000000	ppb	2.769	156.668
66	Zn		316595.758	200.000000	ppb	1.347	1515.460
68	Zn		229331.936	200.000000	ppb	1.910	1992.885
95	Mo		690506.325	200.000000	ppb	2.044	380.008
115	In-1	>	1089737.805		ppb	1.179	1105309.653
107	Ag		1877387.708	200.000000	ppb	2.537	114.001
111	Cd		418064.822	200.000000	ppb	1.033	28.617
118	Sn		1079510.865	200.000000	ppb	1.595	685.359
121	Sb		1260406.008	200.000000	ppb	2.018	128.668
135	Ba		371121.744	200.000000	ppb	2.077	89.334
165	Ho		1285227.233		ppb	1.929	1307419.809
159	Tb		1384490.647		ppb	2.863	1408994.867
203	Tl		1373845.183	200.000000	ppb	1.123	89.334
207	Pb		3802124.674	200.000000	ppb	0.842	586.007
209	Bi	>	703920.965		ppb	1.431	731930.875

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICV-1 - MS021218B
Autosampler Position: 206
Sample Date/Time: Tuesday, March 27, 2018 10:38:21
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICV-1 - MS021218B.016
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		46373.645		ppb	0.318	47189.830
9	Be		37528.643	102.820167	ppb	1.201	54.333
45	Sc	>	4957708.042		ppb	2.726	4982270.966
10	B		286.671	1.202612	ppb	16.248	154.668
23	Na		331.435	0.659247	ppb	4.800	309.529
25	Mg		55423.699	104.493236	ppb	1.515	577.161
27	Al		5963.956	0.092207	ppb	2.074	5474.315
39	K		8696.826	2.375649	ppb	1.841	8443.921
43	Ca		2985.253	183.157878	ppb	4.198	274.290
44	Ca		74361.006	184.772898	ppb	1.082	39926.534
45	Sc-1	>	4957708.042		ppb	2.726	4982270.966
47	Ti		69166.811	101.519074	ppb	1.054	156.001
49	Ti		58749.250	100.548439	ppb	1.549	162.668
51	V		1013182.122	104.973787	ppb	1.761	2493.845
52	Cr		914639.539	104.797159	ppb	1.256	8871.660
55	Mn		1387381.135	104.615758	ppb	2.395	645.356
54	Fe		3549183.542	5236.400940	ppb	0.911	31470.175
57	Fe		1466574.884	5132.502436	ppb	1.712	11706.205
59	Co		1163477.681	99.096961	ppb	1.424	206.002
60	Ni		261119.401	103.105761	ppb	2.122	209.336
63	Cu		576694.236	103.205872	ppb	1.973	399.779
65	Cu		258809.894	100.821688	ppb	2.365	183.806
71	Ga	>	1412631.923		ppb	0.722	1433439.379
75	As		173636.594	100.418170	ppb	0.692	7420.493
75	As-1		184913.325	100.619193	ppb	0.315	-332.758
78	Se		53625.015	102.376031	ppb	1.152	7727.417
82	Se		23797.028	102.388908	ppb	1.399	2.919
88	Sr		2104320.564	100.321841	ppb	2.264	156.668
66	Zn		167676.679	103.453787	ppb	2.138	1515.460
68	Zn		115437.748	97.898633	ppb	1.550	1992.885
95	Mo		351274.117	101.578491	ppb	1.836	380.008
115	In-1	>	1090737.595		ppb	1.308	1105309.653
107	Ag		224.003	0.011850	ppb	12.659	114.001
111	Cd		219295.234	104.790273	ppb	2.467	28.617
118	Sn		526221.324	97.344239	ppb	2.478	685.359
121	Sb		615607.236	97.592924	ppb	2.475	128.668
135	Ba		152.668	0.034726	ppb	4.211	89.334
165	Ho		1302154.631		ppb	2.391	1307419.809
159	Tb		1370336.842		ppb	2.292	1408994.867
203	Tl		680956.767	97.732437	ppb	1.285	89.334
207	Pb		2004619.320	103.931915	ppb	2.949	586.007
209	Bi	>	713981.812		ppb	2.350	731930.875

QC Out of Limits

alyte Mass	Out of Limits Message
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Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICB
Autosampler Position: 2
Sample Date/Time: Tuesday, March 27, 2018 10:45:50
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICB.019
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		46643.707		ppb	1.573	47189.830
9	Be		61.334	0.020488	ppb	0.941	54.333
45	Sc	>	4941567.437		ppb	0.904	4982270.966
10	B		233.336	0.726074	ppb	18.961	154.668
23	Na		256.194	-1.405556	ppb	10.362	309.529
25	Mg		528.587	-0.082958	ppb	12.468	577.161
27	Al		3339.280	-0.370521	ppb	0.537	5474.315
39	K		8625.424	1.988566	ppb	1.203	8443.921
43	Ca		291.433	1.311823	ppb	7.070	274.290
44	Ca		37751.570	-9.870153	ppb	1.633	39926.534
45	Sc-1	>	4941567.437		ppb	0.904	4982270.966
47	Ti		160.668	0.008888	ppb	9.984	156.001
49	Ti		168.668	0.012700	ppb	9.585	162.668
51	V		2515.306	0.004513	ppb	10.637	2493.845
52	Cr		8690.820	-0.012621	ppb	1.694	8871.660
55	Mn		680.025	0.003023	ppb	4.149	645.356
54	Fe		30419.659	-1.180398	ppb	0.665	31470.175
57	Fe		11555.339	-0.191453	ppb	0.675	11706.205
59	Co		246.003	0.003553	ppb	7.226	206.002
60	Ni		295.338	0.034833	ppb	14.227	209.336
63	Cu		380.378	-0.002657	ppb	7.167	399.779
65	Cu		178.447	-0.001116	ppb	15.883	183.806
71	Ga	>	1416456.213		ppb	1.642	1433439.379
75	As		7268.186	-0.038084	ppb	1.709	7420.493
75	As-1		-307.851	0.010967	ppb	19.955	-332.758
78	Se		7553.247	-0.180443	ppb	1.067	7727.417
82	Se		4.075	0.004253	ppb	551.687	2.919
88	Sr		258.004	0.004922	ppb	14.104	156.668
66	Zn		1485.455	-0.008245	ppb	9.331	1515.460
68	Zn		1967.546	-0.001665	ppb	3.190	1992.885
95	Mo		342.007	-0.009336	ppb	27.536	380.008
115	In-1	>	1085777.686		ppb	1.780	1105309.653
107	Ag		258.004	0.015619	ppb	3.101	114.001
111	Cd		67.136	0.018666	ppb	50.845	28.617
118	Sn		2358.978	0.312935	ppb	15.639	685.359
121	Sb		1364.106	0.196586	ppb	23.368	128.668
135	Ba		94.001	0.003555	ppb	27.904	89.334
165	Ho		1278088.440		ppb	0.988	1307419.809
159	Tb		1374103.978		ppb	2.050	1408994.867
203	Tl		112.001	0.003674	ppb	15.465	89.334
207	Pb		558.673	-0.000552	ppb	16.839	586.007
209	Bi	>	710013.349		ppb	1.830	731930.875

QC Out of Limits

ıalyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICS-A - MS092817B

Autosampler Position: 9

Sample Date/Time: Tuesday, March 27, 2018 10:53:16

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICS-A - MS092817B.022

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	44247.763		ppb	1.081	47189.830
9	Be	|	64.334	0.029883	ppb	14.692	54.333
45	Sc	|>	4923595.043		ppb	2.464	4982270.966
10	B	⌊	250.670	0.894770	ppb	1.219	154.668
23	Na	⌈	882923.522	24560.846476	ppb	0.383	309.529
25	Mg	|	5026994.972	9637.883208	ppb	2.677	577.161
27	Al	|	55540647.286	9881.240939	ppb	4.803	5474.315
39	K	|	1219635.665	9644.208381	ppb	2.192	8443.921
43	Ca	|	428834.037	29108.298287	ppb	5.268	274.290
44	Ca	|	5511921.440	29384.160972	ppb	2.645	39926.534
45	Sc-1	|>	4923595.043		ppb	2.464	4982270.966
47	Ti	|	160956.449	238.180018	ppb	0.860	156.001
49	Ti	|	117618.090	202.962165	ppb	1.485	162.668
51	V	|	492.388	-0.207224	ppb	130.039	2493.845
52	Cr	|	10264.461	0.174270	ppb	2.894	8871.660
55	Mn	|	16218.457	1.183310	ppb	1.786	645.356
54	Fe	|	16646347.526	24900.639827	ppb	0.121	31470.175
57	Fe	|	7002991.284	24825.002310	ppb	0.490	11706.205
59	Co	|	1076.730	0.074935	ppb	3.507	206.002
60	Ni	⌊	1781.508	0.626514	ppb	1.805	209.336
63	Cu	⌈	218.971	-0.028703	ppb	60.171	399.779
65	Cu	|	406.164	0.098743	ppb	18.928	183.806
71	Ga	|>	1320431.879		ppb	0.601	1433439.379
75	As	|	7186.827	0.227120	ppb	0.580	7420.493
75	As-1	|	-181.391	0.072664	ppb	17.736	-332.758
78	Se	|	7392.450	0.654212	ppb	1.663	7727.417
82	Se	|	20.857	0.083979	ppb	145.961	2.919
88	Sr	|	24501.649	1.242213	ppb	2.006	156.668
66	Zn	|	2363.641	0.644433	ppb	2.769	1515.460
68	Zn	⌊	2002.221	0.153850	ppb	3.102	1992.885
95	Mo	⌈	694152.213	209.134062	ppb	0.869	380.008
115	In-1	|>	1047667.855		ppb	1.527	1105309.653
107	Ag	|	395.342	0.031863	ppb	5.362	114.001
111	Cd	|	157.939	0.064760	ppb	43.133	28.617
118	Sn	|	3253.258	0.502349	ppb	15.698	685.359
121	Sb	|	1219.416	0.181233	ppb	8.556	128.668
135	Ba	|	356.674	0.152507	ppb	3.426	89.334
165	Ho	|	1272309.122		ppb	2.073	1307419.809
159	Tb	⌊	1347364.576		ppb	1.273	1408994.867
203	Tl	⌈	158.001	0.011870	ppb	16.601	89.334
207	Pb	|	818.680	0.016017	ppb	1.102	586.007
209	Bi	⌊>	663974.350		ppb	1.638	731930.875

QC Out of Limits

alyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICS-AB - MS092817C
Autosampler Position: 10
Sample Date/Time: Tuesday, March 27, 2018 10:55:45
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICS-AB - MS092817C.023
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	45480.149		ppb	0.528	47189.830
9	Be	|	52.333	-0.001581	ppb	13.557	54.333
45	Sc	|>	4846281.806		ppb	1.193	4982270.966
10	B	⌊	217.336	0.621199	ppb	3.831	154.668
23	Na	⌈	859718.885	24290.852611	ppb	1.799	309.529
25	Mg	|	4890491.764	9524.011870	ppb	2.452	577.161
27	Al	|	54428302.143	9839.027758	ppb	1.644	5474.315
39	K	|	1204367.316	9672.578362	ppb	2.024	8443.921
43	Ca	|	426505.482	29416.967386	ppb	1.921	274.290
44	Ca	|	5542344.330	30021.937738	ppb	3.499	39926.534
45	Sc-1	|>	4846281.806		ppb	1.193	4982270.966
47	Ti	|	159008.663	239.026056	ppb	1.116	156.001
49	Ti	|	114918.544	201.462424	ppb	1.409	162.668
51	V	|	196036.289	20.566247	ppb	0.639	2493.845
52	Cr	|	180836.946	20.375039	ppb	0.648	8871.660
55	Mn	|	276053.773	21.239154	ppb	1.338	645.356
54	Fe	|	16328686.552	24801.888878	ppb	3.355	31470.175
57	Fe	|	6869515.641	24733.699413	ppb	1.267	11706.205
59	Co	|	219372.853	19.088045	ppb	1.162	206.002
60	Ni	⌊	49254.415	19.814211	ppb	1.181	209.336
63	Cu	⌈	104709.726	19.854849	ppb	1.775	399.779
65	Cu	|	48562.986	20.043472	ppb	2.686	183.806
71	Ga	|>	1329534.983		ppb	1.835	1433439.379
75	As	|	22974.436	10.323730	ppb	1.288	7420.493
75	As-1	|	17527.889	10.294514	ppb	1.702	-332.758
78	Se	|	11421.487	10.060912	ppb	2.677	7727.417
82	Se	|	2201.653	10.054955	ppb	0.882	2.919
88	Sr	|	24569.835	1.237504	ppb	2.210	156.668
66	Zn	|	16959.146	10.288792	ppb	2.863	1515.460
68	Zn	⌊	12254.922	9.541529	ppb	0.861	1992.885
95	Mo	⌈	680075.209	205.143460	ppb	2.108	380.008
115	In-1	|>	1046184.807		ppb	1.722	1105309.653
107	Ag	|	45587.362	5.046801	ppb	1.314	114.001
111	Cd	|	20097.006	9.998683	ppb	3.757	28.617
118	Sn	|	1984.887	0.257371	ppb	16.595	685.359
121	Sb	|	1009.390	0.146583	ppb	8.918	128.668
135	Ba	|	361.341	0.155648	ppb	8.455	89.334
165	Ho	|	1266010.205		ppb	0.961	1307419.809
159	Tb	⌊	1352331.978		ppb	0.688	1408994.867
203	Tl	⌈	139.334	0.009198	ppb	14.378	89.334
207	Pb	|	752.678	0.012628	ppb	6.279	586.007
209	Bi	⌊>	659010.434		ppb	1.748	731930.875

QC Out of Limits

alyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: Blank
Autosampler Position: 2
Sample Date/Time: Tuesday, March 27, 2018 19:25:03
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\Blank.218
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37782.700		ppb	1.702	
9	Be		39.333		ppb	10.275	
45	Sc	>	4748584.211		ppb	0.792	
10	B		112.001		ppb	6.439	
23	Na		187.621		ppb	14.393	
25	Mg		308.577		ppb	7.579	
27	Al		2178.261		ppb	3.848	
39	K		7934.128		ppb	1.847	
43	Ca		220.003		ppb	11.543	
44	Ca		24391.729		ppb	1.096	
45	Sc-1	>	4748584.211		ppb	0.792	
47	Ti		153.335		ppb	19.096	
49	Ti		168.668		ppb	5.849	
51	V		2529.025		ppb	4.787	
52	Cr		8430.574		ppb	1.378	
55	Mn		865.375		ppb	6.644	
54	Fe		28343.608		ppb	3.841	
57	Fe		11200.232		ppb	2.653	
59	Co		163.335		ppb	17.843	
60	Ni		109.334		ppb	7.393	
63	Cu		343.815		ppb	7.056	
65	Cu		155.820		ppb	10.757	
71	Ga	>	1358577.364		ppb	1.682	
75	As		6980.470		ppb	2.174	
75	As-1		-249.562		ppb	48.758	
78	Se		7226.814		ppb	1.512	
82	Se		10.347		ppb	227.501	
88	Sr		177.335		ppb	5.086	
66	Zn		1297.426		ppb	1.928	
68	Zn		1796.178		ppb	3.986	
95	Mo		419.344		ppb	29.848	
115	In-1	>	1061548.531		ppb	1.020	
107	Ag		107.334		ppb	6.544	
111	Cd		47.387		ppb	60.902	
118	Sn		1125.404		ppb	15.738	
121	Sb		588.686		ppb	21.970	
135	Ba		193.335		ppb	6.888	
165	Ho		1266568.853		ppb	1.902	
159	Tb		1368449.589		ppb	1.853	
203	Tl		55.334		ppb	12.694	
207	Pb		467.338		ppb	7.953	
209	Bi	>	699638.520		ppb	2.029	

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: STD-1 - MS021518A

Autosampler Position: 3

Sample Date/Time: Tuesday, March 27, 2018 19:27:30

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\STD-1 - MS021518A.219

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	34547.602		ppb	4.338	37782.700
9	Be	|	64018.984	200.000000	ppb	1.366	39.333
45	Sc	|>	4664980.311		ppb	1.239	4748584.211
10	B	⌊	49339.562	500.000000	ppb	1.922	112.001
23	Na	⌈	337046.863	10200.000000	ppb	2.292	187.621
25	Mg	|	5428386.149	10200.000000	ppb	3.871	308.577
27	Al	|	1154894.678	200.000000	ppb	4.188	2178.261
39	K	|	1213483.799	10200.000000	ppb	3.257	7934.128
43	Ca	|	140738.617	10200.000000	ppb	2.483	220.003
44	Ca	|	1799340.603	10200.000000	ppb	2.535	24391.729
45	Sc-1	|>	4664980.311		ppb	1.239	4748584.211
47	Ti	|	128858.916	200.000000	ppb	1.221	153.335
49	Ti	|	111104.942	200.000000	ppb	1.701	168.668
51	V	|	1847308.333	200.000000	ppb	2.725	2529.025
52	Cr	|	1644973.192	200.000000	ppb	2.824	8430.574
55	Mn	|	2513402.245	200.000000	ppb	1.460	865.375
54	Fe	|	6623042.137	10200.000000	ppb	2.627	28343.608
57	Fe	|	2751566.454	10200.000000	ppb	0.472	11200.232
59	Co	|	2191082.257	200.000000	ppb	2.799	163.335
60	Ni	⌊	476208.089	200.000000	ppb	1.808	109.334
63	Cu	⌈	1035992.440	200.000000	ppb	2.415	343.815
65	Cu	|	474209.965	200.000000	ppb	2.354	155.820
71	Ga	|>	1280989.631		ppb	2.542	1358577.364
75	As	|	310892.787	200.000000	ppb	2.597	6980.470
75	As-1	|	338243.714	200.000000	ppb	2.720	-249.562
78	Se	|	89808.648	200.000000	ppb	2.824	7226.814
82	Se	|	42946.839	200.000000	ppb	2.947	10.347
88	Sr	|	3825623.725	200.000000	ppb	1.834	177.335
66	Zn	|	297088.542	200.000000	ppb	1.676	1297.426
68	Zn	⌊	214470.058	200.000000	ppb	2.512	1796.178
95	Mo	⌈	651257.070	200.000000	ppb	2.002	419.344
115	In-1	|>	1055684.186		ppb	3.115	1061548.531
107	Ag	|	1824460.839	200.000000	ppb	1.797	107.334
111	Cd	|	402481.212	200.000000	ppb	2.581	47.387
118	Sn	|	1027721.141	200.000000	ppb	0.926	1125.404
121	Sb	|	1217510.662	200.000000	ppb	0.922	588.686
135	Ba	|	365281.734	200.000000	ppb	0.727	193.335
165	Ho	|	1249840.843		ppb	1.505	1266568.853
159	Tb	⌊	1356712.211		ppb	1.387	1368449.589
203	Tl	⌈	1285275.568	200.000000	ppb	2.768	55.334
207	Pb	|	3569768.210	200.000000	ppb	1.938	467.338
209	Bi	⌊>	662644.771		ppb	1.051	699638.520

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICV-1 - MS021218B

Autosampler Position: 206

Sample Date/Time: Tuesday, March 27, 2018 19:32:30

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICV-1 - MS021218B.221

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		35960.989		ppb	0.885	37782.700
9	Be		32768.622	103.626547	ppb	1.007	39.333
45	Sc	>	4605463.460		ppb	1.224	4748584.211
10	B		199.336	0.932890	ppb	4.949	112.001
23	Na		232.384	1.537385	ppb	17.272	187.621
25	Mg		56042.723	106.086610	ppb	1.723	308.577
27	Al		3279.258	0.205077	ppb	2.473	2178.261
39	K		8171.671	4.092172	ppb	0.954	7934.128
43	Ca		2929.998	199.712989	ppb	7.562	220.003
44	Ca		58834.565	204.731387	ppb	1.654	24391.729
45	Sc-1	>	4605463.460		ppb	1.224	4748584.211
47	Ti		65131.164	102.285867	ppb	1.039	153.335
49	Ti		54975.059	100.097198	ppb	0.444	168.668
51	V		937217.815	102.662281	ppb	0.807	2529.025
52	Cr		848020.675	103.969652	ppb	3.525	8430.574
55	Mn		1315764.510	106.043789	ppb	1.979	865.375
54	Fe		3341767.462	5192.527577	ppb	1.236	28343.608
57	Fe		1389336.123	5196.992133	ppb	1.181	11200.232
59	Co		1101762.798	101.869042	ppb	2.104	163.335
60	Ni		245214.881	104.301716	ppb	2.233	109.334
63	Cu		554725.509	104.661320	ppb	2.530	343.815
65	Cu		251899.092	103.807807	ppb	2.882	155.820
71	Ga	>	1309956.228		ppb	0.789	1358577.364
75	As		166262.676	102.521808	ppb	2.297	6980.470
75	As-1		177329.161	102.597933	ppb	2.177	-249.562
78	Se		50987.536	103.722128	ppb	2.521	7226.814
82	Se		22752.411	103.592464	ppb	2.193	10.347
88	Sr		2002562.630	102.351350	ppb	2.218	177.335
66	Zn		161278.705	105.748299	ppb	2.721	1297.426
68	Zn		111738.954	101.097856	ppb	3.132	1796.178
95	Mo		336202.640	102.461973	ppb	0.420	419.344
115	In-1	>	1062894.521		ppb	1.670	1061548.531
107	Ag		172.002	0.007006	ppb	12.791	107.334
111	Cd		212042.743	104.613204	ppb	2.032	47.387
118	Sn		508843.903	98.189503	ppb	2.196	1125.404
121	Sb		588172.427	95.867002	ppb	1.171	588.686
135	Ba		122.667	-0.038548	ppb	8.206	193.335
165	Ho		1254973.930		ppb	1.885	1266568.853
159	Tb		1348796.004		ppb	0.932	1368449.589
203	Tl		642179.005	96.411475	ppb	1.940	55.334
207	Pb		1922765.017	103.917919	ppb	1.927	467.338
209	Bi	>	686846.896		ppb	0.657	699638.520

QC Out of Limits

alyte Mass	Out of Limits Message
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Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICB
Autosampler Position: 2
Sample Date/Time: Tuesday, March 27, 2018 19:40:00
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICB.224
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		36390.023		ppb	0.625	37782.700
9	Be		39.667	0.003067	ppb	9.544	39.333
45	Sc	>	4679087.043		ppb	2.363	4748584.211
10	B		174.002	0.644253	ppb	9.821	112.001
23	Na		203.812	0.572954	ppb	10.889	187.621
25	Mg		441.916	0.258453	ppb	10.670	308.577
27	Al		2244.944	0.016926	ppb	5.246	2178.261
39	K		8244.404	3.611910	ppb	0.871	7934.128
43	Ca		230.479	1.022077	ppb	14.475	220.003
44	Ca		23558.108	-2.704058	ppb	1.489	24391.729
45	Sc-1	>	4679087.043		ppb	2.363	4748584.211
47	Ti		125.334	-0.040600	ppb	29.439	153.335
49	Ti		147.335	-0.033600	ppb	5.139	168.668
51	V		2264.468	-0.024549	ppb	9.621	2529.025
52	Cr		8198.368	-0.013692	ppb	5.180	8430.574
55	Mn		860.041	0.000595	ppb	3.974	865.375
54	Fe		28024.514	0.142113	ppb	5.174	28343.608
57	Fe		10893.857	-0.520811	ppb	1.166	11200.232
59	Co		175.335	0.001315	ppb	13.940	163.335
60	Ni		112.001	0.001769	ppb	4.725	109.334
63	Cu		325.548	-0.002557	ppb	3.465	343.815
65	Cu		163.309	0.003939	ppb	19.633	155.820
71	Ga	>	1341954.735		ppb	2.749	1358577.364
75	As		6971.165	0.049643	ppb	1.245	6980.470
75	As-1		-183.944	0.035290	ppb	29.816	-249.562
78	Se		7174.015	0.088515	ppb	1.182	7226.814
82	Se		18.352	0.035908	ppb	93.368	10.347
88	Sr		164.668	-0.000515	ppb	3.506	177.335
66	Zn		1324.763	0.028181	ppb	1.113	1297.426
68	Zn		1755.503	-0.016946	ppb	3.389	1796.178
95	Mo		398.676	-0.005716	ppb	28.385	419.344
115	In-1	>	1057753.850		ppb	1.351	1061548.531
107	Ag		192.002	0.009319	ppb	8.526	107.334
111	Cd		56.975	0.004786	ppb	22.491	47.387
118	Sn		2474.348	0.263603	ppb	22.041	1125.404
121	Sb		1514.129	0.152455	ppb	17.788	588.686
135	Ba		200.002	0.003991	ppb	9.849	193.335
165	Ho		1241896.183		ppb	1.280	1266568.853
159	Tb		1346543.070		ppb	2.681	1368449.589
203	Tl		66.000	0.001833	ppb	25.891	55.334
207	Pb		526.006	0.003892	ppb	6.282	467.338
209	Bi	>	680558.204		ppb	0.754	699638.520

QC Out of Limits

ıalyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 4
Sample Date/Time: Tuesday, March 27, 2018 19:42:28
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.225
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		35398.471		ppb	2.110	37782.700
9	Be		32638.169	102.022960	ppb	2.174	39.333
45	Sc	>	4660514.917		ppb	2.184	4748584.211
10	B		25701.637	260.172982	ppb	3.098	112.001
23	Na		167657.903	5076.407365	ppb	1.759	187.621
25	Mg		2746906.802	5165.558842	ppb	2.591	308.577
27	Al		594269.557	102.840468	ppb	2.270	2178.261
39	K		618470.151	5172.173643	ppb	2.366	7934.128
43	Ca		72841.568	5275.301732	ppb	4.742	220.003
44	Ca		1196616.784	6743.125289	ppb	3.076	24391.729
45	Sc-1	>	4660514.917		ppb	2.184	4748584.211
47	Ti		64676.723	100.366820	ppb	2.991	153.335
49	Ti		55288.326	99.472174	ppb	2.021	168.668
51	V		948792.329	102.697696	ppb	2.639	2529.025
52	Cr		832054.335	100.755812	ppb	3.421	8430.574
55	Mn		1280452.375	101.998989	ppb	0.918	865.375
54	Fe		3290422.041	5052.703443	ppb	1.268	28343.608
57	Fe		1399948.714	5175.980138	ppb	0.861	11200.232
59	Co		1103856.945	100.888022	ppb	1.634	163.335
60	Ni		237018.341	99.663682	ppb	2.895	109.334
63	Cu		531987.063	99.786117	ppb	2.503	343.815
65	Cu		241349.276	98.860918	ppb	2.362	155.820
71	Ga	>	1318049.025		ppb	2.732	1358577.364
75	As		160054.064	97.944620	ppb	1.420	6980.470
75	As-1		169944.523	97.772210	ppb	0.920	-249.562
78	Se		49214.575	98.891744	ppb	3.586	7226.814
82	Se		21672.333	98.120490	ppb	1.679	10.347
88	Sr		1937415.372	98.489024	ppb	2.590	177.335
66	Zn		155428.607	101.267016	ppb	2.430	1297.426
68	Zn		112440.078	101.115999	ppb	2.703	1796.178
95	Mo		323783.076	100.832590	ppb	1.361	419.344
115	In-1	>	1040025.259		ppb	1.848	1061548.531
107	Ag		918145.232	102.131258	ppb	2.841	107.334
111	Cd		203759.800	102.739239	ppb	1.979	47.387
118	Sn		510883.720	100.773352	ppb	1.031	1125.404
121	Sb		610321.040	101.689265	ppb	0.147	588.686
135	Ba		180950.586	100.469891	ppb	1.044	193.335
165	Ho		1249589.503		ppb	1.503	1266568.853
159	Tb		1342849.120		ppb	0.483	1368449.589
203	Tl		644110.448	100.085620	ppb	1.262	55.334
207	Pb		1805130.315	100.972036	ppb	0.684	467.338
209	Bi	>	663758.219		ppb	1.804	699638.520

QC Out of Limits

alyte Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 1
Sample Date/Time: Tuesday, March 27, 2018 19:47:26
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCB.227
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		36154.761		ppb	1.390	37782.700
9	Be		44.000	**0.019928**	ppb	29.807	39.333
45	Sc	>	4568110.606		ppb	1.673	4748584.211
10	B		154.668	**0.487104**	ppb	1.975	112.001
23	Na		216.193	**1.106252**	ppb	9.561	187.621
25	Mg		342.864	**0.088116**	ppb	15.568	308.577
27	Al		1810.847	**-0.050351**	ppb	0.556	2178.261
39	K		8068.913	**3.768491**	ppb	1.640	7934.128
43	Ca		252.384	**3.031329**	ppb	13.121	220.003
44	Ca		23817.839	**2.113791**	ppb	2.383	24391.729
45	Sc-1	>	4568110.606		ppb	1.673	4748584.211
47	Ti		128.001	**-0.030657**	ppb	11.797	153.335
49	Ti		172.668	**0.019243**	ppb	0.669	168.668
51	V		2234.319	**-0.021910**	ppb	4.855	2529.025
52	Cr		7944.137	**-0.020313**	ppb	2.170	8430.574
55	Mn		780.033	**-0.004248**	ppb	3.333	865.375
54	Fe		27209.794	**-0.073711**	ppb	3.155	28343.608
57	Fe		11184.879	**1.573747**	ppb	2.203	11200.232
59	Co		200.002	**0.004000**	ppb	4.359	163.335
60	Ni		117.334	**0.005274**	ppb	9.841	109.334
63	Cu		374.845	**0.007558**	ppb	7.059	343.815
65	Cu		174.627	**0.009418**	ppb	10.435	155.820
71	Ga	>	1320880.773		ppb	1.436	1358577.364
75	As		6918.323	**0.083751**	ppb	1.884	6980.470
75	As-1		-177.377	**0.037104**	ppb	52.020	-249.562
78	Se		7097.073	**0.165128**	ppb	2.224	7226.814
82	Se		12.153	**0.008648**	ppb	181.767	10.347
88	Sr		147.335	**-0.001260**	ppb	14.515	177.335
66	Zn		1241.418	**-0.013057**	ppb	2.620	1297.426
68	Zn		1768.839	**0.020346**	ppb	2.882	1796.178
95	Mo		425.344	**0.001171**	ppb	22.573	419.344
115	In-1	>	1065284.744		ppb	1.180	1061548.531
107	Ag		142.668	**0.003787**	ppb	11.331	107.334
111	Cd		49.559	**0.000963**	ppb	21.561	47.387
118	Sn		3244.601	**0.407106**	ppb	24.079	1125.404
121	Sb		616.688	**0.004084**	ppb	19.464	588.686
135	Ba		73.334	**-0.065421**	ppb	18.564	193.335
165	Ho		1254505.909		ppb	0.984	1266568.853
159	Tb		1353364.084		ppb	1.718	1368449.589
203	Tl		81.334	**0.004026**	ppb	20.914	55.334
207	Pb		416.670	**-0.002287**	ppb	10.118	467.338
209	Bi	>	687346.658		ppb	1.319	699638.520

QC Out of Limits

ıalyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCV - 0.5 x STD-1

Autosampler Position: 4

Sample Date/Time: Tuesday, March 27, 2018 20:14:40

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.238

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37375.438		ppb	4.380	37782.700
9	Be		33612.742	106.115463	ppb	3.485	39.333
45	Sc	>	4613879.260		ppb	3.338	4748584.211
10	B		25966.388	265.613817	ppb	3.076	112.001
23	Na		177897.049	5441.692765	ppb	2.871	187.621
25	Mg		2734744.863	5194.699262	ppb	3.260	308.577
27	Al		579654.204	101.319136	ppb	3.163	2178.261
39	K		631615.880	5336.893855	ppb	2.052	7934.128
43	Ca		72106.157	5275.386164	ppb	4.447	220.003
44	Ca		1187106.885	6757.602934	ppb	3.907	24391.729
45	Sc-1	>	4613879.260		ppb	3.338	4748584.211
47	Ti		64813.014	101.604935	ppb	2.903	153.335
49	Ti		56380.368	102.481141	ppb	2.597	168.668
51	V		938916.332	102.664173	ppb	3.297	2529.025
52	Cr		823457.057	100.787851	ppb	3.396	8430.574
55	Mn		1300441.176	104.724465	ppb	2.957	865.375
54	Fe		3296156.205	5117.604828	ppb	2.707	28343.608
57	Fe		1409002.503	5268.188934	ppb	3.373	11200.232
59	Co		1118895.975	103.364160	ppb	2.652	163.335
60	Ni		241937.505	102.838463	ppb	2.919	109.334
63	Cu		534663.542	100.282184	ppb	2.430	343.815
65	Cu		243483.561	99.743642	ppb	3.763	155.820
71	Ga	>	1317596.349		ppb	1.103	1358577.364
75	As		162334.921	99.399923	ppb	1.300	6980.470
75	As-1		171994.671	98.949188	ppb	1.193	-249.562
78	Se		50022.734	100.784007	ppb	0.294	7226.814
82	Se		21884.277	99.082730	ppb	2.083	10.347
88	Sr		1953291.602	99.280362	ppb	2.136	177.335
66	Zn		156135.064	101.759696	ppb	1.997	1297.426
68	Zn		112185.513	100.907495	ppb	2.191	1796.178
95	Mo		328013.476	102.548492	ppb	2.353	419.344
115	In-1	>	1036220.444		ppb	1.169	1061548.531
107	Ag		910895.045	101.708750	ppb	0.823	107.334
111	Cd		203351.555	102.915174	ppb	0.753	47.387
118	Sn		518163.335	102.582707	ppb	0.257	1125.404
121	Sb		615666.311	102.932621	ppb	1.990	588.686
135	Ba		185750.931	103.489810	ppb	2.997	193.335
165	Ho		1248016.062		ppb	1.974	1266568.853
159	Tb		1351111.030		ppb	1.795	1368449.589
203	Tl		657924.201	100.411268	ppb	2.379	55.334
207	Pb		1812034.890	99.547251	ppb	2.114	467.338
209	Bi	>	675721.763		ppb	1.759	699638.520

QC Out of Limits

Analyte	Mass	Out of Limits Message
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Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCB

Autosampler Position: 1

Sample Date/Time: Tuesday, March 27, 2018 20:19:37

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\CCB.240

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	37098.547		ppb	0.989	37782.700
9	Be	|	46.000	**0.023503**	ppb	2.174	39.333
45	Sc	|>	4650762.759		ppb	1.741	4748584.211
10	B	⌊	178.002	**0.695033**	ppb	6.256	112.001
23	Na	⌈	176.192	**-0.226128**	ppb	19.347	187.621
25	Mg	|	311.434	**0.017458**	ppb	10.216	308.577
27	Al	|	2050.232	**-0.014669**	ppb	7.148	2178.261
39	K	|	8285.107	**4.372056**	ppb	0.773	7934.128
43	Ca	|	200.955	**-1.059952**	ppb	4.993	220.003
44	Ca	|	23374.775	**-2.930371**	ppb	0.693	24391.729
45	Sc-1	|>	4650762.759		ppb	1.741	4748584.211
47	Ti	|	150.668	**0.001064**	ppb	11.053	153.335
49	Ti	|	158.668	**-0.010949**	ppb	23.728	168.668
51	V	|	2341.142	**-0.014733**	ppb	16.488	2529.025
52	Cr	|	8080.259	**-0.021690**	ppb	3.314	8430.574
55	Mn	|	856.707	**0.000790**	ppb	5.571	865.375
54	Fe	|	27046.794	**-1.088295**	ppb	2.205	28343.608
57	Fe	|	10915.216	**-0.189011**	ppb	1.174	11200.232
59	Co	|	180.002	**0.001813**	ppb	12.522	163.335
60	Ni	⌊	140.001	**0.013930**	ppb	7.559	109.334
63	Cu	⌈	357.854	**0.004472**	ppb	7.015	343.815
65	Cu	|	148.502	**-0.001215**	ppb	4.788	155.820
71	Ga	|>	1321055.254		ppb	1.775	1358577.364
75	As	|	6954.328	**0.108110**	ppb	2.400	6980.470
75	As-1	|	-193.641	**0.028419**	ppb	28.100	-249.562
78	Se	|	7153.776	**0.301504**	ppb	1.687	7226.814
82	Se	|	13.628	**0.016226**	ppb	97.767	10.347
88	Sr	|	162.668	**-0.000485**	ppb	9.550	177.335
66	Zn	|	1406.109	**0.094781**	ppb	4.006	1297.426
68	Zn	⌊	1855.523	**0.099471**	ppb	1.808	1796.178
95	Mo	⌈	396.009	**-0.005928**	ppb	18.210	419.344
115	In-1	|>	1050705.788		ppb	2.158	1061548.531
107	Ag	|	146.668	**0.004440**	ppb	10.052	107.334
111	Cd	|	54.841	**0.004026**	ppb	27.392	47.387
118	Sn	|	3507.371	**0.467292**	ppb	25.016	1125.404
121	Sb	|	974.054	**0.064359**	ppb	21.548	588.686
135	Ba	|	76.667	**-0.063007**	ppb	12.868	193.335
165	Ho	|	1229497.201		ppb	2.288	1266568.853
159	Tb	⌊	1328188.982		ppb	1.790	1368449.589
203	Tl	⌈	72.667	**0.002853**	ppb	23.082	55.334
207	Pb	|	418.003	**-0.002063**	ppb	4.856	467.338
209	Bi	⌊>	682673.391		ppb	1.737	699638.520

QC Out of Limits

ıalyte MassOut of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCV - 0.5 x STD-1

Autosampler Position: 4

Sample Date/Time: Tuesday, March 27, 2018 20:46:45

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.251

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	37164.171		ppb	2.336	37782.700
9	Be	|	33195.501	103.469800	ppb	1.053	39.333
45	Sc	|>	4672679.040		ppb	1.090	4748584.211
10	B	⌊	25887.490	261.423512	ppb	2.595	112.001
23	Na	⌈	176654.463	5334.129197	ppb	1.695	187.621
25	Mg	|	2728538.026	5117.955184	ppb	1.846	308.577
27	Al	|	586315.635	101.198201	ppb	1.980	2178.261
39	K	|	623890.063	5202.671184	ppb	1.933	7934.128
43	Ca	|	73081.162	5281.369510	ppb	0.998	220.003
44	Ca	|	1218992.357	6854.792091	ppb	0.586	24391.729
45	Sc-1	|>	4672679.040		ppb	1.090	4748584.211
47	Ti	|	64693.387	100.138354	ppb	1.009	153.335
49	Ti	|	56109.974	100.700351	ppb	1.161	168.668
51	V	|	933512.552	100.785111	ppb	4.004	2529.025
52	Cr	|	828000.168	100.011115	ppb	1.471	8430.574
55	Mn	|	1288216.168	102.301692	ppb	3.809	865.375
54	Fe	|	3333137.823	5104.100633	ppb	0.860	28343.608
57	Fe	|	1395357.596	5143.726125	ppb	3.309	11200.232
59	Co	|	1094788.427	99.752120	ppb	2.761	163.335
60	Ni	⌊	238700.811	100.063324	ppb	2.845	109.334
63	Cu	⌈	528073.782	99.986583	ppb	3.237	343.815
65	Cu	|	238983.055	98.849901	ppb	2.297	155.820
71	Ga	|>	1305136.187		ppb	2.154	1358577.364
75	As	|	160685.346	99.338284	ppb	3.346	6980.470
75	As-1	|	170559.365	99.078406	ppb	3.191	-249.562
78	Se	|	49368.915	100.376269	ppb	1.278	7226.814
82	Se	|	21722.606	99.325115	ppb	2.330	10.347
88	Sr	|	1919621.721	98.539108	ppb	2.270	177.335
66	Zn	|	152613.360	100.391879	ppb	3.511	1297.426
68	Zn	⌊	110011.069	99.862399	ppb	4.209	1796.178
95	Mo	⌈	325339.835	100.935052	ppb	1.321	419.344
115	In-1	|>	1044138.295		ppb	2.220	1061548.531
107	Ag	|	911933.421	101.036867	ppb	3.340	107.334
111	Cd	|	204452.982	102.710804	ppb	1.084	47.387
118	Sn	|	524083.836	102.956080	ppb	2.923	1125.404
121	Sb	|	622439.550	103.294533	ppb	1.490	588.686
135	Ba	|	181200.906	100.237624	ppb	1.315	193.335
165	Ho	|	1269559.192		ppb	2.094	1266568.853
159	Tb	⌊	1352985.707		ppb	0.951	1368449.589
203	Tl	⌈	653490.251	100.450615	ppb	1.964	55.334
207	Pb	|	1837251.192	101.671391	ppb	1.607	467.338
209	Bi	⌊>	670829.359		ppb	0.701	699638.520

QC Out of Limits

alyte Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 1
Sample Date/Time: Tuesday, March 27, 2018 20:51:42
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCB.253
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37857.004		ppb	1.434	37782.700
9	Be		38.667	0.001483	ppb	12.222	39.333
45	Sc	>	4621799.630		ppb	2.990	4748584.211
10	B		168.668	0.612984	ppb	2.738	112.001
23	Na		164.763	-0.553780	ppb	23.544	187.621
25	Mg		427.629	0.241760	ppb	20.380	308.577
27	Al		2126.249	0.001328	ppb	4.505	2178.261
39	K		8118.291	3.392066	ppb	2.429	7934.128
43	Ca		207.621	-0.533079	ppb	21.860	220.003
44	Ca		23707.067	-0.133997	ppb	1.618	24391.729
45	Sc-1	>	4621799.630		ppb	2.990	4748584.211
47	Ti		141.334	-0.012069	ppb	6.688	153.335
49	Ti		165.335	0.003152	ppb	14.432	168.668
51	V		2383.593	-0.008904	ppb	10.656	2529.025
52	Cr		8060.239	-0.017428	ppb	1.083	8430.574
55	Mn		876.042	0.002742	ppb	4.185	865.375
54	Fe		28241.675	1.044582	ppb	1.778	28343.608
57	Fe		10942.582	0.177954	ppb	0.853	11200.232
59	Co		190.002	0.002853	ppb	4.824	163.335
60	Ni		136.668	0.013113	ppb	24.893	109.334
63	Cu		367.321	0.006291	ppb	12.609	343.815
65	Cu		171.220	0.008042	ppb	15.437	155.820
71	Ga	>	1320077.086		ppb	1.029	1358577.364
75	As		7021.470	0.152750	ppb	1.666	6980.470
75	As-1		-181.726	0.034580	ppb	36.901	-249.562
78	Se		7227.411	0.482359	ppb	1.469	7226.814
82	Se		20.357	0.046143	ppb	69.847	10.347
88	Sr		160.668	-0.000593	ppb	9.669	177.335
66	Zn		1481.454	0.144814	ppb	2.728	1297.426
68	Zn		1814.848	0.063231	ppb	4.346	1796.178
95	Mo		500.014	0.029550	ppb	21.825	419.344
115	In-1	>	1029626.883		ppb	1.864	1061548.531
107	Ag		142.001	0.004240	ppb	11.268	107.334
111	Cd		22.171	-0.012113	ppb	10.593	47.387
118	Sn		4467.808	0.675066	ppb	24.527	1125.404
121	Sb		2094.247	0.256775	ppb	18.850	588.686
135	Ba		79.334	-0.060643	ppb	25.252	193.335
165	Ho		1261117.706		ppb	1.572	1266568.853
159	Tb		1343752.764		ppb	2.005	1368449.589
203	Tl		93.334	0.005677	ppb	13.093	55.334
207	Pb		408.003	-0.003047	ppb	7.254	467.338
209	Bi	>	695938.628		ppb	1.550	699638.520

QC Out of Limits

alyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 4
Sample Date/Time: Tuesday, March 27, 2018 21:18:53
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.264
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38953.309		ppb	2.445	37782.700
9	Be		34363.187	105.435760	ppb	2.687	39.333
45	Sc	>	4747854.103		ppb	3.195	4748584.211
10	B		26647.709	264.880884	ppb	4.106	112.001
23	Na		180831.256	5377.908260	ppb	2.852	187.621
25	Mg		2761963.691	5101.873120	ppb	1.338	308.577
27	Al		597848.334	101.619260	ppb	2.468	2178.261
39	K		638636.539	5246.078435	ppb	4.303	7934.128
43	Ca		73740.858	5247.132244	ppb	2.610	220.003
44	Ca		1201104.346	6645.759483	ppb	2.686	24391.729
45	Sc-1	>	4747854.103		ppb	3.195	4748584.211
47	Ti		65428.657	99.702831	ppb	1.816	153.335
49	Ti		55637.929	98.236208	ppb	4.127	168.668
51	V		929420.793	98.764940	ppb	3.248	2529.025
52	Cr		818077.587	97.269493	ppb	4.071	8430.574
55	Mn		1302538.056	101.908365	ppb	4.628	865.375
54	Fe		3301144.788	4978.475984	ppb	4.272	28343.608
57	Fe		1391591.142	5052.993915	ppb	4.263	11200.232
59	Co		1112890.897	99.908893	ppb	4.504	163.335
60	Ni		242197.996	100.041043	ppb	3.198	109.334
63	Cu		536061.490	99.950601	ppb	3.469	343.815
65	Cu		241147.404	98.211127	ppb	3.056	155.820
71	Ga	>	1325754.929		ppb	1.783	1358577.364
75	As		162334.458	98.763121	ppb	1.724	6980.470
75	As-1		172709.866	98.747527	ppb	1.718	-249.562
78	Se		50444.436	101.049506	ppb	2.504	7226.814
82	Se		22300.609	100.339818	ppb	2.549	10.347
88	Sr		1976858.871	99.841794	ppb	2.810	177.335
66	Zn		155630.449	100.798311	ppb	3.300	1297.426
68	Zn		112524.239	100.598023	ppb	1.678	1796.178
95	Mo		330743.496	102.096010	ppb	2.177	419.344
115	In-1	>	1049462.279		ppb	2.591	1061548.531
107	Ag		913409.545	100.693286	ppb	2.642	107.334
111	Cd		203824.629	101.843280	ppb	2.913	47.387
118	Sn		533015.631	104.171109	ppb	3.944	1125.404
121	Sb		618973.113	102.189971	ppb	2.081	588.686
135	Ba		178915.756	98.416567	ppb	3.804	193.335
165	Ho		1250643.446		ppb	2.497	1266568.853
159	Tb		1347608.564		ppb	1.699	1368449.589
203	Tl		662764.147	99.541012	ppb	1.808	55.334
207	Pb		1859137.055	100.481535	ppb	2.032	467.338
209	Bi	>	686939.243		ppb	2.675	699638.520

QC Out of Limits

alyte Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCB

Autosampler Position: 1

Sample Date/Time: Tuesday, March 27, 2018 21:23:49

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\CCB.266

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38773.619		ppb	4.441	37782.700
9	Be		39.667	0.001880	ppb	3.851	39.333
45	Sc	>	4722143.867		ppb	3.501	4748584.211
10	B		165.335	0.536194	ppb	18.118	112.001
23	Na		171.430	-0.445875	ppb	6.009	187.621
25	Mg		357.150	0.092899	ppb	6.350	308.577
27	Al		2059.567	-0.018334	ppb	5.546	2178.261
39	K		8230.392	2.875259	ppb	2.047	7934.128
43	Ca		218.098	-0.051085	ppb	4.601	220.003
44	Ca		23394.829	-4.779533	ppb	1.241	24391.729
45	Sc-1	>	4722143.867		ppb	3.501	4748584.211
47	Ti		144.001	-0.012922	ppb	21.382	153.335
49	Ti		174.668	0.013072	ppb	6.902	168.668
51	V		2428.795	-0.008696	ppb	8.927	2529.025
52	Cr		8169.676	-0.024557	ppb	5.408	8430.574
55	Mn		852.040	-0.000461	ppb	10.329	865.375
54	Fe		28120.909	-0.043633	ppb	3.308	28343.608
57	Fe		10669.595	-1.660410	ppb	3.053	11200.232
59	Co		181.335	0.001723	ppb	1.685	163.335
60	Ni		128.668	0.008260	ppb	4.749	109.334
63	Cu		323.281	-0.002691	ppb	5.173	343.815
65	Cu		161.872	0.003649	ppb	10.690	155.820
71	Ga	>	1336591.120		ppb	3.032	1358577.364
75	As		6974.721	0.069274	ppb	3.074	6980.470
75	As-1		-190.421	0.031435	ppb	51.936	-249.562
78	Se		7142.705	0.083513	ppb	2.078	7226.814
82	Se		3.497	-0.028230	ppb	610.613	10.347
88	Sr		217.336	0.002155	ppb	2.958	177.335
66	Zn		1454.783	0.116255	ppb	4.635	1297.426
68	Zn		1866.192	0.090642	ppb	1.034	1796.178
95	Mo		527.349	0.033829	ppb	15.408	419.344
115	In-1	>	1056358.658		ppb	2.510	1061548.531
107	Ag		171.335	0.007073	ppb	10.528	107.334
111	Cd		34.223	-0.006331	ppb	32.921	47.387
118	Sn		4403.785	0.638417	ppb	27.104	1125.404
121	Sb		1506.795	0.151105	ppb	20.193	588.686
135	Ba		84.667	-0.058979	ppb	17.412	193.335
165	Ho		1269743.399		ppb	1.185	1266568.853
159	Tb		1349727.122		ppb	1.873	1368449.589
203	Tl		108.667	0.007856	ppb	4.632	55.334
207	Pb		428.670	-0.002067	ppb	7.382	467.338
209	Bi	>	700754.881		ppb	2.772	699638.520

QC Out of Limits

alyte MassOut of Limits Message

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EPA 200.8 ICP/MS Metals

Total

SAMPLE DATA

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:12
EXTRACTION :	N/A	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-28 14:07

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-1.icp

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0006S005**

LCS/MB BATCH:	180327LA2	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000580	1.00	ND	0.00100	
Copper	0.00216	1.00	0.00216	0.00100	
Lead	0.00149	1.00	0.00149	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1974-1
Autosampler Position: 408
Sample Date/Time: Tuesday, March 27, 2018 20:12:10
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1974-1 .237
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	39542.827		ppb	1.553	37782.700
9	Be	|	61.334	0.068890	ppb	6.788	39.333
45	Sc	|>	4725976.934		ppb	3.440	4748584.211
10	B	⌊	1773.506	16.679495	ppb	2.881	112.001
23	Na	⌈	18408.148	545.164803	ppb	2.143	187.621
25	Mg	|	367534.864	681.228981	ppb	2.555	308.577
27	Al	|	2306610.497	394.652210	ppb	3.863	2178.261
39	K	|	202189.395	1622.656904	ppb	1.576	7934.128
43	Ca	|	43163.205	3079.236590	ppb	1.992	220.003
44	Ca	|	740810.716	4063.531014	ppb	3.710	24391.729
45	Sc-1	|>	4725976.934		ppb	3.440	4748584.211
47	Ti	|	14068.898	21.337417	ppb	5.299	153.335
49	Ti	|	11704.198	20.536154	ppb	1.796	168.668
51	V	|	23439.424	2.241161	ppb	2.118	2529.025
52	Cr	|	16467.574	0.975734	ppb	2.471	8430.574
55	Mn	|	280785.369	22.009389	ppb	2.524	865.375
54	Fe	|	371241.485	524.204851	ppb	1.734	28343.608
57	Fe	|	157367.847	537.568974	ppb	1.288	11200.232
59	Co	|	3633.395	0.313124	ppb	7.160	163.335
60	Ni	⌊	2735.746	1.091407	ppb	5.264	109.334
63	Cu	⌈	11888.934	2.108924	ppb	1.152	343.815
65	Cu	|	5566.632	2.159359	ppb	2.457	155.820
71	Ga	|>	1354868.955		ppb	2.854	1358577.364
75	As	|	7500.963	0.338035	ppb	0.686	6980.470
75	As-1	|	346.492	0.332836	ppb	13.004	-249.562
78	Se	|	7216.623	0.029439	ppb	0.404	7226.814
82	Se	|	34.300	0.104553	ppb	44.476	10.347
88	Sr	|	208771.893	10.314924	ppb	3.500	177.335
66	Zn	|	99658.058	62.868992	ppb	1.858	1297.426
68	Zn	⌊	69660.559	60.335932	ppb	1.009	1796.178
95	Mo	⌈	1502.792	0.335452	ppb	12.934	419.344
115	In-1	|>	1051441.999		ppb	0.441	1061548.531
107	Ag	|	314.672	0.022934	ppb	8.392	107.334
111	Cd	|	163.106	0.057969	ppb	24.519	47.387
118	Sn	|	7662.612	1.280496	ppb	15.389	1125.404
121	Sb	|	8346.527	1.280642	ppb	10.980	588.686
135	Ba	|	16895.694	9.182460	ppb	2.723	193.335
165	Ho	|	1267408.778		ppb	2.043	1266568.853
159	Tb	⌊	1351506.463		ppb	3.868	1368449.589
203	Tl	⌈	223.336	0.025248	ppb	11.550	55.334
207	Pb	|	28157.579	1.491157	ppb	2.133	467.338
209	Bi	⌊>	689844.200		ppb	3.129	699638.520

QC Out of Limits

ıalyte Mass Out of Limits Message

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:22
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-2.icp

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0007S011**

LCS/MB BATCH:	180327LA2	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000804	1.00	ND	0.00100	
Copper	0.00200	1.00	0.00200	0.00100	
Lead	0.00230	1.00	0.00230	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-2

Autosampler Position: 409

Sample Date/Time: Tuesday, March 27, 2018 20:22:07

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-2.241

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	37987.204		ppb	0.751	37782.700
9	Be	|	57.334	0.058072	ppb	11.214	39.333
45	Sc	|>	4677587.714		ppb	2.873	4748584.211
10	B	⌊	958.717	8.599568	ppb	1.258	112.001
23	Na	⌈	18039.792	539.544131	ppb	2.178	187.621
25	Mg	|	327088.880	612.544991	ppb	1.603	308.577
27	Al	|	1983405.086	342.918630	ppb	2.034	2178.261
39	K	|	127952.755	1014.137506	ppb	3.176	7934.128
43	Ca	|	43989.043	3169.969067	ppb	1.493	220.003
44	Ca	|	758349.206	4208.071721	ppb	2.652	24391.729
45	Sc-1	|>	4677587.714		ppb	2.873	4748584.211
47	Ti	|	11010.000	16.828494	ppb	2.843	153.335
49	Ti	|	9158.614	16.178600	ppb	3.214	168.668
51	V	|	21153.440	2.018894	ppb	3.578	2529.025
52	Cr	|	16504.978	1.000881	ppb	2.977	8430.574
55	Mn	|	464890.111	36.873921	ppb	2.441	865.375
54	Fe	|	274006.832	380.083448	ppb	3.668	28343.608
57	Fe	|	115773.993	389.091131	ppb	1.609	11200.232
59	Co	|	4923.333	0.433838	ppb	1.145	163.335
60	Ni	⌊	3534.020	1.436751	ppb	2.639	109.334
63	Cu	⌈	10823.923	1.982725	ppb	3.337	343.815
65	Cu	|	4996.532	2.001031	ppb	0.536	155.820
71	Ga	|>	1308573.426		ppb	1.874	1358577.364
75	As	|	7202.098	0.308012	ppb	2.058	6980.470
75	As-1	|	240.626	0.277974	ppb	35.971	-249.562
78	Se	|	7006.804	0.110475	ppb	1.141	7226.814
82	Se	|	27.722	0.081318	ppb	52.733	10.347
88	Sr	|	242439.640	12.399558	ppb	0.732	177.335
66	Zn	|	107720.289	70.423615	ppb	3.504	1297.426
68	Zn	⌊	74760.596	67.164674	ppb	4.726	1796.178
95	Mo	⌈	888.711	0.145089	ppb	14.121	419.344
115	In-1	|>	1056561.065		ppb	1.610	1061548.531
107	Ag	|	193.335	0.009477	ppb	13.776	107.334
111	Cd	|	209.061	0.080417	ppb	3.218	47.387
118	Sn	|	2787.773	0.325775	ppb	21.187	1125.404
121	Sb	|	1673.488	0.178739	ppb	7.645	588.686
135	Ba	|	25038.450	13.595832	ppb	2.693	193.335
165	Ho	|	1258767.332		ppb	1.076	1266568.853
159	Tb	⌊	1360192.527		ppb	1.658	1368449.589
203	Tl	⌈	116.001	0.009117	ppb	5.973	55.334
207	Pb	|	43352.482	2.298581	ppb	2.129	467.338
209	Bi	⌊>	692812.024		ppb	1.527	699638.520

QC Out of Limits

Analyte	Mass	Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:24
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-3.icp

 # 3 **CLIENT SAMPLE NUMBER: EVBMP0002S022**

LCS/MB BATCH:	180327LA2	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000403	1.00	ND	0.00100	
Copper	0.00569	1.00	0.00569	0.00100	
Lead	0.00348	1.00	0.00348	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-3

Autosampler Position: 410

Sample Date/Time: Tuesday, March 27, 2018 20:24:34

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-3.242

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	38441.109		ppb	1.011	37782.700
9	Be	|	45.667	0.020500	ppb	6.690	39.333
45	Sc	|>	4711224.839		ppb	1.415	4748584.211
10	B	⌊	936.715	8.302925	ppb	2.283	112.001
23	Na	⌈	42368.054	1264.252969	ppb	2.213	187.621
25	Mg	|	275460.478	511.931768	ppb	1.813	308.577
27	Al	|	1527470.974	262.059677	ppb	1.885	2178.261
39	K	|	100964.313	779.540796	ppb	1.509	7934.128
43	Ca	|	33692.830	2406.053072	ppb	2.799	220.003
44	Ca	|	580846.873	3166.833547	ppb	1.725	24391.729
45	Sc-1	|>	4711224.839		ppb	1.415	4748584.211
47	Ti	|	10631.554	16.120786	ppb	4.229	153.335
49	Ti	|	8710.839	15.253950	ppb	2.008	168.668
51	V	|	32855.398	3.259525	ppb	3.993	2529.025
52	Cr	|	14852.125	0.785644	ppb	1.708	8430.574
55	Mn	|	120136.747	9.403815	ppb	1.708	865.375
54	Fe	|	229584.778	308.672056	ppb	2.747	28343.608
57	Fe	|	97742.018	319.308862	ppb	1.229	11200.232
59	Co	|	2266.283	0.190175	ppb	2.335	163.335
60	Ni	⌊	4392.395	1.782240	ppb	2.398	109.334
63	Cu	⌈	31339.176	5.787165	ppb	2.792	343.815
65	Cu	|	14103.576	5.689626	ppb	1.696	155.820
71	Ga	|>	1325317.195		ppb	2.982	1358577.364
75	As	|	7587.561	0.497150	ppb	0.538	6980.470
75	As-1	|	575.938	0.468096	ppb	11.129	-249.562
78	Se	|	7140.099	0.220546	ppb	0.616	7226.814
82	Se	|	58.353	0.217421	ppb	10.584	10.347
88	Sr	|	220827.926	11.152577	ppb	3.437	177.335
66	Zn	|	130817.671	84.627632	ppb	2.849	1297.426
68	Zn	⌊	92828.310	82.758955	ppb	1.885	1796.178
95	Mo	⌈	1227.417	0.250535	ppb	10.477	419.344
115	In-1	|>	1052031.731		ppb	1.066	1061548.531
107	Ag	|	203.336	0.010658	ppb	5.763	107.334
111	Cd	|	127.780	0.040310	ppb	3.098	47.387
118	Sn	|	2100.915	0.193157	ppb	18.590	1125.404
121	Sb	|	2039.562	0.240088	ppb	5.018	588.686
135	Ba	|	12902.485	6.984122	ppb	1.882	193.335
165	Ho	|	1258238.245		ppb	3.159	1266568.853
159	Tb	⌊	1359692.681		ppb	1.461	1368449.589
203	Tl	⌈	112.001	0.008525	ppb	9.449	55.334
207	Pb	|	65284.616	3.480092	ppb	1.418	467.338
209	Bi	⌊>	691748.353		ppb	1.945	699638.520

QC Out of Limits

Analyte Mass Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:27
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-4.icp

 # 4 **CLIENT SAMPLE NUMBER: EVBMP0007S010**

LCS/MB BATCH:	180327LA2	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000215	1.00	ND	0.00100	
Copper	0.00215	1.00	0.00215	0.00100	
Lead	0.00111	1.00	0.00111	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-4

Autosampler Position: 411

Sample Date/Time: Tuesday, March 27, 2018 20:27:02

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-4.243

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		39194.646		ppb	0.604	37782.700
9	Be		49.667	0.033009	ppb	15.245	39.333
45	Sc	>	4706511.730		ppb	3.664	4748584.211
10	B		1696.158	15.980750	ppb	2.634	112.001
23	Na		47593.829	1424.468559	ppb	2.350	187.621
25	Mg		394247.828	733.796241	ppb	2.852	308.577
27	Al		1064663.976	182.769146	ppb	2.522	2178.261
39	K		306928.248	2509.591575	ppb	0.991	7934.128
43	Ca		54201.174	3885.317609	ppb	2.679	220.003
44	Ca		914050.413	5070.311632	ppb	2.476	24391.729
45	Sc-1	>	4706511.730		ppb	3.664	4748584.211
47	Ti		6524.343	9.812702	ppb	4.463	153.335
49	Ti		5086.090	8.790880	ppb	3.028	168.668
51	V		20286.104	1.912615	ppb	1.367	2529.025
52	Cr		15419.066	0.857410	ppb	0.746	8430.574
55	Mn		129128.690	10.127061	ppb	1.124	865.375
54	Fe		217276.672	290.303046	ppb	2.628	28343.608
57	Fe		95054.386	309.973318	ppb	0.905	11200.232
59	Co		1992.885	0.165876	ppb	2.775	163.335
60	Ni		3222.571	1.298226	ppb	1.742	109.334
63	Cu		11349.947	2.072504	ppb	4.352	343.815
65	Cu		5386.211	2.152687	ppb	3.533	155.820
71	Ga	>	1314650.848		ppb	2.916	1358577.364
75	As		11793.082	3.226956	ppb	3.061	6980.470
75	As-1		4689.756	2.838218	ppb	5.119	-249.562
78	Se		7160.773	0.398774	ppb	2.145	7226.814
82	Se		32.378	0.101116	ppb	17.957	10.347
88	Sr		311823.528	15.887909	ppb	2.717	177.335
66	Zn		91615.419	59.516456	ppb	1.792	1297.426
68	Zn		64279.999	57.265921	ppb	3.753	1796.178
95	Mo		1588.806	0.362817	ppb	4.016	419.344
115	In-1	>	1049676.651		ppb	0.587	1061548.531
107	Ag		228.670	0.013508	ppb	5.691	107.334
111	Cd		90.006	0.021523	ppb	30.804	47.387
118	Sn		1678.159	0.110900	ppb	20.914	1125.404
121	Sb		1905.533	0.218652	ppb	5.842	588.686
135	Ba		15261.466	8.298091	ppb	0.599	193.335
165	Ho		1262136.491		ppb	1.751	1266568.853
159	Tb		1363793.347		ppb	1.056	1368449.589
203	Tl		91.334	0.005492	ppb	7.690	55.334
207	Pb		21114.164	1.111974	ppb	2.109	467.338
209	Bi	>	689648.625		ppb	1.683	699638.520

QC Out of Limits

Analyte Mass Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:29
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-5.icp

 # 5 **CLIENT SAMPLE NUMBER: EVBMP0008S013**

LCS/MB BATCH:	180327LA2	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.000102	1.00	ND	0.00100	
Copper	0.00199	1.00	0.00199	0.00100	
Lead	0.00126	1.00	0.00126	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-5

Autosampler Position: 412

Sample Date/Time: Tuesday, March 27, 2018 20:29:29

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-5.244

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		40741.115		ppb	2.170	37782.700
9	Be		90.334	0.152764	ppb	5.232	39.333
45	Sc	>	4819300.399		ppb	2.052	4748584.211
10	B		10070.244	97.939583	ppb	2.872	112.001
23	Na		441309.603	12934.719183	ppb	3.289	187.621
25	Mg		465804.375	846.727162	ppb	1.324	308.577
27	Al		9111902.734	1530.372162	ppb	2.786	2178.261
39	K		326014.228	2605.514028	ppb	5.248	7934.128
43	Ca		121646.595	8534.165234	ppb	0.678	220.003
44	Ca		1584052.825	8672.543276	ppb	1.592	24391.729
45	Sc-1	>	4819300.399		ppb	2.052	4748584.211
47	Ti		12047.986	17.883337	ppb	3.836	153.335
49	Ti		5512.338	9.321368	ppb	3.131	168.668
51	V		33836.889	3.283143	ppb	0.763	2529.025
52	Cr		15165.975	0.782173	ppb	1.490	8430.574
55	Mn		127672.968	9.771757	ppb	0.740	865.375
54	Fe		466065.231	654.830021	ppb	1.254	28343.608
57	Fe		199987.153	679.506307	ppb	2.223	11200.232
59	Co		3443.987	0.289593	ppb	5.427	163.335
60	Ni		3191.227	1.253054	ppb	2.626	109.334
63	Cu		11475.248	2.032142	ppb	3.268	343.815
65	Cu		5154.886	1.993386	ppb	1.893	155.820
71	Ga	>	1355133.565		ppb	1.444	1358577.364
75	As		32994.584	16.172649	ppb	1.582	6980.470
75	As-1		25867.442	14.586513	ppb	2.348	-249.562
78	Se		7279.703	0.165808	ppb	0.908	7226.814
82	Se		67.556	0.251219	ppb	41.804	10.347
88	Sr		964497.553	47.653245	ppb	1.380	177.335
66	Zn		101250.750	63.863230	ppb	0.878	1297.426
68	Zn		72569.167	62.887852	ppb	0.589	1796.178
95	Mo		1304.760	0.278641	ppb	2.990	419.344
115	In-1	>	1040283.470		ppb	0.284	1061548.531
107	Ag		233.336	0.014256	ppb	10.154	107.334
111	Cd		248.189	0.101719	ppb	5.335	47.387
118	Sn		1595.477	0.097435	ppb	18.510	1125.404
121	Sb		1702.160	0.187582	ppb	8.406	588.686
135	Ba		57897.791	32.062356	ppb	0.784	193.335
165	Ho		1250306.494		ppb	1.704	1266568.853
159	Tb		1341188.155		ppb	1.508	1368449.589
203	Tl		332.006	0.041782	ppb	13.322	55.334
207	Pb		23687.254	1.258063	ppb	1.643	467.338
209	Bi	>	685622.381		ppb	1.214	699638.520

QC Out of Limits

Analyte Mass	Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:31
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-6.icp

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0009S011**

LCS/MB BATCH:	180327LA2	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000104	1.00	ND	0.00100	
Copper	0.00213	1.00	0.00213	0.00100	
Lead	0.00112	1.00	0.00112	0.00100	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-6

Autosampler Position: 413

Sample Date/Time: Tuesday, March 27, 2018 20:31:57

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-6.245

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	40559.963		ppb	1.681	37782.700
9	Be	|	44.333	0.016690	ppb	17.079	39.333
45	Sc	|>	4693272.001		ppb	2.376	4748584.211
10	B	⌊	1996.886	19.045978	ppb	3.042	112.001
23	Na	⌈	46827.938	1403.910389	ppb	1.668	187.621
25	Mg	|	397768.132	742.224660	ppb	3.237	308.577
27	Al	|	1294073.585	222.800609	ppb	2.353	2178.261
39	K	|	312991.103	2565.473581	ppb	2.185	7934.128
43	Ca	|	53907.021	3874.578241	ppb	2.101	220.003
44	Ca	|	918468.964	5108.202177	ppb	2.154	24391.729
45	Sc-1	|>	4693272.001		ppb	2.376	4748584.211
47	Ti	|	6971.342	10.531982	ppb	4.089	153.335
49	Ti	|	5557.032	9.662776	ppb	3.099	168.668
51	V	|	20760.090	1.969094	ppb	3.319	2529.025
52	Cr	|	14378.697	0.735465	ppb	1.464	8430.574
55	Mn	|	132326.677	10.413221	ppb	4.431	865.375
54	Fe	|	244788.702	333.583931	ppb	3.025	28343.608
57	Fe	|	104051.727	344.253582	ppb	2.820	11200.232
59	Co	|	2122.915	0.178007	ppb	1.676	163.335
60	Ni	⌊	3137.875	1.265583	ppb	3.355	109.334
63	Cu	⌈	11618.569	2.077133	ppb	2.558	343.815
65	Cu	|	5452.447	2.131249	ppb	2.394	155.820
71	Ga	|>	1343024.399		ppb	0.598	1358577.364
75	As	|	12018.706	3.208611	ppb	0.412	6980.470
75	As-1	|	4775.830	2.831006	ppb	2.342	-249.562
78	Se	|	7233.900	0.206060	ppb	1.246	7226.814
82	Se	|	8.310	-0.008485	ppb	114.973	10.347
88	Sr	|	316999.684	15.794864	ppb	3.455	177.335
66	Zn	|	85234.424	54.116678	ppb	1.407	1297.426
68	Zn	⌊	60238.270	52.410697	ppb	1.247	1796.178
95	Mo	⌈	1531.463	0.347962	ppb	5.658	419.344
115	In-1	|>	1043813.162		ppb	1.944	1061548.531
107	Ag	|	243.337	0.015257	ppb	6.990	107.334
111	Cd	|	67.272	0.010425	ppb	31.283	47.387
118	Sn	|	1577.473	0.093430	ppb	18.198	1125.404
121	Sb	|	1427.446	0.141061	ppb	6.497	588.686
135	Ba	|	15128.579	8.273787	ppb	1.441	193.335
165	Ho	|	1259180.239		ppb	1.543	1266568.853
159	Tb	⌊	1368728.968		ppb	1.146	1368449.589
203	Tl	⌈	77.334	0.003377	ppb	16.425	55.334
207	Pb	|	21449.130	1.124818	ppb	1.357	467.338
209	Bi	⌊>	692833.351		ppb	1.620	699638.520

QC Out of Limits

Analyte Mass Out of Limits Message

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:34
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-7.icp

 # 7 **CLIENT SAMPLE NUMBER: FBQW1853Q001**

LCS/MB BATCH:	180327LA2	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.000	1.00	ND	0.00100	
Copper	0.00103	1.00	0.00103	0.00100	
Lead	0.000	1.00	ND	0.00100	

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1974-7
Autosampler Position: 414
Sample Date/Time: Tuesday, March 27, 2018 20:34:24
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1974-7.246
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	39024.264		ppb	1.787	37782.700
9	Be	|	43.000	0.013930	ppb	10.137	39.333
45	Sc	|>	4667620.434		ppb	3.286	4748584.211
10	B	⌊	477.346	3.724613	ppb	6.106	112.001
23	Na	⌈	2996.685	85.226939	ppb	3.966	187.621
25	Mg	|	1038.155	1.383825	ppb	5.886	308.577
27	Al	|	7150.813	0.869041	ppb	2.745	2178.261
39	K	|	8227.055	3.659053	ppb	1.591	7934.128
43	Ca	|	286.671	5.143446	ppb	4.150	220.003
44	Ca	|	24624.736	3.802947	ppb	0.960	24391.729
45	Sc-1	|>	4667620.434		ppb	3.286	4748584.211
47	Ti	|	149.335	-0.001786	ppb	15.866	153.335
49	Ti	|	177.335	0.020098	ppb	14.720	168.668
51	V	|	2666.786	0.020244	ppb	10.292	2529.025
52	Cr	|	9067.188	0.095585	ppb	2.264	8430.574
55	Mn	|	1072.730	0.017793	ppb	7.118	865.375
54	Fe	|	22148.313	-8.800419	ppb	1.322	28343.608
57	Fe	|	10328.533	-2.483571	ppb	2.429	11200.232
59	Co	|	182.002	0.001982	ppb	6.863	163.335
60	Ni	⌊	374.008	0.111976	ppb	1.070	109.334
63	Cu	⌈	5646.954	1.005684	ppb	2.966	343.815
65	Cu	|	2633.557	1.025425	ppb	5.469	155.820
71	Ga	|>	1307954.693		ppb	2.713	1358577.364
75	As	|	6912.573	0.125111	ppb	1.449	6980.470
75	As-1	|	-291.122	-0.029564	ppb	17.706	-249.562
78	Se	|	7136.459	0.429543	ppb	1.381	7226.814
82	Se	|	-13.060	-0.103867	ppb	232.251	10.347
88	Sr	|	404.676	0.011996	ppb	2.488	177.335
66	Zn	|	2258.281	0.668288	ppb	1.552	1297.426
68	Zn	⌊	2395.649	0.614036	ppb	3.007	1796.178
95	Mo	⌈	244.670	-0.051889	ppb	27.410	419.344
115	In-1	|>	1043780.281		ppb	1.711	1061548.531
107	Ag	|	88.667	-0.001866	ppb	25.353	107.334
111	Cd	|	19.962	-0.013275	ppb	129.263	47.387
118	Sn	|	1194.745	0.017437	ppb	5.698	1125.404
121	Sb	|	259.337	-0.053032	ppb	11.291	588.686
135	Ba	|	114.001	-0.042151	ppb	9.116	193.335
165	Ho	|	1241634.026		ppb	1.964	1266568.853
159	Tb	⌊	1335240.762		ppb	1.641	1368449.589
203	Tl	⌈	68.000	0.002067	ppb	10.605	55.334
207	Pb	|	412.003	-0.002485	ppb	3.398	467.338
209	Bi	⌊>	685455.786		ppb	1.899	699638.520

QC Out of Limits

Analyte Mass	Out of Limits Message

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Confirmation.

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-7

Autosampler Position: 460

Sample Date/Time: Wednesday, March 28, 2018 12:33:40

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180328B1\18-03-1974-7.079

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		29828.524		ppb	0.703	29638.905
9	Be		50.667	-0.041892	ppb	11.897	63.667
45	Sc	>	3743948.896		ppb	2.703	3700240.190
10	B		500.680	3.281298	ppb	5.738	163.335
23	Na		2429.849	80.732576	ppb	6.062	127.620
25	Mg		710.504	0.409837	ppb	15.835	481.918
27	Al		2899.129	0.238230	ppb	2.076	1512.126
39	K		7363.648	-0.626522	ppb	1.566	7350.971
43	Ca		384.770	9.651480	ppb	4.090	242.860
44	Ca		29718.974	5.525679	ppb	0.392	28391.886
45	Sc-1	>	3743948.896		ppb	2.703	3700240.190
47	Ti		189.335	-0.012163	ppb	15.393	195.335
49	Ti		190.669	0.009514	ppb	13.690	183.335
51	V		2635.727	0.020790	ppb	3.932	2416.236
52	Cr		9072.525	0.095684	ppb	1.258	8182.352
55	Mn		1295.426	0.035643	ppb	5.421	820.037
54	Fe		24551.057	-6.919101	ppb	1.299	28755.863
57	Fe		10642.226	-0.811637	ppb	0.191	10741.676
59	Co		283.338	0.001552	ppb	21.345	262.004
60	Ni		416.676	0.125697	ppb	13.201	110.667
63	Cu		5669.063	1.013053	ppb	1.277	310.547
65	Cu		2671.346	1.024715	ppb	4.341	170.255
71	Ga	>	1046295.504		ppb	1.483	1022047.102
75	As		6990.304	-0.164667	ppb	0.899	7081.836
75	As-1		-231.051	-0.021745	ppb	41.226	-187.487
78	Se		7239.394	-0.631038	ppb	1.198	7334.273
82	Se		18.674	-0.077999	ppb	161.163	35.576
88	Sr		517.348	0.009525	ppb	17.056	320.006
66	Zn		2312.295	0.824323	ppb	7.407	1049.394
68	Zn		2360.973	0.771455	ppb	2.093	1482.788
95	Mo		842.706	-0.059081	ppb	13.038	1019.391
115	In-1	>	815591.284		ppb	1.908	799582.181
107	Ag		187.335	-0.001827	ppb	23.689	199.336
111	Cd		71.282	0.006299	ppb	35.229	57.155
118	Sn		5331.583	-0.518220	ppb	13.976	7876.152
121	Sb		476.013	-1.152046	ppb	12.443	7491.798
135	Ba		127.334	0.017363	ppb	8.060	92.000
165	Ho		973136.242		ppb	0.744	963855.398
159	Tb		1053045.654		ppb	0.667	1044089.644
203	Tl		180.669	0.004050	ppb	24.910	154.001
207	Pb		504.005	-0.000308	ppb	16.980	507.339
209	Bi	>	522829.126		ppb	1.833	519673.826

QC Out of Limits

Analyte Mass	Out of Limits Message

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EPA 200.8 ICP/MS Metals

Total

QUALITY CONTROL

Method Blank
LCS/LCSD
MS/MSD
PDS/PDSD

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METHOD BLANK ASSOCIATION SUMMARY
FOR METHOD: EPA 200.8

MB SAMPLE ID:	**099-16-094-2272**	ANALYZED BY:	598
MB BATCH ID:	180327LA2	D/T ANALYZED:	2018-03-27 19:54
INSTRUMENT:	ICP/MS 03	REVIEWED BY:	309
EXTRACTION:	N/A	D/T REVIEWED:	2018-03-28 14:06
D/T EXTRACTED:	2018-03-27 00:00	MATRIX:	Water

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180327-BA-2__230.icp

CLIENT WORK ORDER: 18-03-1974

S#	RUN TYPE	CLIENT SAMPLE ID	D/T ANALYZED	DATA FILE
1		A2BMP0006S005	2018-03-27 20:12	W:\ICPMS-DATA\2018\180327B1\18-03-1974-1.icp
2		A2BMP0007S011	2018-03-27 20:22	W:\ICPMS-DATA\2018\180327B1\18-03-1974-2.icp
3		EVBMP0002S022	2018-03-27 20:24	W:\ICPMS-DATA\2018\180327B1\18-03-1974-3.icp
4		EVBMP0007S010	2018-03-27 20:27	W:\ICPMS-DATA\2018\180327B1\18-03-1974-4.icp
5		EVBMP0008S013	2018-03-27 20:29	W:\ICPMS-DATA\2018\180327B1\18-03-1974-5.icp
6		EVBMP0009S011	2018-03-27 20:31	W:\ICPMS-DATA\2018\180327B1\18-03-1974-6.icp
7		FBQW1853Q001	2018-03-27 20:34	W:\ICPMS-DATA\2018\180327B1\18-03-1974-7.icp

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**099-16-094**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 19:54
EXTRACTION :	N/A	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	2018-03-28 14:06

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180327-BA-2__230.icp

 # MB **CLIENT SAMPLE NUMBER: Method Blank**

LCS/MB BATCH:	180327LA2	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Antimony	0.000	1.00	ND	0.00100	
Arsenic	0.000	1.00	ND	0.00100	
Barium	0.000	1.00	ND	0.00100	
Beryllium	0.0000167	1.00	ND	0.00100	
Cadmium	0.000	1.00	ND	0.00100	
Chromium	0.0000111	1.00	ND	0.00100	
Cobalt	0.000000897	1.00	ND	0.00100	
Copper	0.0000316	1.00	ND	0.00100	
Lead	0.00000247	1.00	ND	0.00100	
Molybdenum	0.00000268	1.00	ND	0.00100	
Nickel	0.00000881	1.00	ND	0.00100	
Selenium	0.000	1.00	ND	0.00100	
Silver	0.00000118	1.00	ND	0.00100	
Thallium	0.00000197	1.00	ND	0.00100	
Vanadium	0.000	1.00	ND	0.00100	
Zinc	0.000125	1.00	ND	0.00500	
Aluminum	0.000155	1.00	ND	0.0500	
Calcium	0.00800	1.00	0.00800	0.100	J
Iron	0.000344	1.00	ND	0.0500	
Magnesium	0.000307	1.00	ND	0.100	
Manganese	0.000117	1.00	ND	0.00100	
Potassium	0.00527	1.00	ND	0.0500	
Sodium	0.00454	1.00	0.00454	0.100	J
Strontium	0.0000161	1.00	ND	0.00100	
Tin	0.0000495	1.00	ND	0.00100	
Titanium	0.000	1.00	ND	0.00100	
Boron	0.00344	1.00	ND	0.0500	

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LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

LCS SAMPLE ID: **099-16-094-2272**
LCS/MB BATCH ID: 180327LA2
INSTRUMENT: ICP/MS 03

EXTRACTION: N/A
D/T EXTRACTED: 2018-03-27 00:00

ANALYZED BY: 598
D/T ANALYZED: 2018-03-27 19:57
REVIEWED BY: 309
D/T REVIEWED: 2018-03-28 14:06

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180327-LA-2__231.icp

COMPOUND	CONC	CONC REC	%REC	%REC CL	ME CL	STATUS	QUALIFIERS
Antimony	0.1000	0.1031	103	80-120	73-127	PASS	
Arsenic	0.1000	0.1005	101	80-120	73-127	PASS	
Barium	0.1000	0.1041	104	80-120	73-127	PASS	
Beryllium	0.1000	0.1080	108	80-120	73-127	PASS	
Cadmium	0.1000	0.1067	107	80-120	73-127	PASS	
Chromium	0.1000	0.1018	102	80-120	73-127	PASS	
Cobalt	0.1000	0.09913	99	80-120	73-127	PASS	
Copper	0.1000	0.09992	100	80-120	73-127	PASS	
Lead	0.1000	0.1044	104	80-120	73-127	PASS	
Molybdenum	0.1000	0.1047	105	80-120	73-127	PASS	
Nickel	0.1000	0.1005	101	80-120	73-127	PASS	
Selenium	0.1000	0.1032	103	80-120	73-127	PASS	
Silver	0.05000	0.05314	106	80-120	73-127	PASS	
Thallium	0.1000	0.09645	96	80-120	73-127	PASS	
Vanadium	0.1000	0.1029	103	80-120	73-127	PASS	
Zinc	0.1000	0.1041	104	80-120	73-127	PASS	
Aluminum	0.1000	0.1049	105	80-120	73-127	PASS	
Calcium	5.100	5.250	103	80-120	73-127	PASS	
Iron	5.100	5.029	99	80-120	73-127	PASS	
Magnesium	5.100	5.040	99	80-120	73-127	PASS	
Manganese	0.1000	0.1034	103	80-120	73-127	PASS	
Potassium	1.000	1.063	106	80-120	73-127	PASS	
Sodium	1.000	1.078	108	80-120	73-127	PASS	
Strontium	0.1000	0.1014	101	80-120	73-127	PASS	
Tin	0.1000	0.09992	100	80-120	73-127	PASS	
Titanium	0.1000	0.1014	101	80-120	73-127	PASS	
Boron	0.1000	0.1057	106	80-120	73-127	PASS	

Compounds listed in bold are required to be reported.

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LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

LCS SAMPLE ID:	**099-16-094-2272**	EXTRACTION:	N/A	ANALYZED BY:	598
LCS/MB BATCH ID:	180327LA2	D/T EXTRACTED:	2018-03-27 00:00	D/T ANALYZED:	2018-03-27 19:57
INSTRUMENT:	ICP/MS 03			REVIEWED BY:	309
				D/T REVIEWED:	2018-03-28 14:06

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180327-LA-2__231.icp

COMPOUND	CONC	CONC REC	%REC	%REC CL	ME CL	STATUS	QUALIFIERS

Total number of LCS compounds: 27
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Compounds listed in bold are required to be reported.

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

SPIKED SAMPLE ID: **18-03-1974-1**
MS/MSD BATCH: 180327SA2
INSTRUMENTS:
SAMPLE: ICP/MS 03
MS: ICP/MS 03
MSD: ICP/MS 03

EXTRACTION: N/A
D/T EXTRACTED:
SAMPLE: 2018-03-27 00:00
MS: 2018-03-27 00:00
MSD: 2018-03-27 00:00

ANALYZED BY: 598
D/T ANALYZED:
SAMPLE: 2018-03-27 20:12
MS: 2018-03-27 20:07
MSD: 2018-03-27 20:09
REVIEWED BY: 309
D/T REVIEWED: 2018-03-28 14:07

COMMENT:

COMPOUND NAME	SAMPLE	INITIAL	FINAL	MS CONC	% MS.REC	MSD CONC	% MSD.REC	% REC CL	RPD	RPD CL	STATUS	QUALIFIERS
Antimony	0.00128	0.1000	0.1000	0.09732	96	0.09950	98	80-120	2	0-20	PASS	
Arsenic	ND	0.1000	0.1000	0.1061	106	0.1067	107	80-120	1	0-20	PASS	
Barium	0.00918	0.1000	0.1000	0.1207	112	0.1105	101	80-120	9	0-10	PASS	
Beryllium	ND	0.1000	0.1000	0.1180	118	0.1166	117	80-120	1	0-20	PASS	
Cadmium	ND	0.1000	0.1000	0.1145	114	0.1131	113	80-120	1	0-20	PASS	
Chromium	ND	0.1000	0.1000	0.1099	110	0.1133	113	80-120	3	0-20	PASS	
Cobalt	ND	0.1000	0.1000	0.1071	107	0.1079	108	80-120	1	0-20	PASS	
Copper	0.00215	0.1000	0.1000	0.1094	107	0.1096	107	80-120	0	0-20	PASS	
Lead	0.00149	0.1000	0.1000	0.1161	115	0.1160	114	80-120	0	0-20	PASS	
Molybdenum	ND	0.1000	0.1000	0.1131	113	0.1122	112	80-120	1	0-20	PASS	
Nickel	0.00109	0.1000	0.1000	0.1101	109	0.1097	109	80-120	0	0-20	PASS	
Selenium	ND	0.1000	0.1000	0.1046	105	0.1072	107	80-120	3	0-20	PASS	
Silver	ND	0.05000	0.05000	0.05455	109	0.04912	98	80-120	10	0-20	PASS	
Thallium	ND	0.1000	0.1000	0.1060	106	0.1060	106	80-120	0	0-20	PASS	
Vanadium	0.00224	0.1000	0.1000	0.1109	109	0.1155	113	80-120	4	0-20	PASS	
Zinc	**0.06287**	**0.1000**	**0.1000**	**0.1666**	**104**	**0.2017**	**139**	**80-120**	**19**	**0-20**	**FAIL**	**3F**
Aluminum	**0.3947**	**0.1000**	**0.1000**	**0.4872**	**93**	**0.4635**	**69**	**80-120**	**5**	**0-20**	**FAIL**	**3G**
Calcium	**3.079**	**5.100**	**5.100**	**9.135**	**119**	**9.267**	**121**	**80-120**	**1**	**0-20**	**FAIL**	**3F**
Iron	0.5242	5.100	5.100	6.077	109	6.074	109	80-120	0	0-20	PASS	
Magnesium	0.6812	5.100	5.100	6.269	110	6.329	111	80-120	1	0-20	PASS	
Manganese	0.02201	0.1000	0.1000	0.1371	115	0.1370	115	80-120	0	0-20	PASS	
Potassium	1.623	1.000	1.000	2.816	119	2.802	118	80-120	0	0-20	PASS	
Sodium	0.5452	1.000	1.000	1.705	116	1.704	116	80-120	0	0-20	PASS	
Strontium	0.01031	0.1000	0.1000	0.1200	110	0.1214	111	80-120	1	0-20	PASS	
Tin	0.00128	0.1000	0.1000	0.09383	93	0.09092	90	80-120	3	0-20	PASS	
Titanium	0.02054	0.1000	0.1000	0.1302	110	0.1279	107	80-120	2	0-20	PASS	
Boron	**ND**	**0.1000**	**0.1000**	**0.1257**	**126**	**0.1153**	**115**	**80-120**	**9**	**0-20**	**FAIL**	**3F**

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

Data Files:

TYPE	DATA FILE	DATA FILE PATH
MS	18-03-1974-1 MS.icp	W:\ICPMS-DATA\2018\180327B1\
MSD	18-03-1974-1 MSD.icp	W:\ICPMS-DATA\2018\180327B1\

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 180327-ba-2
Autosampler Position: 401
Sample Date/Time: Tuesday, March 27, 2018 19:54:55
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\180327-ba-2.230
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL): 1e+002
Aliquot Volume (mL): 1
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	39513.076		ppb	3.192	37782.700
9	Be	|	44.000	**1.670858**	ppb	7.873	39.333
45	Sc	|>	4668428.768		ppb	2.997	4748584.211
10	B	⌊	448.678	**344.195400**	ppb	14.934	112.001
23	Na	⌈	333.340	**453.866700**	ppb	15.579	187.621
25	Mg	|	465.726	**30.730141**	ppb	18.293	308.577
27	Al	|	3029.173	**15.497318**	ppb	7.301	2178.261
39	K	|	8418.563	**526.684997**	ppb	1.534	7934.128
43	Ca	|	325.720	**799.826686**	ppb	10.342	220.003
44	Ca	|	25121.361	**669.656246**	ppb	3.771	24391.729
45	Sc-1	|>	4668428.768		ppb	2.997	4748584.211
47	Ti	|	158.001	**1.114479**	ppb	6.698	153.335
49	Ti	|	163.335	**-0.420653**	ppb	2.549	168.668
51	V	|	2440.893	**-0.500661**	ppb	7.329	2529.025
52	Cr	|	8371.854	**1.109402**	ppb	1.787	8430.574
55	Mn	|	2324.297	**11.732003**	ppb	0.394	865.375
54	Fe	|	28061.123	**34.437144**	ppb	6.488	28343.608
57	Fe	|	10834.468	**-61.819835**	ppb	5.954	11200.232
59	Co	|	170.668	**0.089704**	ppb	21.746	163.335
60	Ni	⌊	128.001	**0.880598**	ppb	18.944	109.334
63	Cu	⌈	441.086	**1.762242**	ppb	8.416	343.815
65	Cu	|	235.796	**3.163219**	ppb	7.684	155.820
71	Ga	|>	1359919.622		ppb	2.214	1358577.364
75	As	|	6946.023	**-2.433155**	ppb	4.476	6980.470
75	As-1	|	-346.743	**-5.423030**	ppb	10.483	-249.562
78	Se	|	7211.589	**-4.514339**	ppb	3.541	7226.814
82	Se	|	-17.852	**-12.386999**	ppb	57.934	10.347
88	Sr	|	506.014	**1.614077**	ppb	14.103	177.335
66	Zn	|	1493.456	**12.455708**	ppb	1.943	1297.426
68	Zn	⌊	1906.200	**9.712515**	ppb	3.185	1796.178
95	Mo	⌈	433.344	**0.267590**	ppb	22.108	419.344
115	In-1	|>	1070869.958		ppb	2.660	1061548.531
107	Ag	|	119.334	**0.117545**	ppb	12.690	107.334
111	Cd	|	43.788	**-0.171997**	ppb	68.701	47.387
118	Sn	|	1399.446	**4.954256**	ppb	27.322	1125.404
121	Sb	|	374.675	**-3.571873**	ppb	23.839	588.686
135	Ba	|	92.000	**-5.552533**	ppb	17.391	193.335
165	Ho	|	1273204.062		ppb	1.987	1266568.853
159	Tb	⌊	1364378.027		ppb	3.000	1368449.589
203	Tl	⌈	68.667	**0.197440**	ppb	9.363	55.334
207	Pb	|	513.339	**0.247066**	ppb	7.027	467.338
209	Bi	⌊>	698752.318		ppb	0.713	699638.520

QC Out of Limits

ıalyte Mass Out of Limits Message

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 180327-la-2

Autosampler Position: 402

Sample Date/Time: Tuesday, March 27, 2018 19:57:23

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\180327-la-2.231

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL): 1e+002

Aliquot Volume (mL): 1

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		39332.656		ppb	3.890	37782.700
9	Be		34973.496	10799.357276	ppb	2.073	39.333
45	Sc	>	4718265.167		ppb	2.267	4748584.211
10	B		10632.215	10566.925317	ppb	1.319	112.001
23	Na		36188.090	107778.305632	ppb	1.827	187.621
25	Mg		2712253.930	504043.444057	ppb	1.516	308.577
27	Al		613825.985	10494.668143	ppb	0.921	2178.261
39	K		134932.226	106261.353655	ppb	1.891	7934.128
43	Ca		73355.789	524960.585292	ppb	1.853	220.003
44	Ca		1219807.054	679314.815625	ppb	0.784	24391.729
45	Sc-1	>	4718265.167		ppb	2.267	4748584.211
47	Ti		67414.399	10335.946110	ppb	1.365	153.335
49	Ti		57053.857	10140.810601	ppb	2.064	168.668
51	V		962359.225	10293.306708	ppb	3.439	2529.025
52	Cr		850472.951	10179.206097	ppb	4.756	8430.574
55	Mn		1313695.852	10338.091964	ppb	2.897	865.375
54	Fe		3315057.440	502943.443851	ppb	2.481	28343.608
57	Fe		1426143.908	521177.485535	ppb	5.612	11200.232
59	Co		1097931.821	9912.715121	ppb	2.550	163.335
60	Ni		242144.633	10053.403886	ppb	0.840	109.334
63	Cu		538141.700	10004.818458	ppb	0.267	343.815
65	Cu		246054.632	9991.510092	ppb	0.591	155.820
71	Ga	>	1330114.576		ppb	2.769	1358577.364
75	As		165646.230	10053.066217	ppb	2.329	6980.470
75	As-1		175538.341	10005.381604	ppb	2.109	-249.562
78	Se		51563.465	10324.636408	ppb	3.175	7226.814
82	Se		22534.525	10108.282710	ppb	3.488	10.347
88	Sr		2013571.509	10138.545028	ppb	2.870	177.335
66	Zn		161086.078	10405.367235	ppb	1.028	1297.426
68	Zn		116725.505	10407.045654	ppb	2.269	1796.178
95	Mo		340633.801	10474.786509	ppb	2.923	419.344
115	In-1	>	1053656.362		ppb	1.815	1061548.531
107	Ag		484017.523	5313.890674	ppb	3.421	107.334
111	Cd		214459.909	10673.579967	ppb	1.990	47.387
118	Sn		513255.768	9991.496835	ppb	1.979	1125.404
121	Sb		626940.052	10308.496230	ppb	2.024	588.686
135	Ba		189899.372	10406.197515	ppb	1.927	193.335
165	Ho		1265353.853		ppb	0.541	1266568.853
159	Tb		1362077.639		ppb	1.600	1368449.589
203	Tl		641023.375	9645.006660	ppb	2.148	55.334
207	Pb		1927072.339	10437.230149	ppb	1.420	467.338
209	Bi	>	685537.855		ppb	2.147	699638.520

QC Out of Limits

ıalyte MassOut of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-1 ms

Autosampler Position: 406

Sample Date/Time: Tuesday, March 27, 2018 20:07:14

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-1 ms.235

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		40919.605		ppb	2.917	37782.700
9	Be		38988.764	117.960380	ppb	0.732	39.333
45	Sc	>	4815708.528		ppb	2.340	4748584.211
10	B		12889.802	125.686167	ppb	2.635	112.001
23	Na		58303.522	1704.984798	ppb	1.096	187.621
25	Mg		3444220.131	6269.134708	ppb	1.414	308.577
27	Al		2900149.153	487.228409	ppb	0.112	2178.261
39	K		351511.032	2815.750522	ppb	2.228	7934.128
43	Ca		130107.490	9134.989440	ppb	1.862	220.003
44	Ca		1656085.175	9079.476519	ppb	2.391	24391.729
45	Sc-1	>	4815708.528		ppb	2.340	4748584.211
47	Ti		88820.240	133.464817	ppb	3.984	153.335
49	Ti		74715.272	130.177284	ppb	2.852	168.668
51	V		1058778.219	110.935705	ppb	2.888	2529.025
52	Cr		936982.004	109.948246	ppb	1.770	8430.574
55	Mn		1777646.238	137.082386	ppb	2.880	865.375
54	Fe		4083298.045	6076.961686	ppb	2.190	28343.608
57	Fe		1727629.416	6189.738786	ppb	0.423	11200.232
59	Co		1210921.827	107.109189	ppb	1.651	163.335
60	Ni		270598.508	110.138313	ppb	2.500	109.334
63	Cu		603433.744	111.056439	ppb	3.290	343.815
65	Cu		272048.702	109.386037	ppb	1.800	155.820
71	Ga	>	1342984.790		ppb	2.855	1358577.364
75	As		176135.342	106.147901	ppb	0.398	6980.470
75	As-1		187324.439	105.777379	ppb	0.257	-249.562
78	Se		52616.364	104.592007	ppb	1.985	7226.814
82	Se		23394.734	103.976409	ppb	0.805	10.347
88	Sr		2405447.605	120.035560	ppb	3.163	177.335
66	Zn		259627.570	166.584606	ppb	1.312	1297.426
68	Zn		184450.408	163.783206	ppb	2.334	1796.178
95	Mo		364282.965	113.055700	ppb	0.907	419.344
115	In-1	>	1043688.488		ppb	1.023	1061548.531
107	Ag		492215.534	54.552825	ppb	1.386	107.334
111	Cd		227852.199	114.483498	ppb	1.625	47.387
118	Sn		477475.496	93.834055	ppb	0.907	1125.404
121	Sb		586269.020	97.321960	ppb	1.111	588.686
135	Ba		218172.389	120.718305	ppb	0.917	193.335
165	Ho		1256000.411		ppb	0.584	1266568.853
159	Tb		1343637.735		ppb	1.204	1368449.589
203	Tl		705723.769	106.048228	ppb	1.130	55.334
207	Pb		2145431.778	116.055317	ppb	1.278	467.338
209	Bi	>	686414.861		ppb	2.204	699638.520

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-1 msd

Autosampler Position: 407

Sample Date/Time: Tuesday, March 27, 2018 20:09:43

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-1 msd.236

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		39528.820		ppb	3.447	37782.700
9	Be		37953.405	116.632152	ppb	1.461	39.333
45	Sc	>	4740526.947		ppb	1.340	4748584.211
10	B		11650.795	115.342361	ppb	0.944	112.001
23	Na		57392.998	1704.300884	ppb	1.267	187.621
25	Mg		3423105.873	6329.240882	ppb	0.373	308.577
27	Al		2717126.926	463.480975	ppb	2.934	2178.261
39	K		344591.956	2801.959245	ppb	2.129	7934.128
43	Ca		129952.174	9267.057480	ppb	2.650	220.003
44	Ca		1638445.915	9125.998558	ppb	1.624	24391.729
45	Sc-1	>	4740526.947		ppb	1.340	4748584.211
47	Ti		85010.421	129.767179	ppb	2.242	153.335
49	Ti		72272.415	127.906187	ppb	3.785	168.668
51	V		1084741.805	115.472236	ppb	4.016	2529.025
52	Cr		950221.354	113.274835	ppb	3.838	8430.574
55	Mn		1749914.038	137.033705	ppb	1.844	865.375
54	Fe		4017828.983	6073.969317	ppb	1.869	28343.608
57	Fe		1659154.097	6036.306882	ppb	1.372	11200.232
59	Co		1200741.355	107.853892	ppb	0.950	163.335
60	Ni		265438.375	109.682947	ppb	1.109	109.334
63	Cu		596737.798	110.392918	ppb	1.289	343.815
65	Cu		271153.094	109.585585	ppb	1.127	155.820
71	Ga	>	1336206.970		ppb	1.978	1358577.364
75	As		176158.688	106.683830	ppb	0.954	6980.470
75	As-1		187573.101	106.411102	ppb	1.210	-249.562
78	Se		53524.678	107.241032	ppb	1.490	7226.814
82	Se		23810.439	106.293278	ppb	1.651	10.347
88	Sr		2423321.649	121.444987	ppb	1.470	177.335
66	Zn		312520.936	201.685496	ppb	1.901	1297.426
68	Zn		223133.553	199.485596	ppb	1.470	1796.178
95	Mo		364705.026	112.172012	ppb	1.711	419.344
115	In-1	>	1053289.435		ppb	2.501	1061548.531
107	Ag		447095.986	49.116572	ppb	0.663	107.334
111	Cd		227135.280	113.119791	ppb	0.904	47.387
118	Sn		466849.086	90.916833	ppb	1.356	1125.404
121	Sb		604755.993	99.502279	ppb	2.037	588.686
135	Ba		201564.636	110.527712	ppb	2.006	193.335
165	Ho		1276987.474		ppb	2.072	1266568.853
159	Tb		1374076.919		ppb	2.978	1368449.589
203	Tl		705672.751	105.957840	ppb	0.950	55.334
207	Pb		2145780.141	115.988655	ppb	0.729	467.338
209	Bi	>	686946.218		ppb	2.210	699638.520

QC Out of Limits

ıalyte Mass Out of Limits Message

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EPA 200.8 ICP/MS Metals

Total

RUN LOGS

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PDS / PDSD M071117C

Dataset Report

Water 0.1 ml → 10 ml
Soil 0.025 ml → 10 ml
Filter 0.025 ml → 10 ml

User Name: UFLE
Instrument Name: ICP/MS 3
Dataset File Path: W:\dataset\2018\180327B1\
Report Date/Time: Wednesday, March 28, 2018 07:31:21

Tuning MS092817A
Int STD MS032018B
R.B. MR031318A
Carrier MR031318C
Wash Sol. MR031318D

The Dataset

Analyst	Time and Date	Description	Sample File Name	
SmartTune	09:40:20 Tue 27-Mar-18	solution	W:\dataset\2018\180327B1\Mass Calibration and Resolution.001	
SmartTune	09:42:09 Tue 27-Mar-18		W:\dataset\2018\180327B1\AutoLens.002	
SmartTune	09:57:05 Tue 27-Mar-18	:	W:\dataset\2018\180327B1\Daily Performance Check.003	
598	10:07:46 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.004	
598	10:11:04 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.005	
598	10:13:33 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.006	
598	10:16:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.007	
598	10:18:30 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.008	
598	10:20:58 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.009	
598	10:23:27 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.010	
598	10:25:56 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.011	
598	10:28:25 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.012	
	10:30:54 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.013	
	10:33:22 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.014	
	10:35:52 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.015	
	10:38:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.016	
	10:40:50 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.017	
	10:43:20 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.018	
	10:45:50 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.019	
	10:48:19 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.020	pass
	10:50:47 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.021	
	10:53:16 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICS-A - MS092817B.022	
	10:55:45 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICS-AB - MS092817C.023	
	10:58:12 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.024	
	11:00:41 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.025	
	11:03:10 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.026	
598	11:05:39 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1217x10-3.027	
598	11:08:08 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 ms.028	
	11:10:39 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.029	pass
	11:13:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.030	
	11:15:37 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.031	
598	11:18:08 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 msd.032	
598	11:20:36 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 .033	
598	11:23:04 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-1.034	
598	11:25:32 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 ms.035	
598	11:28:00 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 msd.036	
598	11:30:28 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 .037	
598	11:32:56 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-2.038	
	11:35:26 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.039	pass
	11:37:55 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.040	
	11:40:24 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.041	
598	11:49:17 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.042	
598	11:51:45 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1704-f-1 ms.043	
598	11:54:13 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1704-f-1 msd.044	

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598	19:02:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\LCS 6 hours.213	
	19:04:52 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.214	pass
	19:07:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.215	
	19:09:49 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.216	
598	19:22:35 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.217	
	19:25:03 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.218	
	19:27:30 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.219	
	19:30:00 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.220	
	19:32:30 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.221	
	19:34:59 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.222	
	19:37:29 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.223	
	19:40:00 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.224	
	19:42:28 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.225	pass
	19:44:57 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.226	
	19:47:26 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.227	
	19:49:55 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.228	
598	19:52:25 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2042-1.229	
598	19:54:55 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-ba-2.230	
598	19:57:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-la-2.231	
598	19:59:51 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-1.232	
598	20:02:19 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-2.233	
598	20:04:47 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-3.234	
598	20:07:14 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 ms.235	
598	20:09:43 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 msd.236	
598	20:12:10 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 .237	
	20:14:40 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.238	pass
	20:17:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.239	
	20:19:37 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.240	
598	20:22:07 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-2.241	
598	20:24:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-3.242	
598	20:27:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-4.243	
598	20:29:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-5.244	
598	20:31:57 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-6.245	
598	20:34:24 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-7.246	
598	20:36:53 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-ba-3.247	
598	20:39:21 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-la-3.248	
598	20:41:48 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 ms.249	
598	20:44:16 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 msd.250	
	20:46:45 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.251	pass
	20:49:14 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.252	
	20:51:42 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.253	
598	20:54:11 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 .254	
598	20:56:39 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-1.255	
598	20:59:06 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-3.256	
598	21:01:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-4.257	
598	21:04:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-5.258	
598	21:06:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-6.259	
598	21:08:58 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.260	
598	21:11:27 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-ba-7.261	
598	21:13:55 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-la-7.262	
598	21:16:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-1 ms.263	
	21:18:53 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.264	pass
	21:21:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.265	
	21:23:49 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.266	
	21:26:16 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.267	
	21:28:44 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.268	

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EPA 200.8 ICP/MS Metals

Total

PREPARATION LOGS

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Metals Sample Preparation Logbook (Aqueous)

METHOD	MATRIX	EQUIPMENT ID #	REAGENT ID #	STANDARD ID #
☐ EPA 3005A ☐ EPA 200.7	Aqueous	Thermometer Hp18 (CF +1.0 °C)	HNO_3 MR1101178 1.0 mL	Spike 1 MOY2017B
☐ EPA 3010A ☒ EPA 200.8		Block Digester #2	HCl MR1101383 0.5 mL	Spike 2 MOY2017A
☐ EPA 3020A ☐ 5% HNO_3		Pipetter / Dispenser P-116/P061/D530/MP08	(Specify)	Spike 3 MS1010178

BATCH NUMBER	SUPPLY LOT #	ACID PRESERVATION AND FILTRATION	TURBIDITY ANALYSIS
MS/MSD 180327SA2	Digestion Tube 160613	☒ None ☐ Lab Filtered ☐ Lab Preserved	☐ Yes ☐ No ☒ N/A
(Specify)	Filter	Book # _____ Page # _____	Book # _____ Page # _____

DIGESTION										SAMPLE		SPIKE STANDARD		
	START			END										
DATE	TIME	TEMP W/O CF (°C)	PREP TECH ID #	TIME	TEMP W/O CF (°C)	PREP TECH ID #	INITIAL pH	ECI ID #	ANALYTE(S)	INITIAL (mL)	FINAL (mL)	1 (µL)	2 (µL)	3 (µL)
03/27/18	12:00	95	1058	14:30	95	1058	<2	MS 18-03-1974-1A	Mutus	50	50	50	50	250
							<2	MSD "						
								LCS 180327LA2						
								LCSD / MB 180327BA2						
							<2	18-03-1974-1A						
							<2	2A						
							<2	3A						
							<2	4A						
							<2	5A						
							<2	6A						
							<2	7A						
							<2	18-03-1967-1A						
							<2	1A MB				50	50	250
							<2	1A MSD				1	1	1
							<2	2A						
							<2	3A						
							<2	18-03-1968-4A						
							<2	18-03-1971-1A						
							<2	18-03-1969-1A						
							<2	2A						
							<2	3A						
							<2	4A						
							<2	5A						
	13:00			15:30			<2	18-03-2237-1E						
							<2	2E						
							<2	3E						

COMMENTS:

EPA 200.8 ICP/MS Metals

Total

STANDARD PREPARATION LOGBOOKS

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
03/10/17	M031017B	ORL.P6	Calib STD	M040816A	0.1ml	1000ppm	20ml	5ppm	Calib blk	R1122160I	03/11/17	598	
	C				0.02ml			1ppm					
	D				5ml			0.2ppm					
	E		ICV		0.1ml			5ppm					
03/20/17	M032017A	6020/200.8	Cal Std #2	M006-041-13	0.5mL	100ppm	25mL	200ppb	2.5mL HNO3	M006-040-18	2/20/18	598	
			Cal Std #3	M006-041-14	2.5mL	1000ppm		10ppm					
			BORON	M032017B	1.25mL	100ppm		500ppb					
	M032017B		BORON ICV+Fe - SP ~~1~~	M006-024-04	10mL	1000ppm	100mL	100ppm	DI-WATER	D032017A	3/20/18		
			598 3/20/17 -SP2										
			-Fe										
03/23/17	M032317A	1631	100 ppb STD	M021517A	1mL	10ppm	100mL	100ppb	2mL HCl	M006-037-02	04/23/17	1010	
	M032317B		100ppb ICV	M021517B	1mL	10ppm	100mL	100ppb					
	M032317C		100ppt STD	M032317A	1mL	100ppb	1000mL	100ppt					
	M032317D		100ppt ICV	M032317B	1mL	100ppb	1000mL	100ppt					
	M032317E	1631	5ppb	M032317A	0.5	100ppb	10mL	5ppb					

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
4/18/17	M041817B	6010/200.7	ICV - Li	M006-38-20	9.01mL	10,000 PPM	100mL	1 PPM	6% HNO_3 5% HCl	M006-38-25 M006-38-24	4/18/18	945	
			- Bi	M006-038-21	0.1mL	1,000 PPM							
			- S	M006-038-19	0.01mL	10,000 PPM							
4/20/17	M042017A	Metals	Ag Std. Spike 2	M006-40-19	5.0mL	1000 PPM	1.0L	50 PPM	100mL HNO_3 DI H_2O	M006-41-22	4/20/18	1030	
			Al Std.	M006-40-14	10.0mL	10000 PPM	1.0L	100 PPM					
			Ba Std.	M006 40-02									
			Boron Std.	M006-40-15									
			Si Std.	M006-40-09									
			Na Std.	M006-39-20	100mL			1000 PPM					
			K Std.	M006 41-03									
	M042017B	Metals	Sb Std. Spike 1	M006 39-23	10.0mL	1000 PPM	1L	100 PPM	100mL HNO_3 DI H_2O	M006 041-22	04/20/18	1030	
			As	M006-038-09									
			Be	M006-39-25									
			Cd	M006-41-05									
			Ca	M006-40-01									

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PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
04/20/17	M042017B	Metals	Cr Std. Spike	M006-40-21	10mL	10,000ppm	1 L	100ppm	100mL HNO_3 DI H_2O	M006-41-22	04/20/18	1030	
			Co	M006-40-22									
			Cu	M006-39-24									
			Fe	M006-39-11									
			Pb	M006-39-17									
			Mg	M006-39-12									
			Mn	M006-39-19									
			Mo	M006-41-06									
			Ni	M006-40-23									
			P	M006-41-02									
			Se	M006-39-16									
			Sr	M006-39-14									
			TL	M006-39-13									
			Sn	M006-39-21									
			Ti	M006-39-15									

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PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
04/20/17	M042017B	Metals	V Std. Spike 1	M006-40-25	10.0mL	10.000 ppm	1L	100ppm	100mL HNO_3 DI H_2O	M006-41-22	04/20/18	1030	
			Zn Std. Spike 1	M006-39-18									
04/25/17	M042517A	1631	10 ppm Std. Hg ~~M042517A~~	M021517A	1.0mL	10ppm	100mL	100ppb	20mL HCl DI H_2O	M006-37-22	05/25/17	1030	
	M042517B		10ppm ICV Hg 04/25/17 ~~M042517B~~	M021517B									
	M042517C		100ppb Std Hg	M042517A	0.1mL	100ppb		100ppt					
	M042517D		100ppb ICV Hg	M042517B									
	M042517E		10~~0~~ppb Std. Hg	M042517A	2mL	100ppb	40mL	5ppb					
04/26/17	M042617A	6010/200.7	ICP-MCS-1 4/28/17	~~M006-41-17~~ ~~M006-41-18~~	15mL	See SOP App. C	1L	See SOP App. C	60mL HNO_3 50mL HCl DI H_2O	M006-41-22 ~~M006-41-23~~ M006-41-24 4/28/17	~~04/26/18~~ 10/13/17	1030	Cal. Std 3 ICP
			ICP-MCS-7	~~M006-41-18~~ ~~M006-41-17~~	15mL								
			ICP-MCS-8	M006-41-16	60mL								
			ICP-MCS-10	M006-38-13	7.5mL								
			ICP-AM-11	M006-41-19	6.0mL								
			Na Std.	M006-41-01	6.0mL	~~1000~~ 935 ppm 4/28/17							
			K Std.	M006-38-16	3.0mL								
			P Std.	M006-40-09	1.2mL								

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PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
4/27/17	M042717A	6010/200.7	Na [10,000 PPM]	M006-123-23	1 ml	see SOP Apdx C	200 ml	see SOP Apdx C	12 ml HNO3 10 ml HCl	M006-041-22 ~~M010-042-23~~	12/31/17 ~~04/27/18~~ ~~12/13/17~~	935	
			Sn [10,000 PPM]	-16	0.05 ml					M006-~~041~~-24 77 4/28/17			
			Si [1,000 PPM]	M006-~~039~~-10 040-03 935 4/27/17	1.77 ml								
4/27/17	M042717B	1640	100 ppm Se	M006-42-11	0.2554 g	pure	1 L	100 ppm	H2O	N/A	4/27/18	KO	
4/29/17	M042717C	6020/200.8	Internal std Conc.										
			Sc	M006-042-04	100 mL	1000 ppm	500 mL	20 ppm	5 mL HNO3	M006-41-22	3 yr	JTr	05/2021
			Li6	M006-042-03	50 mL			100 ppm					11/2021
			Ga	M006-042-05	50 mL								11/2020
			In	M006-15-24	10 mL			20 ppm					02/2018
			Ho	M006-042-07	10 mL								04/2022
			Tb	M006-042-06	10 mL								08/2021
			Bi	M006-042-08	10 mL								04/2022
	M042717D		Internal std	M042717C	5 mL	20 ppm	1 L x3	0.1-1 ppm	10 mL HNO3				
5/3/17	M050317A	Hg	100 ppm Hg	M006-36-15	10 mL	1000 ppm	100 mL	100 ppm	5 mL HNO3	M006-41-22	12/20/17	868	
	M050317B		1 ppm STD	M050317A	1 mL	100 ppm	100 mL	1 ppm	5 mL HNO3	M006-41-22	6/3/17	868	

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PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
07/07/17	M070717F	Org. Pb.	ICV	M060817H	0.1mL	1000ppm	20mL	5 ppm	Cal BLK	R1122160i	07/08/17	1080	7/7/17 1080
07/11/17	M071117A	6020/200.8	ICV #1 - Sp1	M042017B	0.1 mL	100 ppm	100 mL	100 ppb	1mL HNO3	M006-042-21	04/20/18	776	* 776 7/11/17
			Fe	M006-039-11	0.049mL	10,000 ppm		5 ppm					
	M071117B		ICV #2 - Sp2	M042017A	0.1 mL	100 ppm		100 ppb					
	M071117C		10ppm Spike #1	M042017B	5 mL	100 ppm	50 mL	10 ppm	5mL HNO3 5mL HCl	M006-042-21 M006-042-22			
			#2	M042017A	5 mL								
7/14/17	M071417A	Org. Pb	Cal STD	M060817G	0.2mL	1000ppm	20mL	10ppm	Cal blk	R1122160i	7/15/17	1080	
	B				0.1mL			5ppm					
	C				0.04mL			2ppm					
	D				0.02mL			1 ppm					
	E				5mL			0.2ppm					
	F		ICV	M060817H	0.1mL	1000ppm	20mL	5 ppm	Cal blk	R1122160i			
7/18/17	M071817A	6020/200.8	Cal STD - U	M005-22-14	0.02mL	1000ppm	100 mL	200ppb	1mL HNO3	M006-042-21	03/31/18	776	
	M071817B		ICV - U	M006-039-11	1 mL	10 ppm	100 mL	100 ppb			09/30/17		
07/20/17	M072017A	1631	100ppm STD.	M006-043-07	10mL	100ppm	100mL	10ppm	2 mL HCl	M006-037-22	12/20/17	1030	

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MS	092117	E	org. Pb	MP-060/P-015	M060817G	5 mL	R06091701	20ml	0.2 ppm	9/22/17	1080
MS	"	F	"	"	M060817H	0.1 mL	"	"	5 "	"	"
MS	092217	A	1631	P007/P-109/P-030	M072017A	1.0mL	M006-37-22	100mL	100ppb	10/22/17	1030
MS	"	B	"	"	M072017B	1.0mL	"	"	100 ppb	"	"
MS	"	C	"	"	M092217A ~~M082517~~ 9/22/17 1030	100mL	"	"	100ppt	"	"
MS	"	D	"	"	M092217B	100mL	"	"	100ppt	"	"
MS	"	E	"	"	M092217A	500mL	"	10mL	5ppb	"	"
MS	092817	A	6020/200.8	MP-058/MP-056	M006-044-01	0.5 mL	M006-043-08 5mL	500 mL	1.0 ppb	08/30/18	776
MS	"	B	"	"	M006-043-24	5 mL	"	"	~~0.2 - 200~~ ppm	776 9/28/17	"
MS	"	C	"	"	M006-043-24 M006-043-25	5 mL 0.5 mL	"	"	~~0.2 1/200~~ ppm 5 - 20 ppb	"	"
MS	092817	D	Org Pb	MP-060/P-015	M060817G	0.2mL	R06091701	20mL	10 ppm	9/29/17	1080
MS	"	E	"	"	"	0.1	"	"	5	"	"
MS	"	F	"	"	"	0.04	"	"	2	"	"
MS	"	G	"	"	"	0.02	"	"	1	"	"
MS	"	H	"	"	"	5	"	"	0.2	"	"
MS	"	I	"	"	M060817H	0.1	"	"	5	"	"
MS	092917	A	6020/200.8	MP-053/MP-058/MP-056 ~~Cal STD~~	M005-022-14	0.02 mL	M006-043-08 1 mL	100 mL	200 ppb	03/31/18	776
MS	"	B	"	~~Ical~~	M006-044-01	1 mL	"	"	100 ppb	08/30/18	"

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Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	100517	A	Org. Pb	MP-060/P015	M060817G	0.2 mL	R0609170 1	20mL	10 ppm	10/10/17	SH
MS		B				0.1 mL			5 ppm		
MS		C				0.04mL			2 ppm		
MS		D				0.02mL			1 ppm		
MS		E				5 mL			0.2 ppm		
MS		F			M060817H	0.1 mL			5 ppm		
MS	100617	A	Org Pb.	MP-060/P015	M060817G	0.2 mL	R0609170 1	20mL	10 ppm	10/7/17	1080
MS		B				0.1 mL			5		
MS		C				0.04mL			2		
MS		D				0.02mL			1		
MS		E				5 mL			0.2		
MS		F			M060817H	0.1 mL			5		
MS	10/0/17	A	6020/200.8	MP-053/MP-058/MP-056	M06-040-I1	10 mL	M06-044-I7 1mL M06-041-I2 1mL	100mL	1000 ppm	10/10/18	776
MS					M06-035-08						
MS					M06-044-19						
MS	101117	A	Org Pb	MP-060/P-015	M060817G	0.2 mL	R0609170 1	20mL	10 ppm	11/12/17	1080
MS		B				0.1mL			5		
MS		C				0.04 mL			2		

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MS	020518	A	6020/200.8	MP-058/P-117	M006-041-13 M006-041-14 M032017B	0.5 mL 2.5 mL 1.25 mL	M006-045-02 2.5	250 mL	0.2 ppm 10.2 ppm 0.5 ppm	2/28/18	SJ
MS		B		MP-056/MP-058	M040012B M006-044-19	0.1 mL 0.045 mL	M006-041-02 1.0	100 mL	100 ppb		
MS		C			M042017A	0.1			100 ppb		
MS		D			MS101017A	0.5			5 ppm		
MS		E		P-117	M006-045-16 M006-045-17 M006-094-15	100 mL 100 mL 100 mL	M006-045-02 10 mL M006-041-N 10	1 L	1000 ppm	4/30/23	
MS	02/21/18	A		MP-058/P-117	M006-045-21 M006-045-22 M032017B	4 mL 20 mL 10 mL	M006-045-02 20 mL	2 L	0.2 ppm 10.2 ppm 0.5 ppm	2/28/18	SJ
MS		B		MP-058/P-117	M042017B M006-094-15 N	~~100 mL~~ 1.0 mL ~~0.045 mL~~ 0.49 SJ 2/21/18	M006-045-02 10 mL	1 L ~~200 mL~~ SJ 2/21/18	100 ppb 5 ppm	~~4/28/18~~	
MS		C			M042017A	1.0 mL ~~[illegible]~~ SJ 2/21/18			100 ppb		
MS		D			MS101017A	5 mL		1 L	5 ppm		
MS	~~0212~~ 021518	A		MP-058/P-117	M006-045-23 M006-045-22 M02~~~~18	4 mL 20 mL 10 mL	M006-045-02 20 mL	2 L	0.2 ppm 10.2 ppm 0.5 ppm	1/30/19	SJ
MS	021718	A	Org Pb	P115/P-015	MS121417A	0.2 mL	MK121417P	20 mL	10 ppm	2/18/18	LOJO
MS		B				0.1			5		
MS		C				0.04			2		
MS		D				0.02			1		
MS		E				0.004			0.2		
MS		F			MS012418A	0.1			5		
MS	022118	A	1631	P-007/P109/P-030	CID MS011618A	1.0 mL	HCl M006-037-22	100 mL	100 ppb	3/21/18	LOJO
MS		B			ICV MS011618B	1.0 mL			100 ppb		

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MS	032018	A	ICP/MS	MY-058/P117	M006-042-04	10 mL	5 mL HNO3 M006-045-02	500 mL	200 ppm	11/30/20	SJ
MS					M006-042-03	50 mL			100 ppm		
MS					M006-042-05						
MS					M006-042-14	1.0 mL			20 ppm		
MS					M006-042-07						
MS					M006-045-11						
MS					M006-042-18						
MS	032018	B			M032018A	5 mL	10 mL HNO3 M006-045-[illegible]	1 L	0.2 ppm → 1 ppm		
MS	032018	C			M006-045-21	0.2 mL			200 ppb	1/31/19	
MS					M006-045-22	0.05 mL			0.80 ppm		
MS					MS060718 J	1 mL			1 ppm		
MS					MS032018C	0.3 mL			0.06-0.5 ppm		
MS											
MS											
MS											
MS											
MS											
MS											

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Reagent Preparation Logbook

PREP DATE	NEW REAGENT ID #	TEST METHOD	REAGENT DESCRIPTION	SOURCE CHEMICAL(S) NAME	SOURCE CHEMICAL(S) ID #	SOURCE CHEMICAL(S) INITIAL AMOUNT	SOLVENT NAME	SOLVENT ID #	FINAL VOLUME	EXPIR. DATE	PREP BY	COMMENTS
07/31/17	R07311701	Metal	1N. NaOAC	Sodium Acetate	M06-17-4	2720g	DI H2O	NA	20 L	07/30/18	805	03/13/19
08/01/17	R0801/1701	metals	1:1 HNO3	HNO3	M006042208	1.25 x 30	DI H2O	NA	2.5 x 30	08/01/18	710	
8/2/17	R0802/1701	Hg	1% NaCl NH2OH	NH2OH-Cl NaCl	M006-43-12 M006-47-20	1.2 kg 1.2 kg	DI H2O	NA	10 L	8/2/18	808	
08/09/17	R0809/1701	TCLP	1N NaOH	NaOH	M006-34-15	160g	DI H2O	~~NA~~ D0809/1701	4L x 8	08/08/18	805	source > 02/22/21.
08/11/17	R0811/1701	metals	1:2 HCl	HCl	M006-41-23	800 x 20	DI H2O	NA	24L x 20	08/11/18	710	
8/11/17	R0811/1702	↓	1:1 HNO3	HNO3	M006-043-08	250ml ~~500ml~~	DI H2O	N/A	500ml	8/11/18	935	
↓	R0811/1703	↓	1:1 HCl	HCl	M006-042-22	↓ 935 8/11/17	↓	↓	↓	↓	↓	
8/14/17	R0814/1701	1640	BUFFER	HAc NH4OH	M006-34-13 G007-79-14	140 mL 160 mL	DI H2O	N/A	1L x 2 ~~2L~~ 53 8/14/17	8/14/18	53	
	R0814/1701		Hydride H2O2	HNO3 H2O2	M006-43-09 M006-40-16	4mL 20mL			1L			
	R0814/1703		Hydride	NaOH NaBH4	M006-19-24 M006-12-01	0.4g 4.0g			200mL x 2			
	R0814/1704		4M HCl	HCl	M006-37-22	200mL			500mL x 2			
	R0814/1705		1% HNO3 (1L)	HNO3	M006-43-09	10mL			1L			
	R0814/1706		1% HNO3 (2L)			20mL			2L x 2			
	R0814/1707		Sea Water Blank		M006-43-09 M006-44-03	10mL 33.33mL			1L			
8/2/17	R0802/1702	Hg	5% KMnO4	KMnO4	M006-31-01	500g	DI H2O	NA	10 L	8/2/18	808	

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MR	120717	A	metals	—	M006-045-01	833mL	Di-H2O	2.5L	1:2 HCl	12/7/18	1080
MR	121117	A	6010/200.7	D044 / F002	M006-045-02 M006-045-01	60mL 50 mL	Di-H2O	1LX2	6% HNO3 5% HCl	12/11/18	935
MR	↓	B	↓	↓	↓	↓	↓	↓	↓	↓	↓
MR	↓	C	↓	↓	↓	100mL 100mL	↓	1L x4	10% HNO3 10% HCl	↓	↓
MR	↓	D	↓	↓	↓	↓	↓	1L X2	↓	↓	↓
MR	121217	A	SPLP	—	M006-44-21 H2SO4 M006-45-02 HNO3	60ml 40ml >100ml	DI-H2O	100 ml	60% H2SO4 40% HNO3	12/11/18	805
MR	121417	A	org. Pb	Pipette 04072016 MIBK D-054	Aliquot 336 M006-35-24	20mL	M006-039-02 MIBK 180mL	200mL	10% .336/MIBK	6/14/18	1080
MR	121417	B	org. Pb	Pipette 04012016 MIBK D-054	10% .336/MIBK MR121417A	20mL	M006-039-02 MIBK 180mL	200mL	1% .336/MIBK	6/14/18	1080
MR	121417	C	org. Pb	Balance 61 pipette 04012016	Iodine G007-04-19	6g	M006-09-09 Benzene	200mL	I_2 3%	6/14/18	1080
MR	121417	D	org. Pb	D-054/D-055/pipette 04012016	Xylene M006-044-14	200mL	—	—	BLANKS	6/14/18	1080
MR	↓	↓	↓	↓	MIBK M006-039-02	250mL	↓	↓	↓	↓	↓
MR	↓	↓	↓	↓	1% .336 MR121417B	50mL	↓	↓	↓	↓	↓
MR	↓	↓	↓	↓	3% I2	1mL	↓	↓	↓	↓	↓
MR	121617	A	metals	—	M006-045-02	1.25L	Di-H2O	2.50L	1:1 HNO3	12/16/18	1080
MR	011218	A	Hg	Bal #59	M006-43-01	~~50~~ 1000g	DI-H2O	20L	5% KMnO4	1/12/19	868
MR	011218	B	Hg	Bal #59	M006-43-025 M006-42-20	1.2 kg 1.2 kg	DI-H2O	10L	12% NaCl·NH2OH	1/12/19	868
MR	01/30/18	A	METALS	—	M006-045-09	4X ~~1.282L~~ 500 ml	DI-H2O	4X 1200 mL	1:1 HNO3	01/30/19	710
MR	01/31/18	A	metals	—	M006-042-22	833mL	Di-H2O	2.5L	1:2 HCl	1/31/19 1/4/18 1080	1080

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MR	03/2/18	Q	metals	—	M006-04601	1.25L	DI H_2O	2.5L	1:1 HNO_3	3/2/19	[illegible]
MR		R									
MR		S									
MR		T									
MR		U									
MR		V									
MR		W									
MR		X									
MR	03/13/18	A	Teflon	P-117	M006-04502	10mL	DI-H_2O	1L	1% HNO_3	3/13/19	[illegible]
MR		B				10mL			1%		
MR		C				20mL			2%		
MR		D			M006-045-02 M006-045-01	120 mL 80 mL		4L	3% HNO_3 2% HCl		
MR		E									
MR		F									
MR											
MR											
MR											
MR											

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1	Hydroxylamine	Acros	5478-11-1	A0332752	10/1/16	500g x 20	P	10/1/13	769	10/1/13	769	
2	Multielement Calib. STD - #1	High-Purity	ICP-MCS-1	1227704 ~~1312925~~	09/26/14	250ml	P	10/03/13	469	10/03/13	469	
3	-7	↓	-7	469 10/13 1312219	↓	↓	↓	↓	↓	↓	↓	
4	-8		-8	1312925		500ml x 2						
5	-10		-10	1319312		125ml						
6	↓ -11		ICP-AM-11	1307750		↓						
7	Tungsten Standard		100063-3	1309114	3/26/15	↓						
8	Nitric Acid	EMD	NX-0407-2	53099	10/7/16	2.5L x 8	G	10/6/13	879	10/8/13	879	
9	HCL	EMD	HX0607-2	53010	10/7/16	2.5L x 8	G	10/6/13	879	10/8/13	879	
10	Sulfuric Acid	EMD	SX1247-2	53128	10/15/16	2.5L x 5	G	10/15/13	769	10/15/13	769	
11	Nitric Acid	EMD	NX0407-2	53099	10/15/16	2.5L x 8	G	10/15/13	879	10/16/13	879	
12	Nitric Acid	EMD	NX0407-2	53055	10/24/16	2.5L x 10	G	10/24/13	TL	10/24/13	TL	
13	HCL	EMD	HX0607-2	53010	10/29/16	2.5L x 8	G	10/29/13	879	10/29/13	879	
14	Indium	Accustandard	ICP-MS-2TAL 0.1X-1	213025049	03/2018	100ml	P	11/01/13	SZ	11/01/13	SZ	
15	Scandium		ICP-MS-50N 0.1X-1	213055044	05/2018							
16	Boron		ICP-07W-1	212050017	10/2017							
17	Tungsten		ICP-65W-1	211105145	11/2016							
18	Lithium											
19	Acetic Acid	Fisher	A38C-212	133363		2.5L x 6	G	11/05/13	805	11/05/13	805	CTF: ICP #3 P15-15, Hg #3 P15-16
20	HNO_3	EMD	NX.0407-2	53099	11/05/16	2.5L x 10	G	11/05/13	787	11/05/13	781	
21	↓	↓	NX0407/4	52174	↓	2.5L x 02	↓	↓	↓	↓	↓	
22	Lithium 6	HIGH-PURITY	100025-6I	1231246	05/01/15	100ml	P	11/07/13	SZ	11/07/13	SZ	
23	HNO_3	EMD	NX.0407-2	53099	11/13/16	2.5L x 10	G	11/13/13	781	11/13/13	781	
24	HCL	EMD	HX0607-2	53010	11/13/16	2.5L x 15	G	11/14/13	805	11/14/13	805	
25	Hydrogen Peroxide H_2O_2	EMD	HX0635-2	5311533	5/31/2015	1L x 8	P	11/25/13	879	11/26/13	879	

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1	Nitric Acid	EMD	NX0407-2	55006	5-27-18	2.5x10	G	5-27-15	710	5-27-15	710	
2	Hydrochloric Acid	EMD	HX0607-2	54169	5-27-18	2.5x4	G	5-27-15	710	5-27-15	710	
3	Sulfuric Acid	EMD	SX-1247-2	54132	4/24/18	2.5Lx4	G	5/27/15	9cr	5/28/15	9cr	
4	Boron	Accu Standard	ICP-07W-1	214065136	7/1/15	100mL	P	5/27/15	57r	5/27/15	57r	
5	QCS-01-1		QCS-01-1	214105086	10/4/16	100mL	P					
6	QCS-02-1	SPEX	QCS-02-1	213125083-01	11/13/16	100mL						
7	CL-CAL-3	~~AccuStandard~~ 57r CL-CAL-3	CL-CAL-3 ~~CLH-54484~~	CL11-54484 57r 5/29/15	5/30/16	125mL						
8	CL-~~CAL~~-INT-A1 57r 5/27/15	~~AccuStandard~~ ~~CL-INT-A1~~ 57r 5/27/15 SPEX	CL-INT-A1 ~~CL12-65TPP~~	CL12-69484								
9	Nitric Acid	EMD	NX0407-2	55006	5-29-18	2.5x6	G	5-29-15	710	5-29-15	710	
10	Hydrochloric Acid	EMD	HX0607-2	54310	5-29-18	2.5x2	G	5-29-15	710	5-29-15	710	
11	Ytterbium	High Purity	10M66-1	1401628	11/20/16	100ml	P	6/1/15	935	6/1/15	935	
12	Holmium		10M23-1	1400209								
13	Terbium		10M57-1	1425501								
14	Li 6		100029-6I	1428030	11/20/16	100mL	P	6/3/15	57r	6/3/15	57r	
15	Calibration Std. 3	SPEX	CL-CAL-3	CL12-70484	5/30/16	125mL x2	P	6/3/15 ~~6/3/15~~	57r	5/30/16	57r	
16	NaCl	Fischer	S-271-10 6/4/15	146640	6/4/18	10 kg	Bucket	6/4/15	9cr	6/4/15	915	
17	Sn Cl_2	Fischer	T142-500 ~~T1403500~~	148075	6/4/18	500g x1	B	6/4/15	9cr	6/4/15	9cr	
18	$K_2S_2O_8$	Fischer	P-281-500	147950	6/4/18	500g x1	B	6/4/15	9cr	6/4/15	9cr	
19	$SnCl_2 \cdot 2H_2O$	↓	T169-500	148074	6/4/18	500g	P	6/4/15	110	6/4/15	110	
20	H_2O_2	↓	H325-500	148097	6/4/17	500g	P	6/4/15	110	6/4/15	110	
21	HCl	↓	A508-P212	411450	6/4/17	~~2x2.5L~~	P	6/4/15	110	6/4/15	110	
22	HNO_3	↓	A467-2	1214670	7/24/17	2x2.5L 2x2L	P	6/4/15	110	6/4/15	110	
23	Hydrogen Peroxide	Fisher	H325-4	147967	6/9/18	4Lx4	P	6/9/15	710	6/9/15	710	
24	Nitric Acid	EMD	NX0407-2	55006	06/12/18	2.5Lx8	G	06/12/15	942	06/12/15	942	
25	↓	↓	↓	54339	↓	2.5Lx2	↓	↓	↓	↓	↓	

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1	HCl	EMD	HX0607-2	55253	03/24/19	2.5Lx10	G	03/24/16	1039	03/24/16	1039	
2	Aluminum Standard	ULTRA	ICP-113	CM-1334	04/30/22	125 ml	P	03/28/16	110	03/28/16	110	#1
3	Beryllium Standard		ICP-104	CP-0170	02/28/23	125	P					#2
4	Chromium Standard		ICP-124	CM-6110	12/31/22	125 mL	P					
5	Iron Standard		ICP-126	CP-0549	02/28/23	125 mL	P					
6	Zinc Standard		ICP-130	CP-0155	02/28/23	125 mL	P					
7	Manganese Standard		ICP-125	CM-2432	06/30/22	125 mL	P					
8	Magnesium Standard		ICP-112	CM-4445	09/30/22	125 mL	P					
9	Calcium Standard		ICP-120	CP-0877	04/30/23	125 mL	P					
10	Silicon Standard		ICP-014	T00497	05/31/21	125 mL	P					
11	Terbium standard		ICP-065	CM-4138	08/31/22	125 mL	P					
12	Xylene	Fisher	XS-4	158943	4/1/19	4Lx4	G	4/1/16	air			
13	HNO3	EMD	HX0407-2	53323	04/13/17	2.5Lx10	G	04/13/16	1039	04/13/16	1039	
14	BOILING STONES	SAINT-GOBAIN	D1064103	K774-4K016	04/19/2021	450g x 2	P	04/19/16	710	04/19/16	710	
15				R674-6A002		450g x 2						
16				S071-6A030		450g x 2						
17	Citric Acid Anhydrous	Fisher	A940-1	1604179	04/20/2021	1kg x 12	P	04/21/16	805	04/21/16	805	CFT: ICP/MS # [illegible]
18	$K_2S_2O_8$	Acros	UN-1492	A0367996	4/21/21	500g X 2	P	4/4/16	aw	4/12/16	aw	
19	Azure dubbble Soln.	Life technologies	A10496	1745205	4/21/19	500 L	P	4/21/16	air	4/21/16	air	
20	H_2SO_4	EMD	SX1247-2	53128	4/27/19	2.5X4	G	4/27/16	710	4/27/16	710	*
21	Hydrochloric Acid	EMD	HX0607-2	55777	05/02/19	2.5x8	G	05/02/16	710	05/02/16	710	[illegible] 4/16
22	Nitric Acid	EMD	NX0407-2	55148	05/02/19	2.5x11	G	05/02/16	710	05/02/16	710	
23	Nitric Acid	Fisher	UN2031	1216010	05/20/19							*
24	Aliquat 336	Aldrich	205613-250mL	MKBV4736V	5/24/[illegible]	250mL	G	5/24/16	53t	5/24/16	53t	
25	HNO_3	EMD	HX0407-2	55323	04/13/17	2.5Lx26 (05/27/16)	G	05/26/16	1030	05/26/16	1030	

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1	Hydrochloric Acid	EMD	~~HX0607-2~~ 56027	56027	10/21/19	2.5x10	G	10/21/16	710	10/21/16	710	
2	Nitric Acid	↓	NX0407-2	56020	1030 11/01/16	2.5x11	↓	↓	↓	↓	↓	
3	ICS-INT-01-1	AccuStandard	INT-01-1	2150315036-01	~~05/31/18~~ 06/30/18	100mL	P	11/01/16	1030	11/01/16	1030	
4	ICS-INT-02-1	↓	INT-02-1	21207502303-03	06/30/18	↓	↓	↓	↓	↓	↓	
5	ICS-INT-03-01		INT-03-01	216065010	06/30/18							
6	ICS-INT-04-5	↓	INT-04-5	213065097-02	05/31/18	500mL	↓	↓	↓	↓	↓	
7	HNO3	EMD	NX0407-2	5-6048	9/19/19	25x20	G	11/09/16	710	11/09/16	710	
8	HCl	EMD	HX0607-2	56027	11/19/19	2.5x11	G	↓	↓	↓	↓	
9	Arsenic Standard	ULTRA	ICP-133	CP-5391	11/30/23	125mL	P	11/9/16	996	11/9/16	996	
10	ICP Multielement Cal. Std. #1	High Purity	ICP-MCS-1	1515602	10/13/17	250mL	P	11/10/16	935	11/10/16	935	
11	#7		ICP-MCS-7	1518601 8	935 11/10/16	↓						
12	#8		ICP-MCS-8	1520834	-	500mL x2						
13	#10		ICP-MCS-10	1515415		250mL						
14	#11		ICP-AM-11	1623105	↓	↓						
15	Sodium - Std.		#10M52-1	1609122	4/13/18	125mL						
16	Potassium - Std.		#10M41-1	1625027								
17	Phosphorus - Std.		#10M39-1K	1609716								
18	Zinc - Std.		#10M68-1	1617621		↓	↓					
19	Sulfur - Std		#10M54-5	1528619								
20	Lithium - Std.		#10M29-1	1604136		↓						
21	Bismuth - Std.		#10006-1	1605722 935 11/10/16	10 ↓	60mL	↓					
22	$NaBH_4$	Alfa Aesar	16940-66-2	P08C022	11/22/22	100g x2	P	11/22/16	55x	11/22/16	55x	
23	Xylenes	fisher	X5-4	166464	11/28/19	4Lx4	G	11/28/16	955	11/28/16	955	
24	HCL	EMD	HX0607-2	562098	12/02/19	2.5x10	G	12/02/16	1058	12/02/16	1058	
25	HNO3	EMD	NX0407-2	56020	12/02/19	2.5x17	G	12/02/16	1058	12/02/16	1058	

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								DATE	WHO	DATE	WHO	
1	SCP Science 50ml DigiTubes	SCP Science	010-500-263	J232266-6560	NA	500px	P	12/14/16	805	12/14/16	805	LGF-verify ...
2	Methyl iso-Butyl Ketone	Fisher Chem.	M213-4	162092	12/14/19	4L x 4	G	12/14/16	935	12/14/16	935	
3	Hydrogen Peroxide	EMD	HX0635-2	56678639	12/16/19	20x 1L	P	12/16/16	1058	12/16/16	1058	
4	Mixed Standard Solution I	Ultra	ICM-601	CP-1893	5/31/20	125ml	P	12/15/16	935	12/15/16	935	
5	II		ICM-602	CM-3432	7/31/19	125ml						
6	III		ICM-603	CP-3418	8/31/20	125ml						
7	IV		ICM-604	T00621	6/30/18	125ml						
8	V		ICM-605	T00611	6/30/18	125ml						
9	Interference Check Std #1		ICM-221	R01207	12/31/17	50ml						
10	Silicon 1000mg/ml	High Purity	100050-3	1514036	9/30/17	60ml						
11	Iron	Ultra	ICP-126	CP-4457	5/30/27	125ml	P	12/20/16	53	12/20/16	53	
12	Magnesium		ICP-112	CM-4445	9/30/22							
13	Thallium		ICP-181	CP-2010	05/31/23							
14	Strontium		ICP-138	CM-4363	03/30/22							
15	Titanium		ICP-122	CM-1138	04/30/22							
16	Selenium		ICP-134	CM-5316	11/30/22							
17	Lead		ICP-182	CM-3300	7/31/22							
18	Zinc		ICP-130	CP-0155	2/28/23							
19	Manganese		ICP-125	M00334	4/30/18							
20	Sodium		ICP-111	CP-3178	05/30/23							
21	Tin		ICP-150	T00753	7/31/21							
22	Potassium		ICP-119	CP-0352	2/28/23							
23	Antimony		ICP-151	CP-2412	6/30/23							
24	Copper		ICP-129	R00892	5/30/20							
25	Beryllium		ICP-104	CP-0170	2/28/23							

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1	Calcium	Ultra	ICP-120	CP-4462	3/30/18	125mL	P	12/20/16	SH	12/21/16	SH	
2	Barium	"	ICP-156	CM-6544	1/31/23	"	"	"	"	"	"	
3	Silicon	"	ICP-114	CP-1238	4/30/23	"	"	"	"	"	"	
4	Nitric Acid	EMD	NX0407-2	56048	12/30/16	2.5x3L	G	12/30/16	710	12/30/16	710	
5	Hydrochloric Acid	EMD	HX0607-2	58208	12/30/16	2.5L	G	12/30/16	710	12/30/16	710	
6	H_2SO_4	EMD	SX1247-2	55329	01/09/20	2.5L	G	01/09/17	996	01/09/17	996	
7	HNO_3	EMD	NX0407-2	56020	01/11/20	2.5L x 2	G	01/11/17	1058	01/11/17	1058	
8	HNO_3	EMD	NX0407-2	56018	01/11/20	2.5x2	G	01/11/17	1058	01/11/17	1058	
9	Phosphorus 10,000 mg/mL	High Purity	10M39-1	1630829	7/10/18	125ml	P	1/11/17	935	1/11/17	935	
10	PH Tape	Micro Essential	#140	216814	06/15/17	4 Rolls	P	01/16/17	1058	01/16/17	1058	
11	HNO3	Fisher	~~A509-P212~~ A509-P215 ~~UN2031~~ UN2031	1116080	~~03/26/2018~~ 03/26/2018	2.5L x 18	P	01/23/17	710	01/23/17	710	
12	HCl	↓	~~A508-P212~~ ~~UN1789~~	4116060	07/26/19	2.5x14	P	01/23/17	710	01/23/17	710	
13	H_2O_2	EMD	HX0635-2 710 01/23/17	56258639	~~09/30/18~~ 09/30/2018	~~1~~ 2 L x 6	P	02/06/17	710	2/06/17	710	4 710 2/6/17
14	AL Standard	Ultra	ICP-113	CP 3976	9/30/2023	125mL	P	02/06/17	1030	02/06/17	1030	
15	Boron	Ultra	ICP-105	K00924A	11/31/21	125mL	P	02/06/17	1030	02/06/17	1030	
16	Hydrogen peroxide	Fisher	H325-500	165728	2/10/2020	500ml x2	P	2/10/17	110			
17	Nitric Acid	Fisher	A467-2	1216080	09/07/2019	2L x 2	P	2/10/17	110			Clean room
18	Nitric Acid	Fisher	A509-P212	1116100	11/10/2018	2.5 x 2	P	2/13/17	710	02/17/17	710	metals DI
19	Silver	Ultra	ICP 047	CP-4409	04/20/23	125mL	P	2/20/17	1030	02/20/17	1030	
20	Silver	Ultra	ICP 147	CP-4495	09/30/23	125mL	P					"
21	Chromium		ICP-124	CP-1768	05/31/23							
22	Cobalt		ICP-127	CP-2011								
23	Nickel		ICP-128	CP-0006	02/23/23							
24	Sulfur		ICP-116	CM-5373	11/30/22							
25	Vanadium		ICP-123	CP-3591	08/31/23							

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1	Sodium	Ultra	ICP-111	CP 3948	9/30/23	125 mL	P	2/20/17	1070	2/20/17	1030	
2	Phosphorus		ICP-115	CP-4381								
3	Potassium		ICP-119	CP-0352	2/28/23							
4	Lithium		ICP-103	T80356	5/31/21							
5	Cadmium		ICP-148	CP-0856	2/28/23							
6	Molybdenum		ICP-142	CL-7860	08/31/21							
7	Bismuth		ICP-183	CP-2127	6/30/23							
8	Sulfuric Acid.	EMD	SX1247-2	~~SX1247-2~~ 65329	2/20/20	2.5L	G	2/20/17	868	2/20/17		
9	Potassium Persulfate	Acros Organics	424185000	A0377662	2/17/19	500g x 12	P	2/27/17	868	2/27/17		
10	Sodium Chloride	AMRESCO	0562	25152	2/17/20	25x2lb	P	2/17/17	110	2/27/17	110	
11	HNO3	Fisher	A509-P212	1116100	11/10/18	2.5L x 10	P	2/28/17	1058	2/28/17	1058	
12	HCl	Fisher	A508-P212	4116090	10/19/19	2.5L x 20	P	2/28/17	1058	2/28/17	1058	
13	Instrument calibration standard 2	SPEX	CL-CAL2	CL1-179MKBY	2/22/18	125mL x 2	P	3/10/17	SL	3/10/17	TM	
14	1 S	SPEX	CL-CAL3	CL2-117MKBY	2/22/18	125mL x 4	P	1	1	1	1	
15	ICP Multielement Calibration Std-10	High Purity	ICP-MCS-10	1515415	2/21/18	250mL	P	3/22/17	935	3/22/17	935	
16	-8		ICP-MCS-8	1637121		500mL x 2						
17	-1		ICP-MCS-1	1515602		500mL						
18	-7		ICP-MCS-7	1705326	2/24/18	500mL						
19	-11		ICP-~~MCS~~ AM11 (3/22/17)	1705327		125mL						
20	Acetic Acid, Glacial	Fisher	A38C-212 (2.5L)	Lot# 166899	04/03/20	2.5L x 4	G	04/04/17	805	04/04/17	805	
21	Nitric Acid	Fisher	A509-P212	1116080	08/26/2018	2.5L	P	4/06/17	710	4/06/17	710	
22	↓	↓	↓	1116100	11/10/2018	2.5L x 18	P	↓	↓	↓	↓	
23	↓	↓	↓	1116080	11/30/2018	2.5L x 8	P	↓	↓	↓	↓	
24	HCl	Fisher	A508-P212	4116090	11/19/2019	2.5L x 20	P	↓	↓	↓	↓	
25	Sodium Borohydride	Fisher	S678-25	161188	4/10/2022	2 x 25g	P	4/10/17	110	4/10/17	110	

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1	Sodium Selenate decahydrate	Aldrich	450294-5G	MKCB4772V	4/02	5g	G	4/10/17	110	4/13/17	110	
2	Ammonium Hydroxide	Fisher	A572-P500	#711090	10/16/2018	500mLx6	P	04/17/17	805	04/19/17	805	
3	Li-6	AccuStd.	ICP-MS-15-L16-10X-1	216115021	11/2021	100mL	P	04/20/17	53r	04/20/17	53r	
4	Sc		ICP-MS-50N-0.1X-1	216055006	05/2021	100mL	P					
5	Ga		ICP-MS-WN-0.1X-1	215110067	11/2020	100mL	P					
6	Tb		ICP-MS-15N-0.1X-1	21312512-01	02/2021	100mL	P					
7	Ho		ICP-MS-24N-0.1X-1	217045020	04/2022	100mL	P					
8	Bi		ICP-MS-06N-0.1X-1	217045044	04/2022	100mL	P					
9	Stannous Chloride Dihydrate	Fisher	T163-500	163999	04/2022	500g X6	P	04/25/17	1030	04/25/17	1030	
10	Hydro chloric Acid	Analytical Ultra	87003-216	4216110	01/2020	500mL	P					
11	Na_2SeO_4	Alfa Aesar	12613	71408-04	04/2022	50g	G	04/25/17				
12	$SnCl_2$	Fisher	T1-142 500	145293A	4/2020	500gx12	P	4/25/17	868	4/26/17	868	
13	BOILING STONES	Saint-Gobain	D1069103	Lot# T74-TC002	04/2022	450g x8	P	04/27/17	805	04/27/17	805	CTF:# P30-24 CTF:3 P30-25
14	XYLENE	Fisher	X5-4	168622	4/28/20	4LX4	G	4/28/17	52r	4/28/17	52r	
15	HCL	Fisher	A508-P212	4116090	~~4/28~~ 10/9/19	2.5x20.	P	4/28/17	710	4/28/17	710	710 4/28/19
16	HNO3	Fisher	A509-P212	1116110	11/30/18	2.5x20	P	4/28/17	710	4/28/17	710	
17	Sodium [10,000µg/mL]	Ultra	ICP-111	CP-3978	9/30/23	1L	P	5/2/17	935	5/2/17	935	
18	Potassium [10,000 µg/mL]		ICP-119	CR-0917	4/30/24	1L	P	5/2/17	935	5/2/17	935	
19	Hydrogen Peroxide	EMD	HX0635-2	56258639	09/30/18	1L	P	05/05/17	710	5/5/17	710.	
20	Sodium Chloride	Fisher.	S271-10	161535	5/15/20	10kg	P	5/15/17	868	5/15/17	868	
21	Nitric Acid	Fisher	A509-P212	1117010	~~5/23/19~~ 10/27/19	2.5x20	P	5/23/17	710	5/23/17	710	#710 5/23/17
22	HCl	Fisher	A508-P212	4116090	10/9/19	2.5X20	P	5/23/17	710	5/23/17	710	
23	Hydrogen peroxide	EMD	HX0635-2	56273642	10/31/18	1LX5	P	5/26/17	710	5/26/17	710	
24	Lead II Chloride	Alfa Aesar	12345	M22B018	5/31/23	50g	P	5/3/17	52r	5/3/17	52r	
25	Buffer pH7.00 Solution (STD)	Fisher	SB56-500	171346	~~06/06/19~~ 03/31/2019 805 06/06/19	500mLx1	P	06/06/17	805	06/06/17	805	CTF:# 3. P31-03

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1	Potassium Permanganate	VWR	~~231-140~~ 97065-626	3166C309	7/15/18		P	7/18/16	SLS	6/13/17	SL	*Fridge	in logs
2	PH Tape	Micro Essential LAB	~~21625~~ 140 1058 06/13/17	216315	06/15/18	10 rolls	P	06/07/17	1058	06/07/17	1058	
3	APDC	Sigma	287652-5G	0CBAC6440	6/15/21	100g	G	6/6/17	SR	6/6/17	SR	
4	H_2SO_4	Fisher	~~A300-212~~ UN1830 1030 06/22/17	3115080	11/25/18	2.5L	P	06/22/17	1030	06/22/17	1030	
5	Nitric Acid	Fisher	A467-2	1216120	01/04/20	2.5L	T	6/28/17	SR	6/28/17	SR	
6	Acetic Acid	|	A(50?)7-6	56126	6/28/20	2L X 2	T	|	SR	|	SR	
7	100 ug/mL Hg	SPEX	PLHG2-1Y	22-93HGY	6/30/18	125mL	P	6/29/17	SLS	6/29/17	SLS	
8	HNO3	Fisher	A509-P212	116120	~~7/14/17~~ 12/6/2018 *	2/X 2.5L	P	7/14/17	710	7/14/17	710	* 7/14/17
9	Nitric Acid	Fisher	A467-2	1217010	01/31/20	2L X 2	T	7/27/17	SR	7/27/17	SR	
10	Sodium Chloride	Alfa Aesar	10862	25313	7/31/22	500g	P	7/31/17	SR	7/31/17	SR	
11	Sodium Chloride	|	|	25152	|	25g	|	|	|	|	|	
12	Hydroxylamine Hydrochloride	Fisher	H330-500	163471	~~7/27/1?~~ 8/2/22	500g X 6	P	7/24/17	SLS	8/2/17	SLS	
13	|	|	|	164843	8/2/22	500g X 6	P	|	|	|		
14	Sulfuric Acid	Fisher		3116090	11/2/19	2.5L	~~G~~ P	8/7/17	SLS	8/7/17	SLS	
15	Tetraethyl Lead	SPEX	SVO-CSEL-8-500	TS170731012	8/2/18	500mL	G	8/8/17	1080	8/8/17	1080	
16	Gold III Chloride	ACROS	43708	A0366219	8/11/22	5g	G	8/4/17	110	8/4/17	110	
17	ICP-MS-QC2-1	AccuStandard	ICP-MS-QC2-1	215075097-02	06/30/19	100mL	P	08/11/17	SR	08/11/17	SR	
18	Beryllium ICP-MS-05N-0.01X-1	|	ICP-MS-05N-0.01X-1	217015012	01/09/22	100mL	P	|	|	|	|	
19	Manganese ICP-MS-33N-0.01X-1	|	ICP-MS-33N-0.01X-1	217035131	03/28/22	100mL	P	|	|	|	|	
20	Aluminum ICP-MS-01N-0.1X-1	|	ICP-MS-01N-0.1X-1	217045036	04/14/22	100mL	P	|	|	|	|	
21	Zinc ICP-MS-70N-0.1X-1	|	ICP-MS-70N-0.1X-1	216035086	03/23/21	100mL	P	|	|	|	|	
22	Iron ICP-MS-27N-0.1X-1	|	ICP-MS-27N-0.1X-1	216015101	02/17/21	100mL	P	|	|	|	|	
23	Chromium ICP-MS-13N-0.1X-1	|	ICP-MS-13N-0.1X-1	216055077	05/25/21	100mL	P	|	|	|	|	
24	Interferents A	SPEX	CL-INT-A1	CL3-158MKBY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	
25	Analytes B	SPEX	CL-INT-B1	CL3-14MKBY	08/30/18	125mL	P	08/11/17	776	08/11/17	776	

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1	Tuning Solution 1	SPEX	CL-TUNE-1	CL3-79MKBY	08/30/18	125mL	P	08/11/17	996	08/11/17	996	
2	Sodium	SPEX	PLNA2-3Y	A017-4NAY	08/30/18	125mL	P	08/11/17	996	08/11/17	996	
3	Ultrapure Sodium Chloride	ESI	SeaBlock-0500	170341	08/14/20	500mLx3	P	08/14/17	SR	08/14/17	SR	
4	Nitric Acid	Fisher	A467-2	121701G	08/16/20	2LX2	T	8/16/17	SR	8/16/17	SR	
5	Nitric Acid	Fisher	A467-2	1116120	12/16/2018	2.5LX5	P	08/23/17	1030	08/23/17	1040	
6	Nitric Acid	Fisher	A509-P212	1116111	03/15/19	2.5LX19	P	08/23/17	1030	08/23/17	1030	
7	HCl	Fisher	A508-P212	141609O	10/19/19	2.5LX20	P	08/23/17	1030	08/23/17	1030	
8	Sodium Selenate decahydrate	Aldrich	450224-50	MKBN4778V	09/15/20	10g	G	09/15/17	1030	09/15/17	1030	
9	Hydrogen Peroxide	EMD	HX0635-2	56273642	10/31/18	1LX6	P	9/15/17	1080	09/15/17	1080	
10	Nitric Acid	Fisher	A467-2	121702G	02/22/20	2LX4	T	09/18/17	SR	09/18/17	SR	
11	Ultrapure Sodium Chloride	ESI	SeaBlock-0500	170610	09/20/20	500mLX2	P	9/20/17	SR	9/20/17	SR	
12	Hydrogen Peroxide	EMD	HX0635-2	56321712	11/30/18	1LX14	P	9/27/17	1080	9/27/17	1080	
13	Puradisc 25mm 1.0µm	whatman	6780-2510	9816517	02/2022	2Box x50	P	09/27/17	1058	09/27/17	1058	
14	Xylenes	Fisher	X5-4	173323	9/29/20	4LX4	G	9/29/17	1080	9/29/17	1080	
15	Ultra Pure Sodium Chloride	ESI	SeaBlock-0500	170603	10/02/20	500mX3	P	10/2/17	SR	10/2/17	SR	
16	PTFE BOILING STONES-450GRAM	chemware	D1069103	225690G	~~10/06/17~~ N/A	(450gm) 1602x3	P	10/06/17	710	10/06/17	710	710 10/06/17
17	Nitric Acid	Fisher	A509-P212	1117040	04/05/2019	2.5LX18	P	10/06/17	710	10/06/17	710	
18	Sodium Iodide	ACROS ORGANICS	20050250	AC34348G	10/06/22	25gX4	G	10/09/17	SR	10/09/17	SR	
19	Iron Standard	ULTRA	ICP-126-L	CR-3137	08/31/24	1L	P	10/10/17	996	10/10/17	996	
20	Soda Lime	Teledyne LeeMan Labs	606-00015	6061-28-B	N/A	200gX2	P	10/18/17	1080	10/18/17	1080	
21	Sulfuric Acid	Omni Trade	SX1247-2	561175	10/25/18	2.5L	G	10/25/17	846	10/25/17	846	
22	ICP Analytical Mixture 11	High Purity	ICP-AM-11	1705327	10/18	125mL	P	10/30/17	935	10/30/17	935	
23	ICP Multi-element Cal. Standard 8	↓	ICP-MCS-8	1635121	↓	500mLX2	↓	↓	↓	↓	↓	
24	Potassium (10,000 mg/mL)	↓	10M41-1	1723447	4/19	125mL	↓	↓	↓	↓	↓	
25	APDC	SIGMA	P8765-100G	BCBR189V	10/31/22	100g	G	10/31/17	996	10/31/17	996	

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LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	HCl	Fisher	A508-P212	4117010	03/02/20	2.5x20	P	11-09-17	710	11-09-17	710	
2	(HNO3) Nitric Acid	↓	A509-P212	1117042	05/25/19	2.5x12	P	↓	↓	↓	↓	
3	Buffer pH 4.0 Solution (I.C.V.)	VWR	E452-500mL	1257C3/2	11/15/18	500ml x1	P	11/16/17	805	11/16/17	805	For: pH #5 REF: pH #C-Logbook p.97
4	M.I.B.K	Fisher	M213-4	171549	11/21/20	4L x 4	G	11/28/17	935	11/21/17	935	
5	P Hydroxylamine Hydrochloride	Fisher	H 336-500	172066	12/1/22	500g x 12	P		848	12/1/17	848	
6	Zirconium	BICCA	MSZRIKN...	4711426	4/2019	100mL	P	12/06/17	JR	12/06/17	JR	
7	Buffer pH 4.0 Solution (Standard)	Fisher	SB101-500	173435	04/30/19	500ml x2	P	12/12/17	805	12/12/17	805	REF: pH Logbook #10 p.60
8	Buffer pH 7.0 Solution (I.C.V.)	Fisher	SB108-500	170679	01/31/19	500ml x2	P	12/12/17	805	12/12/17	805	REF: pH Logbook # p.60
9	Nitric Acid	Fisher	A509-212	1117060	05/15/19	2.5x20	P	11/17/17	710	11/17/17	710	
10	Interferents A	SPEX	CL-INT-A1	CL3-157MERY	12/30/18	125mL	P	12/19/17	53r	12/19/17	53r	
11	Terbium 10,000 µg/mL	High Purity	10M57-1	1716539	6/2019	125ml	P	12/19/17	935	12/19/17	935	
12	0.45 PVDF Filters (For STLC)	MILLEX	SLHVU33NK	R7CA9GH0	01/08/21	NA	P	01/09/18	805	01/09/18	805	REF: CTF #3. P.3
13	EPA Method 200.7 Int. Check STD#1	Ultra	ICM-221	R01207A	3/31/21	50ml	P	1/10/17	935	1/10/18	935	
14	EPA Method 6010A Mixed STD. Sol. V	↓	ICM-605	CR-3299	8/31/20	125ml	↓	1/10/17	935	1/10/17	935	
15	Hg Mercury (1000µg/mL 2% HCl)	High purity standards	100033-2	1723615	7/1/19	250mL	P	1/11/17	1080	1/11/17	1080	
16	Calcium	Ultra	ICP-120-C	CR-3...	9/30/24	1L	Y	1/11/18	53r	1/15/18	53r	
17	Magnesium	|	ICP-112-C	CP-0678	9/30/23	1L	P	|	|	|	|	
18	Lead(II) Chloride	ALDRICH	203572-10G	MKCC3373	1/22/2023	10g	P	1/22/18	710	—		
19	Sodium hydroxide monohydrate	Alfa Aesar	41200	61701011	1/22/23	25g	P	1/22/18	53r	1/22/18	53r	
20	Sulfuric Acid	Fisher	A510-P212	3116493	5/4/20	2.5L	P	1/31/18	848	1/31/18	848	
21	Instrument Calibration Standard 2	SPEX	CL-CAL-2	CL4-41MEBY	01/30/19	125mL	P	1/31/18	53r	1/31/18	53r	
22	Instrument Calibration Standard 3	|	CL-CAL-3	CL4-01MED4	01/30/19	125mL x4	|	|	|	|	|	
23	Glass Microfiber TCLP filter	Whatman	1810-090	9691301	NA	4	NA	04/25/17	805	04/25/17	805	REF: CTF #3 P.30-1
24	Hydrogen Peroxide (H_2O_2)	EMD	~~HX~~ HX0635-2 (2-2-18)	56273642	10/31/18	12x10	P	02/02/18	710	02/02/18	710	
25	HNO3	Fisher	A509-P212	1117062	07/12/19	2.5x15	P	02/02/18	710	02/02/18	710	

COMMENTS:

Book Number: 6

05/22/12 Revision

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EPA 200.8 ICP/MS Metals

Filtered

RAW DATA

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EPA 200.8 ICP/MS Metals

Filtered

INITIAL CALIBRATION

ICV/ICB

CCV/CCB

ICSA/B

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Instrument Tuning

Work Order No.: 18-03-1974
Instrument ID: ICP/MS 03
Tuning Date: 03/27/18

Analyte	Exact Mass (amu)	Measured Mass (amu)	Mass Calibration		Mass Calibration DAC Value	Resolution DAC Value	Measured Peak Width (amu)	Resolution Check	
			Acceptance Criteria (amu)	Pass/Fail (P/F)				Acceptance Criteria (amu)	Pass/Fail (P/F)
C	12.000	12.025	± 0.100	P	2773	2064	0.704	< 0.900	P
Mg	23.985	23.975	± 0.100	P	5713	2056	0.739	< 0.900	P
Mg 25	24.986	25.025	± 0.100	P	5917	1996	0.743	< 0.900	P
Mg 26	25.983	25.975	± 0.100	P	6207	2076	0.720	< 0.900	P
Rh	102.905	102.925	± 0.100	P	24945	1899	0.699	< 0.900	P
Ce	139.905	139.875	± 0.100	P	33963	1839	0.698	< 0.900	P
Pb 206	205.975	205.975	± 0.100	P	50072	1705	0.687	< 0.900	P
Pb 207	206.976	206.975	± 0.100	P	50378	1768	0.716	< 0.900	P
Pb	207.977	208.025	± 0.100	P	50551	1696	0.687	< 0.900	P
U	238.050	238.025	± 0.100	P	57919	1668	0.688	< 0.900	P

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Tuning Filename: C:\Elandata\Tuning\Default.tun

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial Calibration Verification

Work Order No.: 18-03-1974

Instrument ID: ICP/MS 03

Concentration Unit: µg/L

Analyte	Initial Calibration Verification					
		ICV-1		ICV-2		Control
	True	Observed	%REC	Observed	%REC	Limit
Copper	100.000000	100.821688	101	103.807807	104	90 - 110
Cadmium	100.000000	104.790273	105	104.613204	105	90 - 110
Lead	100.000000	103.931915	104	103.917919	104	90 - 110

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ICV-1 Filename: W:\dataset\2018\180327B1\ICV-1 - MS021218B.016

ICV-2 Filename: W:\dataset\2018\180327B1\ICV-1 - MS021218B.221

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Interference Check

Work Order No.: 18-03-1974
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

Analyte	Interference Check					
	ICS-A		ICS-AB			
	Observed	Control Limit	True	Observed	%REC	Control Limit
Copper	0.098743	< 2.000000	20.000000	20.043472	100	80 - 120
Cadmium	0.064760	< 2.000000	10.000000	9.998683	100	80 - 120
Lead	0.016017	< 2.000000				

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ICS-A-1 Filename: W:\dataset\2018\180327B1\ICS-A - MS092817B.022
ICS-AB-1 Filename: W:\dataset\2018\180327B1\ICS-AB - MS092817C.023

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Continuing Calibration Verification

Work Order No.: 18-03-1974
Instrument ID: ICP/MS 03
Concentration Unit: µg/L

	Continuing Calibration Verification									
		CCV-1		CCV-2		CCV-3		CCV-4		Control
Analyte	True	Observed	%REC	Observed	%REC	Observed	%REC	Observed	%REC	Limit
Copper	100.000000	98.860918	99	99.743642	100	98.849901	99	98.211127	98	90 - 110
Cadmium	100.000000	102.739239	103	102.915174	103	102.710804	103	101.843280	102	90 - 110
Lead	100.000000	100.972036	101	99.547251	100	101.671391	102	100.481535	100	90 - 110

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CCV-1 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.225
CCV-2 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.238
CCV-3 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.251
CCV-4 Filename: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.264

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1974

Instrument ID: ICP/MS 03

Concentration Unit: µg/L

Test Method: EPA 200.8

	Initial and Continuing Calibration Blanks						
Analyte	**ICB-1**	**ICB-2**	**CCB-1**	**CCB-2**	**CCB-3**	**CCB-4**	**RL (No PF)**
Copper	-0.001116	0.003939	0.009418	-0.001215	0.008042	0.003649	1.000000
Cadmium	0.018666	0.004786	0.000963	0.004026	-0.012113	-0.006331	1.000000
Lead	-0.000552	0.003892	-0.002287	-0.002063	-0.003047	-0.002067	1.000000

Preparation Factor (PF): 1 L/L

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ICB-1 Filename: W:\dataset\2018\180327B1\ICB.019

ICB-2 Filename: W:\dataset\2018\180327B1\ICB.224

CCB-1 Filename: W:\dataset\2018\180327B1\CCB.227

CCB-2 Filename: W:\dataset\2018\180327B1\CCB.240

CCB-3 Filename: W:\dataset\2018\180327B1\CCB.253

CCB-4 Filename: W:\dataset\2018\180327B1\CCB.266

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Calscience Environmental Laboratories, Inc.

EPA Method 200.8
Internal Standard Summary

Work Order No.: 18-03-1974

Instrument ID: ICP/MS 03

Test Method: EPA 200.8 Control Limit: 60-125%

Sample	Analysis	IS-3		IS-4		IS-5	
CEL ID Number	Date/Time	Analyte	%RI	Analyte	%RI	Analyte	%RI
180327-ba-2	03/27/2018 19:54:55	Gallium	100	Indium	101	Bismuth	100
180327-la-2	03/27/2018 19:57:23	Gallium	98	Indium	99	Bismuth	98
18-03-1974-1 ms	03/27/2018 20:07:14	Gallium	99	Indium	98	Bismuth	98
18-03-1974-1 msd	03/27/2018 20:09:43	Gallium	98	Indium	99	Bismuth	98
18-03-1974-1	03/27/2018 20:12:10	Gallium	100	Indium	99	Bismuth	99
18-03-1974-2	03/27/2018 20:22:07	Gallium	96	Indium	100	Bismuth	99
18-03-1974-3	03/27/2018 20:24:34	Gallium	98	Indium	99	Bismuth	99
18-03-1974-4	03/27/2018 20:27:02	Gallium	97	Indium	99	Bismuth	99
18-03-1974-5	03/27/2018 20:29:29	Gallium	100	Indium	98	Bismuth	98
18-03-1974-6	03/27/2018 20:31:57	Gallium	99	Indium	98	Bismuth	99
18-03-1974-7	03/27/2018 20:34:24	Gallium	96	Indium	98	Bismuth	98
180327-ba-3	03/27/2018 20:36:53	Gallium	99	Indium	100	Bismuth	99
180327-la-3	03/27/2018 20:39:21	Gallium	97	Indium	97	Bismuth	98
18-03-1974-f-2 ms	03/27/2018 20:41:48	Gallium	96	Indium	97	Bismuth	97
18-03-1974-f-2 msd	03/27/2018 20:44:16	Gallium	97	Indium	98	Bismuth	97
18-03-1974-f-2	03/27/2018 20:54:11	Gallium	96	Indium	99	Bismuth	98
18-03-1974-f-1	03/27/2018 20:56:39	Gallium	97	Indium	98	Bismuth	97
18-03-1974-f-3	03/27/2018 20:59:06	Gallium	96	Indium	98	Bismuth	97
18-03-1974-f-4	03/27/2018 21:01:34	Gallium	97	Indium	98	Bismuth	98
18-03-1974-f-5	03/27/2018 21:04:02	Gallium	97	Indium	97	Bismuth	96
18-03-1974-f-6	03/27/2018 21:06:29	Gallium	99	Indium	98	Bismuth	98

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Instrument Tuning Report

Instrument Name: ICP-MS-03 US26INS00050
Analyst Name: UFLE
Sample Date/Time: Tuesday, March 27, 2018 09:40:20
File Name: Default.tun
File Path: C:\Elandata\Tuning\Default.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
C	12.000	12.025	2773	2064	0.704	
Mg	23.985	23.975	5713	2056	0.739	
Mg 25	24.986	25.025	5917	1996	0.743	
Mg 26	25.983	25.975	6207	2076	0.720	
Rh	102.905	102.925	24945	1899	0.699	
Ce	139.905	139.875	33963	1839	0.698	
Pb 206	205.975	205.975	50072	1705	0.687	
Pb 207	206.976	206.975	50378	1768	0.716	
Pb	207.977	208.025	50551	1696	0.687	
U	238.050	238.025	57919	1668	0.688	

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Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Tuesday, March 27, 2018 09:57:05
Sample Description:
Method File: C:\elandata\Method\CEL\Cel-Daily Performance-2.mth
Dataset File: W:\dataset\2018\180327B1\Daily Performance Check.003
Tuning File: C:\Elandata\Tuning\Default.tun
Optimization File: C:\Elandata\Optimize\Default.dac
Dual Detector Mode: Pulse

Acq. Dead Time(ns): 55
Current Dead Time (ns): 55

Instrument Name: ICP/MS 3
User Name: UFLE

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	80443.4	80443.355	480.980	0.6
	In	114.9	499036.5	499036.548	5846.940	1.2
	Pb	208.0	219427.3	219427.314	1249.249	0.6
⌈	Ce++	70.0	6518.7	0.011	0.000	2.7
| >	Ce	139.9	587188.4	587188.372	7390.117	1.3
⌊	CeO	155.9	15865.8	0.027	0.000	1.2
	Bkgd	220.0	51.8	51.833	8.608	16.6

Current Optimization File Data

Current Value	Description
0.92	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
16.00	Plasma Gas Flow
6.50	Lens Voltage
1600.00	ICP RF Power
-1800.00	Analog Stage Voltage
1050.00	Pulse Stage Voltage
-3.00	Quadrupole Rod Offset Std [QRO]
-8.00	Cell Rod Offset Std [CRO]
22.00	Discriminator Threshold
-20.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.90	RPq
0.92	DRC Mode NEB
-16.00	DRC Mode QRO
-3.00	DRC Mode CRO
-37.00	DRC Mode CPV
0.00	Cell Gas A
3.00	Cell Gas B
200.00	RF Voltage
0.00	DC Voltage
60.00	Service DAC 1
350.00	Axial Field Voltage

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
C	13	21	5.0	6708.0

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Mg	24	21	4.5	87062.1
In	115	21	6.5	505297.9
Ce	140	21	6.5	597866.9
Pb	208	21	8.5	218523.0
U	238	21	9.0	460687.1

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: Blank

Autosampler Position: 2

Sample Date/Time: Tuesday, March 27, 2018 10:30:54

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\Blank.013

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		47189.830		ppb	0.500	
9	Be		54.333		ppb	16.599	
45	Sc	>	4982270.966		ppb	3.629	
10	B		154.668		ppb	9.706	
23	Na		309.529		ppb	16.624	
25	Mg		577.161		ppb	9.445	
27	Al		5474.315		ppb	1.441	
39	K		8443.921		ppb	1.898	
43	Ca		274.290		ppb	6.831	
44	Ca		39926.534		ppb	0.437	
45	Sc-1	>	4982270.966		ppb	3.629	
47	Ti		156.001		ppb	15.115	
49	Ti		162.668		ppb	3.756	
51	V		2493.845		ppb	9.675	
52	Cr		8871.660		ppb	0.773	
55	Mn		645.356		ppb	3.787	
54	Fe		31470.175		ppb	1.576	
57	Fe		11706.205		ppb	3.479	
59	Co		206.002		ppb	10.680	
60	Ni		209.336		ppb	13.421	
63	Cu		399.779		ppb	2.208	
65	Cu		183.806		ppb	20.707	
71	Ga	>	1433439.379		ppb	1.707	
75	As		7420.493		ppb	1.538	
75	As-1		-332.758		ppb	23.260	
78	Se		7727.417		ppb	1.775	
82	Se		2.919		ppb	741.926	
88	Sr		156.668		ppb	3.900	
66	Zn		1515.460		ppb	0.936	
68	Zn		1992.885		ppb	4.061	
95	Mo		380.008		ppb	16.941	
115	In-1	>	1105309.653		ppb	0.780	
107	Ag		114.001		ppb	1.754	
111	Cd		28.617		ppb	100.970	
118	Sn		685.359		ppb	8.328	
121	Sb		128.668		ppb	14.359	
135	Ba		89.334		ppb	5.634	
165	Ho		1307419.809		ppb	3.374	
159	Tb		1408994.867		ppb	2.898	
203	Tl		89.334		ppb	10.341	
207	Pb		586.007		ppb	3.464	
209	Bi	>	731930.875		ppb	2.006	

QC Out of Limits

ıalyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: STD-1 - MS021518A

Autosampler Position: 3

Sample Date/Time: Tuesday, March 27, 2018 10:33:22

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\STD-1 - MS021518A.014

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		45718.020		ppb	1.521	47189.830
9	Be		72554.078	200.000000	ppb	1.390	54.333
45	Sc	>	4932291.153		ppb	2.626	4982270.966
10	B		54947.689	500.000000	ppb	3.452	154.668
23	Na		367308.582	10200.000000	ppb	2.443	309.529
25	Mg		5329005.961	10200.000000	ppb	1.403	577.161
27	Al		1131317.035	200.000000	ppb	3.216	5474.315
39	K		1291623.882	10200.000000	ppb	0.468	8443.921
43	Ca		150654.731	10200.000000	ppb	2.411	274.290
44	Ca		1942646.163	10200.000000	ppb	3.327	39926.534
45	Sc-1	>	4932291.153		ppb	2.626	4982270.966
47	Ti		135454.977	200.000000	ppb	3.093	156.001
49	Ti		116120.120	200.000000	ppb	3.354	162.668
51	V		1917524.382	200.000000	ppb	1.799	2493.845
52	Cr		1728806.014	200.000000	ppb	1.233	8871.660
55	Mn		2639553.937	200.000000	ppb	0.766	645.356
54	Fe		6850818.905	10200.000000	ppb	1.764	31470.175
57	Fe		2888950.088	10200.000000	ppb	0.592	11706.205
59	Co		2336121.750	200.000000	ppb	1.430	206.002
60	Ni		503844.308	200.000000	ppb	1.721	209.336
63	Cu		1095952.380	200.000000	ppb	2.464	399.779
65	Cu		503460.022	200.000000	ppb	2.601	183.806
71	Ga	>	1385716.288		ppb	1.075	1433439.379
75	As		332138.120	200.000000	ppb	1.938	7420.493
75	As-1		360901.503	200.000000	ppb	2.176	-332.758
78	Se		95640.867	200.000000	ppb	2.255	7727.417
82	Se		45603.043	200.000000	ppb	2.756	2.919
88	Sr		4114857.564	200.000000	ppb	2.769	156.668
66	Zn		316595.758	200.000000	ppb	1.347	1515.460
68	Zn		229331.936	200.000000	ppb	1.910	1992.885
95	Mo		690506.325	200.000000	ppb	2.044	380.008
115	In-1	>	1089737.805		ppb	1.179	1105309.653
107	Ag		1877387.708	200.000000	ppb	2.537	114.001
111	Cd		418064.822	200.000000	ppb	1.033	28.617
118	Sn		1079510.865	200.000000	ppb	1.595	685.359
121	Sb		1260406.008	200.000000	ppb	2.018	128.668
135	Ba		371121.744	200.000000	ppb	2.077	89.334
165	Ho		1285227.233		ppb	1.929	1307419.809
159	Tb		1384490.647		ppb	2.863	1408994.867
203	Tl		1373845.183	200.000000	ppb	1.123	89.334
207	Pb		3802124.674	200.000000	ppb	0.842	586.007
209	Bi	>	703920.965		ppb	1.431	731930.875

QC Out of Limits

ıalyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICV-1 - MS021218B
Autosampler Position: 206
Sample Date/Time: Tuesday, March 27, 2018 10:38:21
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICV-1 - MS021218B.016
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		46373.645		ppb	0.318	47189.830
9	Be		37528.643	102.820167	ppb	1.201	54.333
45	Sc	>	4957708.042		ppb	2.726	4982270.966
10	B		286.671	1.202612	ppb	16.248	154.668
23	Na		331.435	0.659247	ppb	4.800	309.529
25	Mg		55423.699	104.493236	ppb	1.515	577.161
27	Al		5963.956	0.092207	ppb	2.074	5474.315
39	K		8696.826	2.375649	ppb	1.841	8443.921
43	Ca		2985.253	183.157878	ppb	4.198	274.290
44	Ca		74361.006	184.772898	ppb	1.082	39926.534
45	Sc-1	>	4957708.042		ppb	2.726	4982270.966
47	Ti		69166.811	101.519074	ppb	1.054	156.001
49	Ti		58749.250	100.548439	ppb	1.549	162.668
51	V		1013182.122	104.973787	ppb	1.761	2493.845
52	Cr		914639.539	104.797159	ppb	1.256	8871.660
55	Mn		1387381.135	104.615758	ppb	2.395	645.356
54	Fe		3549183.542	5236.400940	ppb	0.911	31470.175
57	Fe		1466574.884	5132.502436	ppb	1.712	11706.205
59	Co		1163477.681	99.096961	ppb	1.424	206.002
60	Ni		261119.401	103.105761	ppb	2.122	209.336
63	Cu		576694.236	103.205872	ppb	1.973	399.779
65	Cu		258809.894	100.821688	ppb	2.365	183.806
71	Ga	>	1412631.923		ppb	0.722	1433439.379
75	As		173636.594	100.418170	ppb	0.692	7420.493
75	As-1		184913.325	100.619193	ppb	0.315	-332.758
78	Se		53625.015	102.376031	ppb	1.152	7727.417
82	Se		23797.028	102.388908	ppb	1.399	2.919
88	Sr		2104320.564	100.321841	ppb	2.264	156.668
66	Zn		167676.679	103.453787	ppb	2.138	1515.460
68	Zn		115437.748	97.898633	ppb	1.550	1992.885
95	Mo		351274.117	101.578491	ppb	1.836	380.008
115	In-1	>	1090737.595		ppb	1.308	1105309.653
107	Ag		224.003	0.011850	ppb	12.659	114.001
111	Cd		219295.234	104.790273	ppb	2.467	28.617
118	Sn		526221.324	97.344239	ppb	2.478	685.359
121	Sb		615607.236	97.592924	ppb	2.475	128.668
135	Ba		152.668	0.034726	ppb	4.211	89.334
165	Ho		1302154.631		ppb	2.391	1307419.809
159	Tb		1370336.842		ppb	2.292	1408994.867
203	Tl		680956.767	97.732437	ppb	1.285	89.334
207	Pb		2004619.320	103.931915	ppb	2.949	586.007
209	Bi	>	713981.812		ppb	2.350	731930.875

QC Out of Limits

alyte Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICB
Autosampler Position: 2
Sample Date/Time: Tuesday, March 27, 2018 10:45:50
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICB.019
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		46643.707		ppb	1.573	47189.830
9	Be		61.334	0.020488	ppb	0.941	54.333
45	Sc	>	4941567.437		ppb	0.904	4982270.966
10	B		233.336	0.726074	ppb	18.961	154.668
23	Na		256.194	-1.405556	ppb	10.362	309.529
25	Mg		528.587	-0.082958	ppb	12.468	577.161
27	Al		3339.280	-0.370521	ppb	0.537	5474.315
39	K		8625.424	1.988566	ppb	1.203	8443.921
43	Ca		291.433	1.311823	ppb	7.070	274.290
44	Ca		37751.570	-9.870153	ppb	1.633	39926.534
45	Sc-1	>	4941567.437		ppb	0.904	4982270.966
47	Ti		160.668	0.008888	ppb	9.984	156.001
49	Ti		168.668	0.012700	ppb	9.585	162.668
51	V		2515.306	0.004513	ppb	10.637	2493.845
52	Cr		8690.820	-0.012621	ppb	1.694	8871.660
55	Mn		680.025	0.003023	ppb	4.149	645.356
54	Fe		30419.659	-1.180398	ppb	0.665	31470.175
57	Fe		11555.339	-0.191453	ppb	0.675	11706.205
59	Co		246.003	0.003553	ppb	7.226	206.002
60	Ni		295.338	0.034833	ppb	14.227	209.336
63	Cu		380.378	-0.002657	ppb	7.167	399.779
65	Cu		178.447	-0.001116	ppb	15.883	183.806
71	Ga	>	1416456.213		ppb	1.642	1433439.379
75	As		7268.186	-0.038084	ppb	1.709	7420.493
75	As-1		-307.851	0.010967	ppb	19.955	-332.758
78	Se		7553.247	-0.180443	ppb	1.067	7727.417
82	Se		4.075	0.004253	ppb	551.687	2.919
88	Sr		258.004	0.004922	ppb	14.104	156.668
66	Zn		1485.455	-0.008245	ppb	9.331	1515.460
68	Zn		1967.546	-0.001665	ppb	3.190	1992.885
95	Mo		342.007	-0.009336	ppb	27.536	380.008
115	In-1	>	1085777.686		ppb	1.780	1105309.653
107	Ag		258.004	0.015619	ppb	3.101	114.001
111	Cd		67.136	0.018666	ppb	50.845	28.617
118	Sn		2358.978	0.312935	ppb	15.639	685.359
121	Sb		1364.106	0.196586	ppb	23.368	128.668
135	Ba		94.001	0.003555	ppb	27.904	89.334
165	Ho		1278088.440		ppb	0.988	1307419.809
159	Tb		1374103.978		ppb	2.050	1408994.867
203	Tl		112.001	0.003674	ppb	15.465	89.334
207	Pb		558.673	-0.000552	ppb	16.839	586.007
209	Bi	>	710013.349		ppb	1.830	731930.875

QC Out of Limits

ıalyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICS-A - MS092817B

Autosampler Position: 9

Sample Date/Time: Tuesday, March 27, 2018 10:53:16

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICS-A - MS092817B.022

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	44247.763		ppb	1.081	47189.830
9	Be	|	64.334	0.029883	ppb	14.692	54.333
45	Sc	|>	4923595.043		ppb	2.464	4982270.966
10	B	⌊	250.670	0.894770	ppb	1.219	154.668
23	Na	⌈	882923.522	24560.846476	ppb	0.383	309.529
25	Mg	|	5026994.972	9637.883208	ppb	2.677	577.161
27	Al	|	55540647.286	9881.240939	ppb	4.803	5474.315
39	K	|	1219635.665	9644.208381	ppb	2.192	8443.921
43	Ca	|	428834.037	29108.298287	ppb	5.268	274.290
44	Ca	|	5511921.440	29384.160972	ppb	2.645	39926.534
45	Sc-1	|>	4923595.043		ppb	2.464	4982270.966
47	Ti	|	160956.449	238.180018	ppb	0.860	156.001
49	Ti	|	117618.090	202.962165	ppb	1.485	162.668
51	V	|	492.388	-0.207224	ppb	130.039	2493.845
52	Cr	|	10264.461	0.174270	ppb	2.894	8871.660
55	Mn	|	16218.457	1.183310	ppb	1.786	645.356
54	Fe	|	16646347.526	24900.639827	ppb	0.121	31470.175
57	Fe	|	7002991.284	24825.002310	ppb	0.490	11706.205
59	Co	|	1076.730	0.074935	ppb	3.507	206.002
60	Ni	⌊	1781.508	0.626514	ppb	1.805	209.336
63	Cu	⌈	218.971	-0.028703	ppb	60.171	399.779
65	Cu	|	406.164	0.098743	ppb	18.928	183.806
71	Ga	|>	1320431.879		ppb	0.601	1433439.379
75	As	|	7186.827	0.227120	ppb	0.580	7420.493
75	As-1	|	-181.391	0.072664	ppb	17.736	-332.758
78	Se	|	7392.450	0.654212	ppb	1.663	7727.417
82	Se	|	20.857	0.083979	ppb	145.961	2.919
88	Sr	|	24501.649	1.242213	ppb	2.006	156.668
66	Zn	|	2363.641	0.644433	ppb	2.769	1515.460
68	Zn	⌊	2002.221	0.153850	ppb	3.102	1992.885
95	Mo	⌈	694152.213	209.134062	ppb	0.869	380.008
115	In-1	|>	1047667.855		ppb	1.527	1105309.653
107	Ag	|	395.342	0.031863	ppb	5.362	114.001
111	Cd	|	157.939	0.064760	ppb	43.133	28.617
118	Sn	|	3253.258	0.502349	ppb	15.698	685.359
121	Sb	|	1219.416	0.181233	ppb	8.556	128.668
135	Ba	|	356.674	0.152507	ppb	3.426	89.334
165	Ho	|	1272309.122		ppb	2.073	1307419.809
159	Tb	⌊	1347364.576		ppb	1.273	1408994.867
203	Tl	⌈	158.001	0.011870	ppb	16.601	89.334
207	Pb	|	818.680	0.016017	ppb	1.102	586.007
209	Bi	⌊>	663974.350		ppb	1.638	731930.875

QC Out of Limits

alyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICS-AB - MS092817C
Autosampler Position: 10
Sample Date/Time: Tuesday, March 27, 2018 10:55:45
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICS-AB - MS092817C.023
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	45480.149		ppb	0.528	47189.830
9	Be	|	52.333	-0.001581	ppb	13.557	54.333
45	Sc	|>	4846281.806		ppb	1.193	4982270.966
10	B	⌊	217.336	0.621199	ppb	3.831	154.668
23	Na	⌈	859718.885	24290.852611	ppb	1.799	309.529
25	Mg	|	4890491.764	9524.011870	ppb	2.452	577.161
27	Al	|	54428302.143	9839.027758	ppb	1.644	5474.315
39	K	|	1204367.316	9672.578362	ppb	2.024	8443.921
43	Ca	|	426505.482	29416.967386	ppb	1.921	274.290
44	Ca	|	5542344.330	30021.937738	ppb	3.499	39926.534
45	Sc-1	|>	4846281.806		ppb	1.193	4982270.966
47	Ti	|	159008.663	239.026056	ppb	1.116	156.001
49	Ti	|	114918.544	201.462424	ppb	1.409	162.668
51	V	|	196036.289	20.566247	ppb	0.639	2493.845
52	Cr	|	180836.946	20.375039	ppb	0.648	8871.660
55	Mn	|	276053.773	21.239154	ppb	1.338	645.356
54	Fe	|	16328686.552	24801.888878	ppb	3.355	31470.175
57	Fe	|	6869515.641	24733.699413	ppb	1.267	11706.205
59	Co	|	219372.853	19.088045	ppb	1.162	206.002
60	Ni	⌊	49254.415	19.814211	ppb	1.181	209.336
63	Cu	⌈	104709.726	19.854849	ppb	1.775	399.779
65	Cu	|	48562.986	20.043472	ppb	2.686	183.806
71	Ga	|>	1329534.983		ppb	1.835	1433439.379
75	As	|	22974.436	10.323730	ppb	1.288	7420.493
75	As-1	|	17527.889	10.294514	ppb	1.702	-332.758
78	Se	|	11421.487	10.060912	ppb	2.677	7727.417
82	Se	|	2201.653	10.054955	ppb	0.882	2.919
88	Sr	|	24569.835	1.237504	ppb	2.210	156.668
66	Zn	|	16959.146	10.288792	ppb	2.863	1515.460
68	Zn	⌊	12254.922	9.541529	ppb	0.861	1992.885
95	Mo	⌈	680075.209	205.143460	ppb	2.108	380.008
115	In-1	|>	1046184.807		ppb	1.722	1105309.653
107	Ag	|	45587.362	5.046801	ppb	1.314	114.001
111	Cd	|	20097.006	9.998683	ppb	3.757	28.617
118	Sn	|	1984.887	0.257371	ppb	16.595	685.359
121	Sb	|	1009.390	0.146583	ppb	8.918	128.668
135	Ba	|	361.341	0.155648	ppb	8.455	89.334
165	Ho	|	1266010.205		ppb	0.961	1307419.809
159	Tb	⌊	1352331.978		ppb	0.688	1408994.867
203	Tl	⌈	139.334	0.009198	ppb	14.378	89.334
207	Pb	|	752.678	0.012628	ppb	6.279	586.007
209	Bi	⌊>	659010.434		ppb	1.748	731930.875

QC Out of Limits

alyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: Blank
Autosampler Position: 2
Sample Date/Time: Tuesday, March 27, 2018 19:25:03
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\Blank.218
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37782.700		ppb	1.702	
9	Be		39.333		ppb	10.275	
45	Sc	>	4748584.211		ppb	0.792	
10	B		112.001		ppb	6.439	
23	Na		187.621		ppb	14.393	
25	Mg		308.577		ppb	7.579	
27	Al		2178.261		ppb	3.848	
39	K		7934.128		ppb	1.847	
43	Ca		220.003		ppb	11.543	
44	Ca		24391.729		ppb	1.096	
45	Sc-1	>	4748584.211		ppb	0.792	
47	Ti		153.335		ppb	19.096	
49	Ti		168.668		ppb	5.849	
51	V		2529.025		ppb	4.787	
52	Cr		8430.574		ppb	1.378	
55	Mn		865.375		ppb	6.644	
54	Fe		28343.608		ppb	3.841	
57	Fe		11200.232		ppb	2.653	
59	Co		163.335		ppb	17.843	
60	Ni		109.334		ppb	7.393	
63	Cu		343.815		ppb	7.056	
65	Cu		155.820		ppb	10.757	
71	Ga	>	1358577.364		ppb	1.682	
75	As		6980.470		ppb	2.174	
75	As-1		-249.562		ppb	48.758	
78	Se		7226.814		ppb	1.512	
82	Se		10.347		ppb	227.501	
88	Sr		177.335		ppb	5.086	
66	Zn		1297.426		ppb	1.928	
68	Zn		1796.178		ppb	3.986	
95	Mo		419.344		ppb	29.848	
115	In-1	>	1061548.531		ppb	1.020	
107	Ag		107.334		ppb	6.544	
111	Cd		47.387		ppb	60.902	
118	Sn		1125.404		ppb	15.738	
121	Sb		588.686		ppb	21.970	
135	Ba		193.335		ppb	6.888	
165	Ho		1266568.853		ppb	1.902	
159	Tb		1368449.589		ppb	1.853	
203	Tl		55.334		ppb	12.694	
207	Pb		467.338		ppb	7.953	
209	Bi	>	699638.520		ppb	2.029	

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: STD-1 - MS021518A

Autosampler Position: 3

Sample Date/Time: Tuesday, March 27, 2018 19:27:30

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\STD-1 - MS021518A.219

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	34547.602		ppb	4.338	37782.700
9	Be	|	64018.984	200.000000	ppb	1.366	39.333
45	Sc	|>	4664980.311		ppb	1.239	4748584.211
10	B	⌊	49339.562	500.000000	ppb	1.922	112.001
23	Na	⌈	337046.863	10200.000000	ppb	2.292	187.621
25	Mg	|	5428386.149	10200.000000	ppb	3.871	308.577
27	Al	|	1154894.678	200.000000	ppb	4.188	2178.261
39	K	|	1213483.799	10200.000000	ppb	3.257	7934.128
43	Ca	|	140738.617	10200.000000	ppb	2.483	220.003
44	Ca	|	1799340.603	10200.000000	ppb	2.535	24391.729
45	Sc-1	|>	4664980.311		ppb	1.239	4748584.211
47	Ti	|	128858.916	200.000000	ppb	1.221	153.335
49	Ti	|	111104.942	200.000000	ppb	1.701	168.668
51	V	|	1847308.333	200.000000	ppb	2.725	2529.025
52	Cr	|	1644973.192	200.000000	ppb	2.824	8430.574
55	Mn	|	2513402.245	200.000000	ppb	1.460	865.375
54	Fe	|	6623042.137	10200.000000	ppb	2.627	28343.608
57	Fe	|	2751566.454	10200.000000	ppb	0.472	11200.232
59	Co	|	2191082.257	200.000000	ppb	2.799	163.335
60	Ni	⌊	476208.089	200.000000	ppb	1.808	109.334
63	Cu	⌈	1035992.440	200.000000	ppb	2.415	343.815
65	Cu	|	474209.965	200.000000	ppb	2.354	155.820
71	Ga	|>	1280989.631		ppb	2.542	1358577.364
75	As	|	310892.787	200.000000	ppb	2.597	6980.470
75	As-1	|	338243.714	200.000000	ppb	2.720	-249.562
78	Se	|	89808.648	200.000000	ppb	2.824	7226.814
82	Se	|	42946.839	200.000000	ppb	2.947	10.347
88	Sr	|	3825623.725	200.000000	ppb	1.834	177.335
66	Zn	|	297088.542	200.000000	ppb	1.676	1297.426
68	Zn	⌊	214470.058	200.000000	ppb	2.512	1796.178
95	Mo	⌈	651257.070	200.000000	ppb	2.002	419.344
115	In-1	|>	1055684.186		ppb	3.115	1061548.531
107	Ag	|	1824460.839	200.000000	ppb	1.797	107.334
111	Cd	|	402481.212	200.000000	ppb	2.581	47.387
118	Sn	|	1027721.141	200.000000	ppb	0.926	1125.404
121	Sb	|	1217510.662	200.000000	ppb	0.922	588.686
135	Ba	|	365281.734	200.000000	ppb	0.727	193.335
165	Ho	|	1249840.843		ppb	1.505	1266568.853
159	Tb	⌊	1356712.211		ppb	1.387	1368449.589
203	Tl	⌈	1285275.568	200.000000	ppb	2.768	55.334
207	Pb	|	3569768.210	200.000000	ppb	1.938	467.338
209	Bi	⌊>	662644.771		ppb	1.051	699638.520

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: ICV-1 - MS021218B

Autosampler Position: 206

Sample Date/Time: Tuesday, March 27, 2018 19:32:30

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\ICV-1 - MS021218B.221

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		35960.989		ppb	0.885	37782.700
9	Be		32768.622	103.626547	ppb	1.007	39.333
45	Sc	>	4605463.460		ppb	1.224	4748584.211
10	B		199.336	0.932890	ppb	4.949	112.001
23	Na		232.384	1.537385	ppb	17.272	187.621
25	Mg		56042.723	106.086610	ppb	1.723	308.577
27	Al		3279.258	0.205077	ppb	2.473	2178.261
39	K		8171.671	4.092172	ppb	0.954	7934.128
43	Ca		2929.998	199.712989	ppb	7.562	220.003
44	Ca		58834.565	204.731387	ppb	1.654	24391.729
45	Sc-1	>	4605463.460		ppb	1.224	4748584.211
47	Ti		65131.164	102.285867	ppb	1.039	153.335
49	Ti		54975.059	100.097198	ppb	0.444	168.668
51	V		937217.815	102.662281	ppb	0.807	2529.025
52	Cr		848020.675	103.969652	ppb	3.525	8430.574
55	Mn		1315764.510	106.043789	ppb	1.979	865.375
54	Fe		3341767.462	5192.527577	ppb	1.236	28343.608
57	Fe		1389336.123	5196.992133	ppb	1.181	11200.232
59	Co		1101762.798	101.869042	ppb	2.104	163.335
60	Ni		245214.881	104.301716	ppb	2.233	109.334
63	Cu		554725.509	104.661320	ppb	2.530	343.815
65	Cu		251899.092	103.807807	ppb	2.882	155.820
71	Ga	>	1309956.228		ppb	0.789	1358577.364
75	As		166262.676	102.521808	ppb	2.297	6980.470
75	As-1		177329.161	102.597933	ppb	2.177	-249.562
78	Se		50987.536	103.722128	ppb	2.521	7226.814
82	Se		22752.411	103.592464	ppb	2.193	10.347
88	Sr		2002562.630	102.351350	ppb	2.218	177.335
66	Zn		161278.705	105.748299	ppb	2.721	1297.426
68	Zn		111738.954	101.097856	ppb	3.132	1796.178
95	Mo		336202.640	102.461973	ppb	0.420	419.344
115	In-1	>	1062894.521		ppb	1.670	1061548.531
107	Ag		172.002	0.007006	ppb	12.791	107.334
111	Cd		212042.743	104.613204	ppb	2.032	47.387
118	Sn		508843.903	98.189503	ppb	2.196	1125.404
121	Sb		588172.427	95.867002	ppb	1.171	588.686
135	Ba		122.667	-0.038548	ppb	8.206	193.335
165	Ho		1254973.930		ppb	1.885	1266568.853
159	Tb		1348796.004		ppb	0.932	1368449.589
203	Tl		642179.005	96.411475	ppb	1.940	55.334
207	Pb		1922765.017	103.917919	ppb	1.927	467.338
209	Bi	>	686846.896		ppb	0.657	699638.520

QC Out of Limits

alyte Mass	Out of Limits Message
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Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: ICB
Autosampler Position: 2
Sample Date/Time: Tuesday, March 27, 2018 19:40:00
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\ICB.224
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		36390.023		ppb	0.625	37782.700
9	Be		39.667	0.003067	ppb	9.544	39.333
45	Sc	>	4679087.043		ppb	2.363	4748584.211
10	B		174.002	0.644253	ppb	9.821	112.001
23	Na		203.812	0.572954	ppb	10.889	187.621
25	Mg		441.916	0.258453	ppb	10.670	308.577
27	Al		2244.944	0.016926	ppb	5.246	2178.261
39	K		8244.404	3.611910	ppb	0.871	7934.128
43	Ca		230.479	1.022077	ppb	14.475	220.003
44	Ca		23558.108	-2.704058	ppb	1.489	24391.729
45	Sc-1	>	4679087.043		ppb	2.363	4748584.211
47	Ti		125.334	-0.040600	ppb	29.439	153.335
49	Ti		147.335	-0.033600	ppb	5.139	168.668
51	V		2264.468	-0.024549	ppb	9.621	2529.025
52	Cr		8198.368	-0.013692	ppb	5.180	8430.574
55	Mn		860.041	0.000595	ppb	3.974	865.375
54	Fe		28024.514	0.142113	ppb	5.174	28343.608
57	Fe		10893.857	-0.520811	ppb	1.166	11200.232
59	Co		175.335	0.001315	ppb	13.940	163.335
60	Ni		112.001	0.001769	ppb	4.725	109.334
63	Cu		325.548	-0.002557	ppb	3.465	343.815
65	Cu		163.309	0.003939	ppb	19.633	155.820
71	Ga	>	1341954.735		ppb	2.749	1358577.364
75	As		6971.165	0.049643	ppb	1.245	6980.470
75	As-1		-183.944	0.035290	ppb	29.816	-249.562
78	Se		7174.015	0.088515	ppb	1.182	7226.814
82	Se		18.352	0.035908	ppb	93.368	10.347
88	Sr		164.668	-0.000515	ppb	3.506	177.335
66	Zn		1324.763	0.028181	ppb	1.113	1297.426
68	Zn		1755.503	-0.016946	ppb	3.389	1796.178
95	Mo		398.676	-0.005716	ppb	28.385	419.344
115	In-1	>	1057753.850		ppb	1.351	1061548.531
107	Ag		192.002	0.009319	ppb	8.526	107.334
111	Cd		56.975	0.004786	ppb	22.491	47.387
118	Sn		2474.348	0.263603	ppb	22.041	1125.404
121	Sb		1514.129	0.152455	ppb	17.788	588.686
135	Ba		200.002	0.003991	ppb	9.849	193.335
165	Ho		1241896.183		ppb	1.280	1266568.853
159	Tb		1346543.070		ppb	2.681	1368449.589
203	Tl		66.000	0.001833	ppb	25.891	55.334
207	Pb		526.006	0.003892	ppb	6.282	467.338
209	Bi	>	680558.204		ppb	0.754	699638.520

QC Out of Limits

ıalyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 4
Sample Date/Time: Tuesday, March 27, 2018 19:42:28
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.225
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		35398.471		ppb	2.110	37782.700
9	Be		32638.169	102.022960	ppb	2.174	39.333
45	Sc	>	4660514.917		ppb	2.184	4748584.211
10	B		25701.637	260.172982	ppb	3.098	112.001
23	Na		167657.903	5076.407365	ppb	1.759	187.621
25	Mg		2746906.802	5165.558842	ppb	2.591	308.577
27	Al		594269.557	102.840468	ppb	2.270	2178.261
39	K		618470.151	5172.173643	ppb	2.366	7934.128
43	Ca		72841.568	5275.301732	ppb	4.742	220.003
44	Ca		1196616.784	6743.125289	ppb	3.076	24391.729
45	Sc-1	>	4660514.917		ppb	2.184	4748584.211
47	Ti		64676.723	100.366820	ppb	2.991	153.335
49	Ti		55288.326	99.472174	ppb	2.021	168.668
51	V		948792.329	102.697696	ppb	2.639	2529.025
52	Cr		832054.335	100.755812	ppb	3.421	8430.574
55	Mn		1280452.375	101.998989	ppb	0.918	865.375
54	Fe		3290422.041	5052.703443	ppb	1.268	28343.608
57	Fe		1399948.714	5175.980138	ppb	0.861	11200.232
59	Co		1103856.945	100.888022	ppb	1.634	163.335
60	Ni		237018.341	99.663682	ppb	2.895	109.334
63	Cu		531987.063	99.786117	ppb	2.503	343.815
65	Cu		241349.276	98.860918	ppb	2.362	155.820
71	Ga	>	1318049.025		ppb	2.732	1358577.364
75	As		160054.064	97.944620	ppb	1.420	6980.470
75	As-1		169944.523	97.772210	ppb	0.920	-249.562
78	Se		49214.575	98.891744	ppb	3.586	7226.814
82	Se		21672.333	98.120490	ppb	1.679	10.347
88	Sr		1937415.372	98.489024	ppb	2.590	177.335
66	Zn		155428.607	101.267016	ppb	2.430	1297.426
68	Zn		112440.078	101.115999	ppb	2.703	1796.178
95	Mo		323783.076	100.832590	ppb	1.361	419.344
115	In-1	>	1040025.259		ppb	1.848	1061548.531
107	Ag		918145.232	102.131258	ppb	2.841	107.334
111	Cd		203759.800	102.739239	ppb	1.979	47.387
118	Sn		510883.720	100.773352	ppb	1.031	1125.404
121	Sb		610321.040	101.689265	ppb	0.147	588.686
135	Ba		180950.586	100.469891	ppb	1.044	193.335
165	Ho		1249589.503		ppb	1.503	1266568.853
159	Tb		1342849.120		ppb	0.483	1368449.589
203	Tl		644110.448	100.085620	ppb	1.262	55.334
207	Pb		1805130.315	100.972036	ppb	0.684	467.338
209	Bi	>	663758.219		ppb	1.804	699638.520

QC Out of Limits

alyte Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 1
Sample Date/Time: Tuesday, March 27, 2018 19:47:26
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCB.227
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		36154.761		ppb	1.390	37782.700
9	Be		44.000	**0.019928**	ppb	29.807	39.333
45	Sc	>	4568110.606		ppb	1.673	4748584.211
10	B		154.668	**0.487104**	ppb	1.975	112.001
23	Na		216.193	**1.106252**	ppb	9.561	187.621
25	Mg		342.864	**0.088116**	ppb	15.568	308.577
27	Al		1810.847	**-0.050351**	ppb	0.556	2178.261
39	K		8068.913	**3.768491**	ppb	1.640	7934.128
43	Ca		252.384	**3.031329**	ppb	13.121	220.003
44	Ca		23817.839	**2.113791**	ppb	2.383	24391.729
45	Sc-1	>	4568110.606		ppb	1.673	4748584.211
47	Ti		128.001	**-0.030657**	ppb	11.797	153.335
49	Ti		172.668	**0.019243**	ppb	0.669	168.668
51	V		2234.319	**-0.021910**	ppb	4.855	2529.025
52	Cr		7944.137	**-0.020313**	ppb	2.170	8430.574
55	Mn		780.033	**-0.004248**	ppb	3.333	865.375
54	Fe		27209.794	**-0.073711**	ppb	3.155	28343.608
57	Fe		11184.879	**1.573747**	ppb	2.203	11200.232
59	Co		200.002	**0.004000**	ppb	4.359	163.335
60	Ni		117.334	**0.005274**	ppb	9.841	109.334
63	Cu		374.845	**0.007558**	ppb	7.059	343.815
65	Cu		174.627	**0.009418**	ppb	10.435	155.820
71	Ga	>	1320880.773		ppb	1.436	1358577.364
75	As		6918.323	**0.083751**	ppb	1.884	6980.470
75	As-1		-177.377	**0.037104**	ppb	52.020	-249.562
78	Se		7097.073	**0.165128**	ppb	2.224	7226.814
82	Se		12.153	**0.008648**	ppb	181.767	10.347
88	Sr		147.335	**-0.001260**	ppb	14.515	177.335
66	Zn		1241.418	**-0.013057**	ppb	2.620	1297.426
68	Zn		1768.839	**0.020346**	ppb	2.882	1796.178
95	Mo		425.344	**0.001171**	ppb	22.573	419.344
115	In-1	>	1065284.744		ppb	1.180	1061548.531
107	Ag		142.668	**0.003787**	ppb	11.331	107.334
111	Cd		49.559	**0.000963**	ppb	21.561	47.387
118	Sn		3244.601	**0.407106**	ppb	24.079	1125.404
121	Sb		616.688	**0.004084**	ppb	19.464	588.686
135	Ba		73.334	**-0.065421**	ppb	18.564	193.335
165	Ho		1254505.909		ppb	0.984	1266568.853
159	Tb		1353364.084		ppb	1.718	1368449.589
203	Tl		81.334	**0.004026**	ppb	20.914	55.334
207	Pb		416.670	**-0.002287**	ppb	10.118	467.338
209	Bi	>	687346.658		ppb	1.319	699638.520

QC Out of Limits

ıalyte Mass Out of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCV - 0.5 x STD-1

Autosampler Position: 4

Sample Date/Time: Tuesday, March 27, 2018 20:14:40

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.238

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37375.438		ppb	4.380	37782.700
9	Be		33612.742	106.115463	ppb	3.485	39.333
45	Sc	>	4613879.260		ppb	3.338	4748584.211
10	B		25966.388	265.613817	ppb	3.076	112.001
23	Na		177897.049	5441.692765	ppb	2.871	187.621
25	Mg		2734744.863	5194.699262	ppb	3.260	308.577
27	Al		579654.204	101.319136	ppb	3.163	2178.261
39	K		631615.880	5336.893855	ppb	2.052	7934.128
43	Ca		72106.157	5275.386164	ppb	4.447	220.003
44	Ca		1187106.885	6757.602934	ppb	3.907	24391.729
45	Sc-1	>	4613879.260		ppb	3.338	4748584.211
47	Ti		64813.014	101.604935	ppb	2.903	153.335
49	Ti		56380.368	102.481141	ppb	2.597	168.668
51	V		938916.332	102.664173	ppb	3.297	2529.025
52	Cr		823457.057	100.787851	ppb	3.396	8430.574
55	Mn		1300441.176	104.724465	ppb	2.957	865.375
54	Fe		3296156.205	5117.604828	ppb	2.707	28343.608
57	Fe		1409002.503	5268.188934	ppb	3.373	11200.232
59	Co		1118895.975	103.364160	ppb	2.652	163.335
60	Ni		241937.505	102.838463	ppb	2.919	109.334
63	Cu		534663.542	100.282184	ppb	2.430	343.815
65	Cu		243483.561	99.743642	ppb	3.763	155.820
71	Ga	>	1317596.349		ppb	1.103	1358577.364
75	As		162334.921	99.399923	ppb	1.300	6980.470
75	As-1		171994.671	98.949188	ppb	1.193	-249.562
78	Se		50022.734	100.784007	ppb	0.294	7226.814
82	Se		21884.277	99.082730	ppb	2.083	10.347
88	Sr		1953291.602	99.280362	ppb	2.136	177.335
66	Zn		156135.064	101.759696	ppb	1.997	1297.426
68	Zn		112185.513	100.907495	ppb	2.191	1796.178
95	Mo		328013.476	102.548492	ppb	2.353	419.344
115	In-1	>	1036220.444		ppb	1.169	1061548.531
107	Ag		910895.045	101.708750	ppb	0.823	107.334
111	Cd		203351.555	102.915174	ppb	0.753	47.387
118	Sn		518163.335	102.582707	ppb	0.257	1125.404
121	Sb		615666.311	102.932621	ppb	1.990	588.686
135	Ba		185750.931	103.489810	ppb	2.997	193.335
165	Ho		1248016.062		ppb	1.974	1266568.853
159	Tb		1351111.030		ppb	1.795	1368449.589
203	Tl		657924.201	100.411268	ppb	2.379	55.334
207	Pb		1812034.890	99.547251	ppb	2.114	467.338
209	Bi	>	675721.763		ppb	1.759	699638.520

QC Out of Limits

Analyte	Mass	Out of Limits Message
a	44	

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCB

Autosampler Position: 1

Sample Date/Time: Tuesday, March 27, 2018 20:19:37

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\CCB.240

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	37098.547		ppb	0.989	37782.700
9	Be	|	46.000	**0.023503**	ppb	2.174	39.333
45	Sc	|>	4650762.759		ppb	1.741	4748584.211
10	B	⌊	178.002	**0.695033**	ppb	6.256	112.001
23	Na	⌈	176.192	**-0.226128**	ppb	19.347	187.621
25	Mg	|	311.434	**0.017458**	ppb	10.216	308.577
27	Al	|	2050.232	**-0.014669**	ppb	7.148	2178.261
39	K	|	8285.107	**4.372056**	ppb	0.773	7934.128
43	Ca	|	200.955	**-1.059952**	ppb	4.993	220.003
44	Ca	|	23374.775	**-2.930371**	ppb	0.693	24391.729
45	Sc-1	|>	4650762.759		ppb	1.741	4748584.211
47	Ti	|	150.668	**0.001064**	ppb	11.053	153.335
49	Ti	|	158.668	**-0.010949**	ppb	23.728	168.668
51	V	|	2341.142	**-0.014733**	ppb	16.488	2529.025
52	Cr	|	8080.259	**-0.021690**	ppb	3.314	8430.574
55	Mn	|	856.707	**0.000790**	ppb	5.571	865.375
54	Fe	|	27046.794	**-1.088295**	ppb	2.205	28343.608
57	Fe	|	10915.216	**-0.189011**	ppb	1.174	11200.232
59	Co	|	180.002	**0.001813**	ppb	12.522	163.335
60	Ni	⌊	140.001	**0.013930**	ppb	7.559	109.334
63	Cu	⌈	357.854	**0.004472**	ppb	7.015	343.815
65	Cu	|	148.502	**-0.001215**	ppb	4.788	155.820
71	Ga	|>	1321055.254		ppb	1.775	1358577.364
75	As	|	6954.328	**0.108110**	ppb	2.400	6980.470
75	As-1	|	-193.641	**0.028419**	ppb	28.100	-249.562
78	Se	|	7153.776	**0.301504**	ppb	1.687	7226.814
82	Se	|	13.628	**0.016226**	ppb	97.767	10.347
88	Sr	|	162.668	**-0.000485**	ppb	9.550	177.335
66	Zn	|	1406.109	**0.094781**	ppb	4.006	1297.426
68	Zn	⌊	1855.523	**0.099471**	ppb	1.808	1796.178
95	Mo	⌈	396.009	**-0.005928**	ppb	18.210	419.344
115	In-1	|>	1050705.788		ppb	2.158	1061548.531
107	Ag	|	146.668	**0.004440**	ppb	10.052	107.334
111	Cd	|	54.841	**0.004026**	ppb	27.392	47.387
118	Sn	|	3507.371	**0.467292**	ppb	25.016	1125.404
121	Sb	|	974.054	**0.064359**	ppb	21.548	588.686
135	Ba	|	76.667	**-0.063007**	ppb	12.868	193.335
165	Ho	|	1229497.201		ppb	2.288	1266568.853
159	Tb	⌊	1328188.982		ppb	1.790	1368449.589
203	Tl	⌈	72.667	**0.002853**	ppb	23.082	55.334
207	Pb	|	418.003	**-0.002063**	ppb	4.856	467.338
209	Bi	⌊>	682673.391		ppb	1.737	699638.520

QC Out of Limits

ıalyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCV - 0.5 x STD-1

Autosampler Position: 4

Sample Date/Time: Tuesday, March 27, 2018 20:46:45

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.251

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	37164.171		ppb	2.336	37782.700
9	Be	|	33195.501	103.469800	ppb	1.053	39.333
45	Sc	|>	4672679.040		ppb	1.090	4748584.211
10	B	⌊	25887.490	261.423512	ppb	2.595	112.001
23	Na	⌈	176654.463	5334.129197	ppb	1.695	187.621
25	Mg	|	2728538.026	5117.955184	ppb	1.846	308.577
27	Al	|	586315.635	101.198201	ppb	1.980	2178.261
39	K	|	623890.063	5202.671184	ppb	1.933	7934.128
43	Ca	|	73081.162	5281.369510	ppb	0.998	220.003
44	Ca	|	1218992.357	6854.792091	ppb	0.586	24391.729
45	Sc-1	|>	4672679.040		ppb	1.090	4748584.211
47	Ti	|	64693.387	100.138354	ppb	1.009	153.335
49	Ti	|	56109.974	100.700351	ppb	1.161	168.668
51	V	|	933512.552	100.785111	ppb	4.004	2529.025
52	Cr	|	828000.168	100.011115	ppb	1.471	8430.574
55	Mn	|	1288216.168	102.301692	ppb	3.809	865.375
54	Fe	|	3333137.823	5104.100633	ppb	0.860	28343.608
57	Fe	|	1395357.596	5143.726125	ppb	3.309	11200.232
59	Co	|	1094788.427	99.752120	ppb	2.761	163.335
60	Ni	⌊	238700.811	100.063324	ppb	2.845	109.334
63	Cu	⌈	528073.782	99.986583	ppb	3.237	343.815
65	Cu	|	238983.055	98.849901	ppb	2.297	155.820
71	Ga	|>	1305136.187		ppb	2.154	1358577.364
75	As	|	160685.346	99.338284	ppb	3.346	6980.470
75	As-1	|	170559.365	99.078406	ppb	3.191	-249.562
78	Se	|	49368.915	100.376269	ppb	1.278	7226.814
82	Se	|	21722.606	99.325115	ppb	2.330	10.347
88	Sr	|	1919621.721	98.539108	ppb	2.270	177.335
66	Zn	|	152613.360	100.391879	ppb	3.511	1297.426
68	Zn	⌊	110011.069	99.862399	ppb	4.209	1796.178
95	Mo	⌈	325339.835	100.935052	ppb	1.321	419.344
115	In-1	|>	1044138.295		ppb	2.220	1061548.531
107	Ag	|	911933.421	101.036867	ppb	3.340	107.334
111	Cd	|	204452.982	102.710804	ppb	1.084	47.387
118	Sn	|	524083.836	102.956080	ppb	2.923	1125.404
121	Sb	|	622439.550	103.294533	ppb	1.490	588.686
135	Ba	|	181200.906	100.237624	ppb	1.315	193.335
165	Ho	|	1269559.192		ppb	2.094	1266568.853
159	Tb	⌊	1352985.707		ppb	0.951	1368449.589
203	Tl	⌈	653490.251	100.450615	ppb	1.964	55.334
207	Pb	|	1837251.192	101.671391	ppb	1.607	467.338
209	Bi	⌊>	670829.359		ppb	0.701	699638.520

QC Out of Limits

alyte Mass	Out of Limits Message
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Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCB
Autosampler Position: 1
Sample Date/Time: Tuesday, March 27, 2018 20:51:42
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCB.253
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37857.004		ppb	1.434	37782.700
9	Be		38.667	0.001483	ppb	12.222	39.333
45	Sc	>	4621799.630		ppb	2.990	4748584.211
10	B		168.668	0.612984	ppb	2.738	112.001
23	Na		164.763	-0.553780	ppb	23.544	187.621
25	Mg		427.629	0.241760	ppb	20.380	308.577
27	Al		2126.249	0.001328	ppb	4.505	2178.261
39	K		8118.291	3.392066	ppb	2.429	7934.128
43	Ca		207.621	-0.533079	ppb	21.860	220.003
44	Ca		23707.067	-0.133997	ppb	1.618	24391.729
45	Sc-1	>	4621799.630		ppb	2.990	4748584.211
47	Ti		141.334	-0.012069	ppb	6.688	153.335
49	Ti		165.335	0.003152	ppb	14.432	168.668
51	V		2383.593	-0.008904	ppb	10.656	2529.025
52	Cr		8060.239	-0.017428	ppb	1.083	8430.574
55	Mn		876.042	0.002742	ppb	4.185	865.375
54	Fe		28241.675	1.044582	ppb	1.778	28343.608
57	Fe		10942.582	0.177954	ppb	0.853	11200.232
59	Co		190.002	0.002853	ppb	4.824	163.335
60	Ni		136.668	0.013113	ppb	24.893	109.334
63	Cu		367.321	0.006291	ppb	12.609	343.815
65	Cu		171.220	0.008042	ppb	15.437	155.820
71	Ga	>	1320077.086		ppb	1.029	1358577.364
75	As		7021.470	0.152750	ppb	1.666	6980.470
75	As-1		-181.726	0.034580	ppb	36.901	-249.562
78	Se		7227.411	0.482359	ppb	1.469	7226.814
82	Se		20.357	0.046143	ppb	69.847	10.347
88	Sr		160.668	-0.000593	ppb	9.669	177.335
66	Zn		1481.454	0.144814	ppb	2.728	1297.426
68	Zn		1814.848	0.063231	ppb	4.346	1796.178
95	Mo		500.014	0.029550	ppb	21.825	419.344
115	In-1	>	1029626.883		ppb	1.864	1061548.531
107	Ag		142.001	0.004240	ppb	11.268	107.334
111	Cd		22.171	-0.012113	ppb	10.593	47.387
118	Sn		4467.808	0.675066	ppb	24.527	1125.404
121	Sb		2094.247	0.256775	ppb	18.850	588.686
135	Ba		79.334	-0.060643	ppb	25.252	193.335
165	Ho		1261117.706		ppb	1.572	1266568.853
159	Tb		1343752.764		ppb	2.005	1368449.589
203	Tl		93.334	0.005677	ppb	13.093	55.334
207	Pb		408.003	-0.003047	ppb	7.254	467.338
209	Bi	>	695938.628		ppb	1.550	699638.520

QC Out of Limits

alyte MassOut of Limits Message

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: CCV - 0.5 x STD-1
Autosampler Position: 4
Sample Date/Time: Tuesday, March 27, 2018 21:18:53
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.264
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38953.309		ppb	2.445	37782.700
9	Be		34363.187	105.435760	ppb	2.687	39.333
45	Sc	>	4747854.103		ppb	3.195	4748584.211
10	B		26647.709	264.880884	ppb	4.106	112.001
23	Na		180831.256	5377.908260	ppb	2.852	187.621
25	Mg		2761963.691	5101.873120	ppb	1.338	308.577
27	Al		597848.334	101.619260	ppb	2.468	2178.261
39	K		638636.539	5246.078435	ppb	4.303	7934.128
43	Ca		73740.858	5247.132244	ppb	2.610	220.003
44	Ca		1201104.346	6645.759483	ppb	2.686	24391.729
45	Sc-1	>	4747854.103		ppb	3.195	4748584.211
47	Ti		65428.657	99.702831	ppb	1.816	153.335
49	Ti		55637.929	98.236208	ppb	4.127	168.668
51	V		929420.793	98.764940	ppb	3.248	2529.025
52	Cr		818077.587	97.269493	ppb	4.071	8430.574
55	Mn		1302538.056	101.908365	ppb	4.628	865.375
54	Fe		3301144.788	4978.475984	ppb	4.272	28343.608
57	Fe		1391591.142	5052.993915	ppb	4.263	11200.232
59	Co		1112890.897	99.908893	ppb	4.504	163.335
60	Ni		242197.996	100.041043	ppb	3.198	109.334
63	Cu		536061.490	99.950601	ppb	3.469	343.815
65	Cu		241147.404	98.211127	ppb	3.056	155.820
71	Ga	>	1325754.929		ppb	1.783	1358577.364
75	As		162334.458	98.763121	ppb	1.724	6980.470
75	As-1		172709.866	98.747527	ppb	1.718	-249.562
78	Se		50444.436	101.049506	ppb	2.504	7226.814
82	Se		22300.609	100.339818	ppb	2.549	10.347
88	Sr		1976858.871	99.841794	ppb	2.810	177.335
66	Zn		155630.449	100.798311	ppb	3.300	1297.426
68	Zn		112524.239	100.598023	ppb	1.678	1796.178
95	Mo		330743.496	102.096010	ppb	2.177	419.344
115	In-1	>	1049462.279		ppb	2.591	1061548.531
107	Ag		913409.545	100.693286	ppb	2.642	107.334
111	Cd		203824.629	101.843280	ppb	2.913	47.387
118	Sn		533015.631	104.171109	ppb	3.944	1125.404
121	Sb		618973.113	102.189971	ppb	2.081	588.686
135	Ba		178915.756	98.416567	ppb	3.804	193.335
165	Ho		1250643.446		ppb	2.497	1266568.853
159	Tb		1347608.564		ppb	1.699	1368449.589
203	Tl		662764.147	99.541012	ppb	1.808	55.334
207	Pb		1859137.055	100.481535	ppb	2.032	467.338
209	Bi	>	686939.243		ppb	2.675	699638.520

QC Out of Limits

alyte Mass	Out of Limits Message
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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: CCB

Autosampler Position: 1

Sample Date/Time: Tuesday, March 27, 2018 21:23:49

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\CCB.266

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		38773.619		ppb	4.441	37782.700
9	Be		39.667	0.001880	ppb	3.851	39.333
45	Sc	>	4722143.867		ppb	3.501	4748584.211
10	B		165.335	0.536194	ppb	18.118	112.001
23	Na		171.430	-0.445875	ppb	6.009	187.621
25	Mg		357.150	0.092899	ppb	6.350	308.577
27	Al		2059.567	-0.018334	ppb	5.546	2178.261
39	K		8230.392	2.875259	ppb	2.047	7934.128
43	Ca		218.098	-0.051085	ppb	4.601	220.003
44	Ca		23394.829	-4.779533	ppb	1.241	24391.729
45	Sc-1	>	4722143.867		ppb	3.501	4748584.211
47	Ti		144.001	-0.012922	ppb	21.382	153.335
49	Ti		174.668	0.013072	ppb	6.902	168.668
51	V		2428.795	-0.008696	ppb	8.927	2529.025
52	Cr		8169.676	-0.024557	ppb	5.408	8430.574
55	Mn		852.040	-0.000461	ppb	10.329	865.375
54	Fe		28120.909	-0.043633	ppb	3.308	28343.608
57	Fe		10669.595	-1.660410	ppb	3.053	11200.232
59	Co		181.335	0.001723	ppb	1.685	163.335
60	Ni		128.668	0.008260	ppb	4.749	109.334
63	Cu		323.281	-0.002691	ppb	5.173	343.815
65	Cu		161.872	0.003649	ppb	10.690	155.820
71	Ga	>	1336591.120		ppb	3.032	1358577.364
75	As		6974.721	0.069274	ppb	3.074	6980.470
75	As-1		-190.421	0.031435	ppb	51.936	-249.562
78	Se		7142.705	0.083513	ppb	2.078	7226.814
82	Se		3.497	-0.028230	ppb	610.613	10.347
88	Sr		217.336	0.002155	ppb	2.958	177.335
66	Zn		1454.783	0.116255	ppb	4.635	1297.426
68	Zn		1866.192	0.090642	ppb	1.034	1796.178
95	Mo		527.349	0.033829	ppb	15.408	419.344
115	In-1	>	1056358.658		ppb	2.510	1061548.531
107	Ag		171.335	0.007073	ppb	10.528	107.334
111	Cd		34.223	-0.006331	ppb	32.921	47.387
118	Sn		4403.785	0.638417	ppb	27.104	1125.404
121	Sb		1506.795	0.151105	ppb	20.193	588.686
135	Ba		84.667	-0.058979	ppb	17.412	193.335
165	Ho		1269743.399		ppb	1.185	1266568.853
159	Tb		1349727.122		ppb	1.873	1368449.589
203	Tl		108.667	0.007856	ppb	4.632	55.334
207	Pb		428.670	-0.002067	ppb	7.382	467.338
209	Bi	>	700754.881		ppb	2.772	699638.520

QC Out of Limits

alyte MassOut of Limits Message

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EPA 200.8 ICP/MS Metals

Filtered

SAMPLE DATA

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:56
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-1.icp

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0006S005**

LCS/MB BATCH:	180327LA3F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA3	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000147	1.00	ND	0.00100	
Copper	0.000901	1.00	0.000901	0.00100	J
Lead	0.000147	1.00	0.000147	0.00100	J

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-f-1

Autosampler Position: 420

Sample Date/Time: Tuesday, March 27, 2018 20:56:39

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-f-1.255

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	37523.665		ppb	3.114	37782.700
9	Be	|	43.000	0.016259	ppb	27.418	39.333
45	Sc	|>	4598410.094		ppb	2.935	4748584.211
10	B	⌊	898.044	8.148594	ppb	4.677	112.001
23	Na	⌈	14706.176	446.310684	ppb	2.421	187.621
25	Mg	|	183806.054	349.804456	ppb	4.726	308.577
27	Al	|	233149.988	40.660089	ppb	5.322	2178.261
39	K	|	121740.965	978.886223	ppb	3.280	7934.128
43	Ca	|	21956.007	1601.839302	ppb	1.068	220.003
44	Ca	|	380083.939	2077.699491	ppb	3.148	24391.729
45	Sc-1	|>	4598410.094		ppb	2.935	4748584.211
47	Ti	|	1350.101	1.897169	ppb	11.525	153.335
49	Ti	|	971.386	1.475325	ppb	12.426	168.668
51	V	|	12116.652	1.064214	ppb	6.188	2529.025
52	Cr	|	9115.909	0.118734	ppb	4.823	8430.574
55	Mn	|	11688.178	0.876656	ppb	2.238	865.375
54	Fe	|	42386.561	23.501441	ppb	3.535	28343.608
57	Fe	|	20267.904	35.628990	ppb	1.187	11200.232
59	Co	|	464.012	0.028310	ppb	6.437	163.335
60	Ni	⌊	994.721	0.378965	ppb	5.299	109.334
63	Cu	⌈	5166.847	0.903785	ppb	1.713	343.815
65	Cu	|	2358.844	0.901330	ppb	4.532	155.820
71	Ga	|>	1322343.103		ppb	2.037	1358577.364
75	As	|	7380.805	0.375009	ppb	0.931	6980.470
75	As-1	|	201.681	0.255100	ppb	54.113	-249.562
78	Se	|	7212.257	0.420967	ppb	0.751	7226.814
82	Se	|	23.654	0.062465	ppb	137.341	10.347
88	Sr	|	111476.190	5.638684	ppb	2.149	177.335
66	Zn	|	6632.419	3.517049	ppb	1.434	1297.426
68	Zn	⌊	5472.314	3.389664	ppb	3.292	1796.178
95	Mo	⌈	816.704	0.125375	ppb	13.158	419.344
115	In-1	|>	1044224.641		ppb	3.017	1061548.531
107	Ag	|	124.001	0.002080	ppb	12.802	107.334
111	Cd	|	75.986	0.014698	ppb	23.995	47.387
118	Sn	|	1896.201	0.154534	ppb	16.095	1125.404
121	Sb	|	1278.758	0.115748	ppb	17.705	588.686
135	Ba	|	4654.525	2.470916	ppb	3.240	193.335
165	Ho	|	1250693.934		ppb	1.815	1266568.853
159	Tb	⌊	1348849.166		ppb	2.085	1368449.589
203	Tl	⌈	99.334	0.006921	ppb	9.300	55.334
207	Pb	|	3141.544	0.146874	ppb	1.307	467.338
209	Bi	⌊>	679493.715		ppb	1.426	699638.520

QC Out of Limits

Analyte Mass Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:54
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-2.icp

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0007S011**

LCS/MB BATCH:	180327LA3F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA3	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.00000519	1.00	ND	0.00100	
Copper	0.000896	1.00	0.000896	0.00100	J
Lead	0.000148	1.00	0.000148	0.00100	J

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-f-2

Autosampler Position: 419

Sample Date/Time: Tuesday, March 27, 2018 20:54:11

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-f-2 .254

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37427.254		ppb	2.629	37782.700
9	Be		47.000	0.027912	ppb	9.274	39.333
45	Sc	>	4609087.925		ppb	3.447	4748584.211
10	B		907.379	8.220971	ppb	4.673	112.001
23	Na		15136.418	458.442887	ppb	4.569	187.621
25	Mg		192438.295	365.515363	ppb	3.787	308.577
27	Al		240503.266	41.865045	ppb	3.257	2178.261
39	K		121226.636	972.385303	ppb	2.688	7934.128
43	Ca		23264.020	1694.426029	ppb	1.715	220.003
44	Ca		400324.977	2190.505145	ppb	3.110	24391.729
45	Sc-1	>	4609087.925		ppb	3.447	4748584.211
47	Ti		1325.430	1.849519	ppb	8.743	153.335
49	Ti		1040.063	1.590353	ppb	28.271	168.668
51	V		11668.796	1.011506	ppb	2.896	2529.025
52	Cr		9401.528	0.151065	ppb	2.967	8430.574
55	Mn		11486.592	0.858544	ppb	3.555	865.375
54	Fe		44785.416	27.116744	ppb	3.693	28343.608
57	Fe		20843.878	37.641517	ppb	2.432	11200.232
59	Co		458.678	0.027763	ppb	2.803	163.335
60	Ni		1045.394	0.400224	ppb	5.690	109.334
63	Cu		5276.598	0.941349	ppb	4.336	343.815
65	Cu		2304.966	0.896336	ppb	0.635	155.820
71	Ga	>	1299717.243		ppb	2.500	1358577.364
75	As		7166.710	0.319113	ppb	2.300	6980.470
75	As-1		157.411	0.231014	ppb	69.179	-249.562
78	Se		7019.186	0.257831	ppb	1.820	7226.814
82	Se		14.951	0.022584	ppb	198.958	10.347
88	Sr		118249.177	6.088585	ppb	2.897	177.335
66	Zn		6842.576	3.731314	ppb	3.218	1297.426
68	Zn		5681.777	3.669519	ppb	4.580	1796.178
95	Mo		854.041	0.135306	ppb	16.868	419.344
115	In-1	>	1049215.375		ppb	4.164	1061548.531
107	Ag		127.334	0.002343	ppb	16.120	107.334
111	Cd		57.336	0.005186	ppb	33.194	47.387
118	Sn		2763.104	0.321788	ppb	24.699	1125.404
121	Sb		1798.848	0.200456	ppb	17.165	588.686
135	Ba		5378.925	2.859416	ppb	2.222	193.335
165	Ho		1251915.612		ppb	2.205	1266568.853
159	Tb		1347090.847		ppb	2.287	1368449.589
203	Tl		102.667	0.007328	ppb	9.206	55.334
207	Pb		3178.211	0.147652	ppb	3.285	467.338
209	Bi	>	684199.253		ppb	1.299	699638.520

QC Out of Limits

alyte Mass Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:59
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-3.icp

 # 3 **CLIENT SAMPLE NUMBER: EVBMP0002S022**

LCS/MB BATCH:	180327LA3F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA3	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000239	1.00	ND	0.00100	
Copper	0.00520	1.00	0.00520	0.00100	
Lead	0.000727	1.00	0.000727	0.00100	J

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1974-f-3
Autosampler Position: 421
Sample Date/Time: Tuesday, March 27, 2018 20:59:06
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1974-f-3.256
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	38530.294		ppb	5.236	37782.700
9	Be	|	43.667	0.017930	ppb	25.121	39.333
45	Sc	|>	4623005.612		ppb	4.091	4748584.211
10	B	⌊	773.366	6.797755	ppb	8.855	112.001
23	Na	⌈	44464.774	1354.971441	ppb	3.857	187.621
25	Mg	|	238844.062	452.317768	ppb	4.098	308.577
27	Al	|	246259.518	42.749251	ppb	3.545	2178.261
39	K	|	102614.993	810.491428	ppb	5.388	7934.128
43	Ca	|	34294.133	2496.975992	ppb	3.282	220.003
44	Ca	|	588382.309	3274.882476	ppb	2.639	24391.729
45	Sc-1	|>	4623005.612		ppb	4.091	4748584.211
47	Ti	|	1509.459	2.130789	ppb	9.212	153.335
49	Ti	|	1346.101	2.151988	ppb	13.397	168.668
51	V	|	27404.929	2.730386	ppb	5.286	2529.025
52	Cr	|	11050.722	0.350939	ppb	4.519	8430.574
55	Mn	|	24237.636	1.882791	ppb	4.064	865.375
54	Fe	|	44326.247	26.233238	ppb	4.945	28343.608
57	Fe	|	22007.294	41.839751	ppb	3.478	11200.232
59	Co	|	570.018	0.037847	ppb	4.912	163.335
60	Ni	⌊	3529.353	1.453841	ppb	4.720	109.334
63	Cu	⌈	28383.414	5.295949	ppb	2.386	343.815
65	Cu	|	12765.965	5.200955	ppb	3.816	155.820
71	Ga	|>	1310002.201		ppb	1.724	1358577.364
75	As	|	7522.918	0.510239	ppb	0.687	6980.470
75	As-1	|	557.131	0.461000	ppb	11.293	-249.562
78	Se	|	7015.891	0.116264	ppb	0.955	7226.814
82	Se	|	29.628	0.089596	ppb	58.226	10.347
88	Sr	|	223392.927	11.414992	ppb	2.172	177.335
66	Zn	|	20972.845	13.031428	ppb	2.896	1297.426
68	Zn	⌊	15475.163	12.629972	ppb	1.872	1796.178
95	Mo	⌈	1344.099	0.289921	ppb	4.362	419.344
115	In-1	|>	1042616.324		ppb	1.975	1061548.531
107	Ag	|	122.001	0.001868	ppb	17.272	107.334
111	Cd	|	94.043	0.023883	ppb	22.900	47.387
118	Sn	|	1538.800	0.084959	ppb	18.980	1125.404
121	Sb	|	1780.174	0.199880	ppb	2.939	588.686
135	Ba	|	7735.960	4.182774	ppb	3.961	193.335
165	Ho	|	1254550.437		ppb	3.705	1266568.853
159	Tb	⌊	1351551.606		ppb	3.307	1368449.589
203	Tl	⌈	88.667	0.005351	ppb	19.184	55.334
207	Pb	|	13689.291	0.726789	ppb	3.112	467.338
209	Bi	⌊>	676493.542		ppb	3.888	699638.520

QC Out of Limits

Analyte MassOut of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 21:01
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-4.icp

 # 4 **CLIENT SAMPLE NUMBER: EVBMP0007S010**

LCS/MB BATCH:	180327LA3F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA3	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000228	1.00	ND	0.00100	
Copper	0.00169	1.00	0.00169	0.00100	
Lead	0.000276	1.00	0.000276	0.00100	J

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-f-4

Autosampler Position: 422

Sample Date/Time: Tuesday, March 27, 2018 21:01:34

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-f-4.257

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	38682.190		ppb	3.508	37782.700
9	Be	|	45.667	0.022050	ppb	23.415	39.333
45	Sc	|>	4646864.503		ppb	3.329	4748584.211
10	B	⌊	1612.143	15.331874	ppb	3.939	112.001
23	Na	⌈	44247.594	1341.529666	ppb	4.930	187.621
25	Mg	|	321544.833	606.381737	ppb	2.818	308.577
27	Al	|	395970.047	68.638068	ppb	2.055	2178.261
39	K	|	287868.404	2380.743857	ppb	2.414	7934.128
43	Ca	|	47518.179	3449.381585	ppb	1.854	220.003
44	Ca	|	812495.116	4549.840909	ppb	2.421	24391.729
45	Sc-1	|>	4646864.503		ppb	3.329	4748584.211
47	Ti	|	2784.431	4.122740	ppb	12.465	153.335
49	Ti	|	1982.884	3.286540	ppb	7.466	168.668
51	V	|	15702.342	1.440068	ppb	4.925	2529.025
52	Cr	|	10992.644	0.337198	ppb	2.220	8430.574
55	Mn	|	12997.961	0.971557	ppb	3.764	865.375
54	Fe	|	77583.225	77.464549	ppb	5.031	28343.608
57	Fe	|	36378.017	95.096576	ppb	3.035	11200.232
59	Co	|	738.030	0.053018	ppb	3.297	163.335
60	Ni	⌊	2282.287	0.917961	ppb	2.061	109.334
63	Cu	⌈	9080.775	1.647567	ppb	2.783	343.815
65	Cu	|	4255.608	1.688580	ppb	0.950	155.820
71	Ga	|>	1313611.062		ppb	2.280	1358577.364
75	As	|	11555.671	3.081419	ppb	1.328	6980.470
75	As-1	|	4459.104	2.706802	ppb	6.607	-249.562
78	Se	|	7111.358	0.298346	ppb	0.730	7226.814
82	Se	|	16.919	0.029177	ppb	197.358	10.347
88	Sr	|	277899.662	14.166219	ppb	2.264	177.335
66	Zn	|	8854.310	5.009979	ppb	1.333	1297.426
68	Zn	⌊	7302.266	5.100862	ppb	2.221	1796.178
95	Mo	⌈	1492.123	0.338078	ppb	4.540	419.344
115	In-1	|>	1038010.576		ppb	2.212	1061548.531
107	Ag	|	156.668	0.005740	ppb	12.267	107.334
111	Cd	|	91.483	0.022804	ppb	11.184	47.387
118	Sn	|	1425.448	0.064750	ppb	19.155	1125.404
121	Sb	|	1474.121	0.150415	ppb	11.904	588.686
135	Ba	|	10386.602	5.681837	ppb	3.773	193.335
165	Ho	|	1240304.565		ppb	2.848	1266568.853
159	Tb	⌊	1336886.997		ppb	1.288	1368449.589
203	Tl	⌈	66.667	0.001886	ppb	12.124	55.334
207	Pb	|	5565.985	0.276446	ppb	3.261	467.338
209	Bi	⌊>	686208.337		ppb	2.982	699638.520

QC Out of Limits

Analyte Mass Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 21:04
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-5.icp

 # 5 **CLIENT SAMPLE NUMBER: EVBMP0008S013**

LCS/MB BATCH:	180327LA3F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA3	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.0000545	1.00	ND	0.00100	
Copper	0.00128	1.00	0.00128	0.00100	
Lead	0.000160	1.00	0.000160	0.00100	J

Return to Contents

Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1974-f-5
Autosampler Position: 423
Sample Date/Time: Tuesday, March 27, 2018 21:04:02
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1974-f-5.258
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		40578.793		ppb	4.005	37782.700
9	Be		43.667	0.011955	ppb	3.498	39.333
45	Sc	>	4810447.838		ppb	5.047	4748584.211
10	B		9892.050	96.546051	ppb	3.311	112.001
23	Na		439370.607	12924.137190	ppb	2.882	187.621
25	Mg		364115.466	663.972621	ppb	1.485	308.577
27	Al		1333126.106	224.205619	ppb	2.200	2178.261
39	K		270989.113	2162.374381	ppb	3.314	7934.128
43	Ca		107360.721	7555.634836	ppb	0.657	220.003
44	Ca		1839664.027	10123.341971	ppb	2.117	24391.729
45	Sc-1	>	4810447.838		ppb	5.047	4748584.211
47	Ti		10576.182	15.689289	ppb	8.996	153.335
49	Ti		4148.951	6.981198	ppb	8.858	168.668
51	V		27048.610	2.576006	ppb	5.084	2529.025
52	Cr		10899.874	0.280453	ppb	4.908	8430.574
55	Mn		23658.783	1.762420	ppb	4.302	865.375
54	Fe		82307.034	80.665835	ppb	3.717	28343.608
57	Fe		41219.433	108.276744	ppb	5.641	11200.232
59	Co		792.035	0.055532	ppb	3.341	163.335
60	Ni		1988.218	0.765399	ppb	3.196	109.334
63	Cu		7482.028	1.345459	ppb	2.064	343.815
65	Cu		3252.794	1.275059	ppb	3.847	155.820
71	Ga	>	1314129.194		ppb	2.006	1358577.364
75	As		32414.618	16.442981	ppb	1.738	6980.470
75	As-1		25359.620	14.746749	ppb	1.969	-249.562
78	Se		7208.162	0.517254	ppb	1.533	7226.814
82	Se		67.603	0.261741	ppb	18.138	10.347
88	Sr		500538.816	25.513422	ppb	3.140	177.335
66	Zn		4227.650	1.959395	ppb	2.567	1297.426
68	Zn		4010.885	2.082603	ppb	3.475	1796.178
95	Mo		1301.426	0.283340	ppb	1.643	419.344
115	In-1	>	1025720.190		ppb	1.242	1061548.531
107	Ag		133.334	0.003351	ppb	17.059	107.334
111	Cd		152.227	0.054485	ppb	25.314	47.387
118	Sn		1456.786	0.073744	ppb	17.589	1125.404
121	Sb		1664.153	0.185190	ppb	5.621	588.686
135	Ba		4794.598	2.596440	ppb	3.637	193.335
165	Ho		1272405.778		ppb	2.797	1266568.853
159	Tb		1345152.918		ppb	3.237	1368449.589
203	Tl		160.668	0.016451	ppb	6.141	55.334
207	Pb		3360.246	0.160312	ppb	6.173	467.338
209	Bi	>	673997.126		ppb	2.099	699638.520

QC Out of Limits

Analyte Mass Out of Limits Message

Return to Contents

RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**18-03-1974**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 21:06
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-6.icp

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0009S011**

LCS/MB BATCH:	180327LA3F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180327SA3	FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Cadmium	0.00000858	1.00	ND	0.00100	
Copper	0.00164	1.00	0.00164	0.00100	
Lead	0.000289	1.00	0.000289	0.00100	J

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Quantitative Analysis - Summary Report

Operator Name: UFLE
Sample ID: 18-03-1974-f-6
Autosampler Position: 424
Sample Date/Time: Tuesday, March 27, 2018 21:06:29
Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth
Dataset File: W:\dataset\2018\180327B1\18-03-1974-f-6.259
Initial Sample Quantity (mg):
Sample Prep Volume (mL):
Diluted to Volume (mL):
Aliquot Volume (mL):
Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	40047.480		ppb	4.746	37782.700
9	Be	|	45.000	0.021320	ppb	5.879	39.333
45	Sc	|>	4624257.226		ppb	3.884	4748584.211
10	B	⌊	1694.825	16.251365	ppb	8.174	112.001
23	Na	⌈	44019.673	1340.074342	ppb	1.750	187.621
25	Mg	|	323426.873	612.765308	ppb	2.737	308.577
27	Al	|	422121.803	73.568963	ppb	0.960	2178.261
39	K	|	293844.875	2444.157083	ppb	2.642	7934.128
43	Ca	|	48576.305	3541.496759	ppb	4.860	220.003
44	Ca	|	821574.582	4625.223583	ppb	3.817	24391.729
45	Sc-1	|>	4624257.226		ppb	3.884	4748584.211
47	Ti	|	3243.252	4.848801	ppb	13.029	153.335
49	Ti	|	1880.197	3.136091	ppb	13.523	168.668
51	V	|	15334.000	1.408438	ppb	3.147	2529.025
52	Cr	|	10678.273	0.304781	ppb	3.576	8430.574
55	Mn	|	15337.596	1.165109	ppb	1.473	865.375
54	Fe	|	78532.326	79.589023	ppb	1.652	28343.608
57	Fe	|	37226.800	98.960879	ppb	3.685	11200.232
59	Co	|	696.027	0.049543	ppb	6.419	163.335
60	Ni	⌊	2343.636	0.949686	ppb	3.454	109.334
63	Cu	⌈	9351.836	1.660857	ppb	4.555	343.815
65	Cu	|	4217.721	1.636058	ppb	0.803	155.820
71	Ga	|>	1342181.915		ppb	2.498	1358577.364
75	As	|	11461.270	2.865614	ppb	1.258	6980.470
75	As-1	|	4480.017	2.664704	ppb	4.699	-249.562
78	Se	|	6997.251	-0.320976	ppb	1.540	7226.814
82	Se	|	17.029	0.026792	ppb	305.420	10.347
88	Sr	|	276940.883	13.816308	ppb	1.423	177.335
66	Zn	|	9996.164	5.620974	ppb	3.412	1297.426
68	Zn	⌊	8132.970	5.704458	ppb	1.711	1796.178
95	Mo	⌈	1440.114	0.322768	ppb	2.422	419.344
115	In-1	|>	1035703.427		ppb	1.658	1061548.531
107	Ag	|	130.001	0.002840	ppb	9.608	107.334
111	Cd	|	62.907	0.008581	ppb	49.997	47.387
118	Sn	|	1084.067	-0.003033	ppb	23.710	1125.404
121	Sb	|	1292.759	0.120285	ppb	6.668	588.686
135	Ba	|	10085.596	5.522343	ppb	3.617	193.335
165	Ho	|	1239846.978		ppb	1.126	1266568.853
159	Tb	⌊	1335768.966		ppb	2.903	1368449.589
203	Tl	⌈	74.000	0.002952	ppb	4.681	55.334
207	Pb	|	5813.375	0.289270	ppb	0.846	467.338
209	Bi	⌊>	687314.227		ppb	1.112	699638.520

QC Out of Limits

Analyte Mass Out of Limits Message

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EPA 200.8 ICP/MS Metals

Filtered

QUALITY CONTROL

Method Blank
LCS/LCSD
MS/MSD
PDS/PDSD

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METHOD BLANK ASSOCIATION SUMMARY
FOR METHOD: EPA 200.8

MB SAMPLE ID:	**099-12-900-199**	ANALYZED BY:	598
MB BATCH ID:	180327LA3F	D/T ANALYZED:	2018-03-27 20:36
INSTRUMENT:	ICP/MS 03	REVIEWED BY:	
EXTRACTION:	Filtered	D/T REVIEWED:	
D/T EXTRACTED:	2018-03-27 00:00	MATRIX:	Water

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180327-BA-3__247.icp

CLIENT WORK ORDER: 18-03-1974

S#	RUN TYPE	CLIENT SAMPLE ID	D/T ANALYZED	DATA FILE
1		A2BMP0006S005	2018-03-27 20:56	W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-1.icp
2		A2BMP0007S011	2018-03-27 20:54	W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-2.icp
3		EVBMP0002S022	2018-03-27 20:59	W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-3.icp
4		EVBMP0007S010	2018-03-27 21:01	W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-4.icp
5		EVBMP0008S013	2018-03-27 21:04	W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-5.icp
6		EVBMP0009S011	2018-03-27 21:06	W:\ICPMS-DATA\2018\180327B1\18-03-1974-F-6.icp

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RAW DATA SHEET
FOR METHOD: EPA 200.8

WORK ORDER:	**099-12-900**	ANALYZED BY:	598
INSTRUMENT:	ICP/MS 03	D/T ANALYZED:	2018-03-27 20:36
EXTRACTION :	Filtered	REVIEWED BY:	
D/T EXTRACTED:	2018-03-27 00:00	D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180327-BA-3__247.icp

 # MB **CLIENT SAMPLE NUMBER: Method Blank**

LCS/MB BATCH:	180327LA3F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Antimony	0.000	1.00	ND	0.00100	
Arsenic	0.000	1.00	ND	0.00100	
Barium	0.000	1.00	ND	0.00100	
Beryllium	0.00000610	1.00	ND	0.00100	
Cadmium	0.000	1.00	ND	0.00100	
Chromium	0.000	1.00	ND	0.00100	
Cobalt	0.000	1.00	ND	0.00100	
Copper	0.00000566	1.00	ND	0.00100	
Lead	0.000	1.00	ND	0.00100	
Molybdenum	0.000	1.00	ND	0.00100	
Nickel	0.000	1.00	ND	0.00100	
Selenium	0.000	1.00	ND	0.00100	
Silver	0.000	1.00	ND	0.00100	
Thallium	0.000000253	1.00	ND	0.00100	
Vanadium	0.000	1.00	ND	0.00100	
Zinc	0.00000751	1.00	ND	0.00500	
Aluminum	0.000	1.00	ND	0.0500	
Calcium	0.0000937	1.00	ND	0.100	
Iron	0.000	1.00	ND	0.0500	
Magnesium	0.0000541	1.00	ND	0.100	
Manganese	0.00000315	1.00	ND	0.00100	
Potassium	0.00317	1.00	ND	0.0500	
Sodium	0.000	1.00	ND	0.100	
Strontium	0.000	1.00	ND	0.00100	
Tin	0.000	1.00	ND	0.00100	
Titanium	0.000	1.00	ND	0.00100	
Boron	0.000236	1.00	ND	0.0500	

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LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

LCS SAMPLE ID: **099-12-900-199**
LCS/MB BATCH ID: 180327LA3F
INSTRUMENT: ICP/MS 03

EXTRACTION: Filtered
D/T EXTRACTED: 2018-03-27 00:00

ANALYZED BY: 598
D/T ANALYZED: 2018-03-27 20:39
REVIEWED BY:
D/T REVIEWED:

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180327-LA-3__248.icp

COMPOUND	CONC	CONC REC	%REC	%REC CL	ME CL	STATUS	QUALIFIERS
Antimony	0.1000	0.1040	104	80-120	73-127	PASS	
Arsenic	0.1000	0.09901	99	80-120	73-127	PASS	
Barium	0.1000	0.1059	106	80-120	73-127	PASS	
Beryllium	0.1000	0.1109	111	80-120	73-127	PASS	
Cadmium	0.1000	0.1058	106	80-120	73-127	PASS	
Chromium	0.1000	0.1033	103	80-120	73-127	PASS	
Cobalt	0.1000	0.1009	101	80-120	73-127	PASS	
Copper	0.1000	0.09756	98	80-120	73-127	PASS	
Lead	0.1000	0.1049	105	80-120	73-127	PASS	
Molybdenum	0.1000	0.1040	104	80-120	73-127	PASS	
Nickel	0.1000	0.1025	102	80-120	73-127	PASS	
Selenium	0.1000	0.09994	100	80-120	73-127	PASS	
Silver	0.05000	0.05285	106	80-120	73-127	PASS	
Thallium	0.1000	0.09762	98	80-120	73-127	PASS	
Vanadium	0.1000	0.1025	103	80-120	73-127	PASS	
Zinc	0.1000	0.1036	104	80-120	73-127	PASS	
Aluminum	0.1000	0.1059	106	80-120	73-127	PASS	
Calcium	5.100	5.342	105	80-120	73-127	PASS	
Iron	5.100	5.189	102	80-120	73-127	PASS	
Magnesium	5.100	5.089	100	80-120	73-127	PASS	
Manganese	0.1000	0.1069	107	80-120	73-127	PASS	
Potassium	1.000	1.079	108	80-120	73-127	PASS	
Sodium	1.000	1.117	112	80-120	73-127	PASS	
Strontium	0.1000	0.09931	99	80-120	73-127	PASS	
Tin	0.1000	0.1004	100	80-120	73-127	PASS	
Titanium	0.1000	0.1005	101	80-120	73-127	PASS	
Boron	0.1000	0.1056	106	80-120	73-127	PASS	

Compounds listed in bold are required to be reported.

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LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

LCS SAMPLE ID:	**099-12-900-199**	EXTRACTION:	Filtered	ANALYZED BY:	598
LCS/MB BATCH ID:	180327LA3F	D/T EXTRACTED:	2018-03-27 00:00	D/T ANALYZED:	2018-03-27 20:39
INSTRUMENT:	ICP/MS 03			REVIEWED BY:	
				D/T REVIEWED:	

DATA FILE: W:\ICPMS-DATA\2018\180327B1\180327-LA-3__248.icp

COMPOUND	CONC	CONC REC	%REC	%REC CL	ME CL	STATUS	QUALIFIERS

Total number of LCS compounds: 27
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Compounds listed in bold are required to be reported.

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

SPIKED SAMPLE ID: **18-03-1974-2**
MS/MSD BATCH: 180327SA3
INSTRUMENTS:
SAMPLE: ICP/MS 03
MS: ICP/MS 03
MSD: ICP/MS 03

EXTRACTION: Filtered
D/T EXTRACTED:
SAMPLE: 2018-03-27 00:00
MS: 2018-03-27 00:00
MSD: 2018-03-27 00:00

ANALYZED BY: 598
D/T ANALYZED:
SAMPLE: 2018-03-27 20:54
MS: 2018-03-27 20:41
MSD: 2018-03-27 20:44
REVIEWED BY:
D/T REVIEWED:

COMMENT:

COMPOUND NAME	SAMPLE	INITIAL	FINAL	MS CONC	% MS.REC	MSD CONC	% MSD.REC	% REC CL	RPD	RPD CL	STATUS	QUALIFIERS
Antimony	ND	0.1000	0.1000	0.09207	92	0.09479	95	80-120	3	0-20	PASS	
Arsenic	ND	0.1000	0.1000	0.09861	99	0.1030	103	80-120	4	0-20	PASS	
Barium	0.00285	0.1000	0.1000	0.08844	86	0.09021	87	80-120	2	0-10	PASS	
Beryllium	ND	0.1000	0.1000	0.1056	106	0.1079	108	80-120	2	0-20	PASS	
Cadmium	ND	0.1000	0.1000	0.1039	104	0.1068	107	80-120	3	0-20	PASS	
Chromium	ND	0.1000	0.1000	0.09968	100	0.1012	101	80-120	2	0-20	PASS	
Cobalt	ND	0.1000	0.1000	0.09609	96	0.09885	99	80-120	3	0-20	PASS	
Copper	ND	0.1000	0.1000	0.09776	98	0.09965	100	80-120	2	0-20	PASS	
Lead	ND	0.1000	0.1000	0.1023	102	0.1048	105	80-120	2	0-20	PASS	
Molybdenum	ND	0.1000	0.1000	0.1015	101	0.1034	103	80-120	2	0-20	PASS	
Nickel	ND	0.1000	0.1000	0.09949	99	0.1016	102	80-120	2	0-20	PASS	
Selenium	ND	0.1000	0.1000	0.1031	103	0.1076	108	80-120	4	0-20	PASS	
Silver	ND	0.05000	0.05000	0.04353	87	0.04328	87	80-120	1	0-20	PASS	
Thallium	ND	0.1000	0.1000	0.09488	95	0.09685	97	80-120	2	0-20	PASS	
Vanadium	0.00101	0.1000	0.1000	0.1017	101	0.1018	101	80-120	0	0-20	PASS	
Zinc	ND	0.1000	0.1000	0.1073	107	0.1113	111	80-120	4	0-20	PASS	
Aluminum	**ND**	**0.1000**	**0.1000**	**0.1297**	**130**	**0.1301**	**130**	**80-120**	**0**	**0-20**	**FAIL**	**3F**
Calcium	1.694	5.100	5.100	6.922	102	7.173	107	80-120	4	0-20	PASS	
Iron	ND	5.100	5.100	5.181	102	5.153	101	80-120	1	0-20	PASS	
Magnesium	0.3655	5.100	5.100	5.450	100	5.548	102	80-120	2	0-20	PASS	
Manganese	ND	0.1000	0.1000	0.1048	105	0.1051	105	80-120	0	0-20	PASS	
Potassium	0.9724	1.000	1.000	1.844	87	1.809	84	80-120	2	0-20	PASS	
Sodium	0.4584	1.000	1.000	1.355	90	1.351	89	80-120	0	0-20	PASS	
Strontium	0.00608	0.1000	0.1000	0.1035	97	0.1062	100	80-120	3	0-20	PASS	
Tin	ND	0.1000	0.1000	0.09614	96	0.09810	98	80-120	2	0-20	PASS	
Titanium	0.00159	0.1000	0.1000	0.1005	99	0.1011	99	80-120	1	0-20	PASS	
Boron	ND	0.1000	0.1000	0.09348	93	0.09465	95	80-120	1	0-20	PASS	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 200.8

Data Files:

TYPE	DATA FILE	DATA FILE PATH
MS	18-03-1974-F-2 MS.icp	W:\ICPMS-DATA\2018\180327B1\
MSD	18-03-1974-F-2 MSD.icp	W:\ICPMS-DATA\2018\180327B1\

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 180327-ba-3

Autosampler Position: 415

Sample Date/Time: Tuesday, March 27, 2018 20:36:53

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\180327-ba-3.247

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	39696.560		ppb	3.697	37782.700
9	Be	|	41.000	0.006102	ppb	15.994	39.333
45	Sc	|>	4714243.054		ppb	4.245	4748584.211
10	B	⌊	134.001	0.235687	ppb	17.597	112.001
23	Na	⌈	182.859	-0.101640	ppb	5.634	187.621
25	Mg	|	334.292	0.054078	ppb	9.402	308.577
27	Al	|	2060.233	-0.017038	ppb	1.314	2178.261
39	K	|	8248.407	3.166073	ppb	1.323	7934.128
43	Ca	|	220.003	0.093672	ppb	9.365	220.003
44	Ca	|	23230.600	-5.397847	ppb	1.437	24391.729
45	Sc-1	|>	4714243.054		ppb	4.245	4748584.211
47	Ti	|	134.001	-0.027996	ppb	9.079	153.335
49	Ti	|	146.668	-0.036384	ppb	10.235	168.668
51	V	|	2402.568	-0.011308	ppb	9.152	2529.025
52	Cr	|	8139.646	-0.027599	ppb	3.927	8430.574
55	Mn	|	898.044	0.003146	ppb	1.682	865.375
54	Fe	|	27455.024	-1.020885	ppb	2.419	28343.608
57	Fe	|	10263.124	-3.105962	ppb	0.716	11200.232
59	Co	|	143.334	-0.001699	ppb	4.900	163.335
60	Ni	⌊	106.001	-0.001126	ppb	13.606	109.334
63	Cu	⌈	333.424	-0.001179	ppb	4.392	343.815
65	Cu	|	167.927	0.005660	ppb	1.335	155.820
71	Ga	|>	1342443.609		ppb	2.559	1358577.364
75	As	|	6859.625	-0.020296	ppb	2.611	6980.470
75	As-1	|	-216.981	0.017923	ppb	66.032	-249.562
78	Se	|	7046.633	-0.205848	ppb	2.048	7226.814
82	Se	|	0.336	-0.041618	ppb	11280.144	10.347
88	Sr	|	146.668	-0.001424	ppb	2.083	177.335
66	Zn	|	1292.759	0.007509	ppb	4.388	1297.426
68	Zn	⌊	1694.825	-0.072040	ppb	7.390	1796.178
95	Mo	⌈	216.669	-0.061869	ppb	18.561	419.344
115	In-1	|>	1059888.687		ppb	1.087	1061548.531
107	Ag	|	90.000	-0.001862	ppb	20.367	107.334
111	Cd	|	21.126	-0.012907	ppb	76.351	47.387
118	Sn	|	1048.729	-0.014789	ppb	19.361	1125.404
121	Sb	|	305.339	-0.046259	ppb	19.235	588.686
135	Ba	|	62.000	-0.071417	ppb	20.145	193.335
165	Ho	|	1257812.434		ppb	0.683	1266568.853
159	Tb	⌊	1341725.526		ppb	1.812	1368449.589
203	Tl	⌈	56.667	0.000253	ppb	14.264	55.334
207	Pb	|	366.003	-0.005256	ppb	13.296	467.338
209	Bi	⌊>	695106.149		ppb	1.182	699638.520

QC Out of Limits

ıalyte MassOut of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 180327-la-3

Autosampler Position: 416

Sample Date/Time: Tuesday, March 27, 2018 20:39:21

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\180327-la-3.248

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	39787.613		ppb	3.441	37782.700
9	Be	|	34885.150	**110.870814**	ppb	1.593	39.333
45	Sc	|>	4584023.052		ppb	3.098	4748584.211
10	B	⌊	10322.527	**105.607305**	ppb	2.640	112.001
23	Na	⌈	36412.794	**1117.048281**	ppb	1.828	187.621
25	Mg	|	2661450.696	**5088.810738**	ppb	4.143	308.577
27	Al	|	601796.385	**105.895141**	ppb	2.653	2178.261
39	K	|	133032.409	**1079.421991**	ppb	1.316	7934.128
43	Ca	|	72532.355	**5341.780768**	ppb	4.243	220.003
44	Ca	|	1193766.573	**6842.708211**	ppb	2.745	24391.729
45	Sc-1	|>	4584023.052		ppb	3.098	4748584.211
47	Ti	|	65904.062	**104.020707**	ppb	1.617	153.335
49	Ti	|	54928.126	**100.525882**	ppb	1.302	168.668
51	V	|	931281.023	**102.513671**	ppb	4.613	2529.025
52	Cr	|	838527.134	**103.294178**	ppb	2.828	8430.574
55	Mn	|	1319760.814	**106.939526**	ppb	1.474	865.375
54	Fe	|	3321850.653	**5188.810226**	ppb	1.589	28343.608
57	Fe	|	1405144.529	**5285.858717**	ppb	2.246	11200.232
59	Co	|	1084698.222	**100.855105**	ppb	2.648	163.335
60	Ni	⌊	239603.501	**102.482077**	ppb	2.255	109.334
63	Cu	⌈	524875.646	**98.070370**	ppb	1.391	343.815
65	Cu	|	239058.912	**97.557709**	ppb	2.009	155.820
71	Ga	|>	1323600.649		ppb	2.982	1358577.364
75	As	|	162395.506	**99.014052**	ppb	1.004	6980.470
75	As-1	|	172499.572	**98.820909**	ppb	1.274	-249.562
78	Se	|	49862.482	**99.935855**	ppb	1.807	7226.814
82	Se	|	21987.864	**99.111145**	ppb	1.579	10.347
88	Sr	|	1961742.555	**99.314350**	ppb	1.260	177.335
66	Zn	|	159496.362	**103.571268**	ppb	0.707	1297.426
68	Zn	⌊	114862.451	**102.933999**	ppb	0.882	1796.178
95	Mo	⌈	329627.105	**103.994848**	ppb	0.750	419.344
115	In-1	|>	1026785.910		ppb	1.448	1061548.531
107	Ag	|	469029.824	**52.847476**	ppb	1.355	107.334
111	Cd	|	207138.673	**105.802118**	ppb	1.227	47.387
118	Sn	|	502725.562	**100.438922**	ppb	1.498	1125.404
121	Sb	|	616691.165	**104.048601**	ppb	1.870	588.686
135	Ba	|	188266.567	**105.865844**	ppb	1.874	193.335
165	Ho	|	1268335.644		ppb	1.181	1266568.853
159	Tb	⌊	1357054.085		ppb	1.706	1368449.589
203	Tl	⌈	650556.503	**97.619746**	ppb	2.672	55.334
207	Pb	|	1942591.943	**104.944085**	ppb	1.456	467.338
209	Bi	⌊>	687166.393		ppb	0.651	699638.520

QC Out of Limits

alyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-f-2 ms

Autosampler Position: 417

Sample Date/Time: Tuesday, March 27, 2018 20:41:48

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-f-2 ms.249

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li	⌈	37813.224		ppb	3.912	37782.700
9	Be	|	33271.472	**105.579349**	ppb	2.825	39.333
45	Sc	|>	4595548.331		ppb	4.314	4748584.211
10	B	⌊	9170.626	**93.478156**	ppb	3.130	112.001
23	Na	⌈	44226.368	**1355.269869**	ppb	0.614	187.621
25	Mg	|	2855412.378	**5449.801621**	ppb	2.781	308.577
27	Al	|	737851.605	**129.676927**	ppb	1.940	2178.261
39	K	|	222226.229	**1843.990639**	ppb	2.243	7934.128
43	Ca	|	94153.431	**6921.640203**	ppb	4.861	220.003
44	Ca	|	1571426.307	**9026.111321**	ppb	4.752	24391.729
45	Sc-1	|>	4595548.331		ppb	4.314	4748584.211
47	Ti	|	64224.312	**101.081917**	ppb	4.074	153.335
49	Ti	|	55007.257	**100.472055**	ppb	0.799	168.668
51	V	|	925478.834	**101.697485**	ppb	3.750	2529.025
52	Cr	|	810586.938	**99.677156**	ppb	2.189	8430.574
55	Mn	|	1295404.912	**104.770976**	ppb	1.781	865.375
54	Fe	|	3322554.808	**5180.707612**	ppb	0.671	28343.608
57	Fe	|	1401848.512	**5262.420440**	ppb	0.959	11200.232
59	Co	|	1035805.407	**96.087984**	ppb	0.495	163.335
60	Ni	⌊	232958.722	**99.491479**	ppb	2.931	109.334
63	Cu	⌈	515277.202	**97.645492**	ppb	2.993	343.815
65	Cu	|	236174.218	**97.757467**	ppb	1.535	155.820
71	Ga	|>	1304235.209		ppb	1.528	1358577.364
75	As	|	159440.444	**98.610968**	ppb	0.265	6980.470
75	As-1	|	169523.301	**98.535700**	ppb	0.560	-249.562
78	Se	|	50466.097	**103.062678**	ppb	1.924	7226.814
82	Se	|	22201.671	**101.551673**	ppb	1.275	10.347
88	Sr	|	2015774.119	**103.512477**	ppb	1.366	177.335
66	Zn	|	162934.327	**107.323195**	ppb	2.322	1297.426
68	Zn	⌊	117036.878	**106.439747**	ppb	2.576	1796.178
95	Mo	⌈	321289.739	**101.475170**	ppb	0.682	419.344
115	In-1	|>	1025788.918		ppb	2.051	1061548.531
107	Ag	|	386001.523	**43.530845**	ppb	1.823	107.334
111	Cd	|	203184.820	**103.866945**	ppb	2.505	47.387
118	Sn	|	480788.553	**96.144073**	ppb	1.175	1125.404
121	Sb	|	545055.283	**92.065865**	ppb	0.710	588.686
135	Ba	|	157129.855	**88.440838**	ppb	1.574	193.335
165	Ho	|	1252405.878		ppb	2.290	1266568.853
159	Tb	⌊	1349806.620		ppb	2.243	1368449.589
203	Tl	⌈	627191.153	**94.879228**	ppb	1.887	55.334
207	Pb	|	1879074.506	**102.321656**	ppb	1.375	467.338
209	Bi	⌊>	681790.314		ppb	1.797	699638.520

QC Out of Limits

alyte Mass Out of Limits Message

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Quantitative Analysis - Summary Report

Operator Name: UFLE

Sample ID: 18-03-1974-f-2 msd

Autosampler Position: 418

Sample Date/Time: Tuesday, March 27, 2018 20:44:16

Method File: C:\Elandata\Method\cel\epa 6020\epa_6020_200.8_std.mth

Dataset File: W:\dataset\2018\180327B1\18-03-1974-f-2 msd.250

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Diluted to Volume (mL):

Aliquot Volume (mL):

Instrument Name: ICP-MS-03 US26INS00050

Summary

Mass	Analyte	Interna	Meas. Intens. Mean	Conc. Mean	Report Unit	Meas. Intens. RSD	Blank Intensity
6	Li		37789.760		ppb	2.962	37782.700
9	Be		34392.633	**107.921333**	ppb	2.725	39.333
45	Sc	>	4646597.231		ppb	3.905	4748584.211
10	B		9380.171	**94.654642**	ppb	1.702	112.001
23	Na		44577.609	**1350.621323**	ppb	1.228	187.621
25	Mg		2940215.547	**5547.650595**	ppb	2.758	308.577
27	Al		748803.207	**130.116362**	ppb	2.856	2178.261
39	K		220490.308	**1808.696075**	ppb	2.568	7934.128
43	Ca		98596.814	**7172.808757**	ppb	2.735	220.003
44	Ca		1609045.171	**9148.264101**	ppb	2.279	24391.729
45	Sc-1	>	4646597.231		ppb	3.905	4748584.211
47	Ti		66736.249	**103.890227**	ppb	3.433	153.335
49	Ti		56018.269	**101.085719**	ppb	4.260	168.668
51	V		937130.279	**101.788080**	ppb	2.136	2529.025
52	Cr		833223.346	**101.244485**	ppb	3.111	8430.574
55	Mn		1314599.816	**105.092998**	ppb	1.762	865.375
54	Fe		3343339.754	**5153.114119**	ppb	0.720	28343.608
57	Fe		1420791.805	**5272.903559**	ppb	2.346	11200.232
59	Co		1077926.279	**98.846722**	ppb	1.531	163.335
60	Ni		240761.160	**101.586837**	ppb	2.585	109.334
63	Cu		528238.654	**99.387083**	ppb	2.471	343.815
65	Cu		242500.125	**99.647210**	ppb	1.290	155.820
71	Ga	>	1313919.170		ppb	1.298	1358577.364
75	As		167508.746	**102.994343**	ppb	2.682	6980.470
75	As-1		179048.949	**103.271646**	ppb	3.150	-249.562
78	Se		52792.595	**107.597978**	ppb	2.457	7226.814
82	Se		23587.866	**107.058651**	ppb	3.792	10.347
88	Sr		2083433.271	**106.165468**	ppb	4.053	177.335
66	Zn		170137.068	**111.278611**	ppb	2.041	1297.426
68	Zn		122536.082	**110.669725**	ppb	2.878	1796.178
95	Mo		331567.619	**103.443396**	ppb	2.971	419.344
115	In-1	>	1038090.488		ppb	0.490	1061548.531
107	Ag		388469.366	**43.284638**	ppb	0.833	107.334
111	Cd		211454.048	**106.819184**	ppb	0.694	47.387
118	Sn		496484.175	**98.097962**	ppb	0.821	1125.404
121	Sb		568016.494	**94.788370**	ppb	0.242	588.686
135	Ba		162211.348	**90.211640**	ppb	1.755	193.335
165	Ho		1257258.644		ppb	1.783	1266568.853
159	Tb		1363387.748		ppb	0.903	1368449.589
203	Tl		640046.362	**96.847659**	ppb	1.200	55.334
207	Pb		1923118.535	**104.752934**	ppb	2.549	467.338
209	Bi	>	681545.978		ppb	0.626	699638.520

QC Out of Limits

alyte Mass Out of Limits Message

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EPA 200.8 ICP/MS Metals

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RUN LOGS

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PDS / PDSD M071117C

Dataset Report

Water 0.1 ml → 10 ml
Soil 0.025 ml → 10 ml
Filter 0.025 ml → 10 ml

User Name: UFLE
Instrument Name: ICP/MS 3
Dataset File Path: W:\dataset\2018\180327B1\
Report Date/Time: Wednesday, March 28, 2018 07:31:21

Tuning	MS092817A
Int STD	MS032018B
R.B.	MR031318A
Carrier	MR031318C
Wash Sol.	MR031318D

The Dataset

Analyst	Time and Date	Description	Sample File Name	
SmartTune	09:40:20 Tue 27-Mar-18	solution	W:\dataset\2018\180327B1\Mass Calibration and Resolution.001	
SmartTune	09:42:09 Tue 27-Mar-18		W:\dataset\2018\180327B1\AutoLens.002	
SmartTune	09:57:05 Tue 27-Mar-18	:	W:\dataset\2018\180327B1\Daily Performance Check.003	
598	10:07:46 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.004	
598	10:11:04 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.005	
598	10:13:33 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.006	
598	10:16:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.007	
598	10:18:30 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.008	
598	10:20:58 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.009	
598	10:23:27 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.010	
598	10:25:56 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.011	
598	10:28:25 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.012	
	10:30:54 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.013	
	10:33:22 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.014	
	10:35:52 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.015	
	10:38:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.016	
	10:40:50 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.017	
	10:43:20 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.018	
	10:45:50 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.019	
	10:48:19 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.020	pass
	10:50:47 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.021	
	10:53:16 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICS-A - MS092817B.022	
	10:55:45 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICS-AB - MS092817C.023	
	10:58:12 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.024	
	11:00:41 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.025	
	11:03:10 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.026	
598	11:05:39 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1217x10-3.027	
598	11:08:08 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 ms.028	
	11:10:39 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.029	pass
	11:13:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.030	
	11:15:37 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.031	
598	11:18:08 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 msd.032	
598	11:20:36 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-2 .033	
598	11:23:04 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-f-1.034	
598	11:25:32 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 ms.035	
598	11:28:00 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 msd.036	
598	11:30:28 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-1 .037	
598	11:32:56 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1723-2.038	
	11:35:26 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.039	pass
	11:37:55 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.040	
	11:40:24 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.041	
598	11:49:17 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.042	
598	11:51:45 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1704-f-1 ms.043	
598	11:54:13 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1704-f-1 msd.044	

Reviewed/Assign to Logbook Date: 03-28-18
Analysis: 6020/200.8 Method ID: 996
Logbook Page: 36 Instrument ID: ICP/MS 3

598	19:02:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\LCS 6 hours.213	
	19:04:52 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.214	pass
	19:07:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.215	
	19:09:49 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.216	
598	19:22:35 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.217	
	19:25:03 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.218	
	19:27:30 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.219	
	19:30:00 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV Ca Mg - MS021218D.220	
	19:32:30 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-1 - MS021218B.221	
	19:34:59 Tue 27-Mar-18		W:\dataset\2018\180327B1\Rinse Blank.222	
	19:37:29 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICV-2 - MS021218C.223	
	19:40:00 Tue 27-Mar-18		W:\dataset\2018\180327B1\ICB.224	
	19:42:28 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.225	pass
	19:44:57 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.226	
	19:47:26 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.227	
	19:49:55 Tue 27-Mar-18		W:\dataset\2018\180327B1\1.0 ppb - 0.01 x CCV.228	
598	19:52:25 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2042-1.229	
598	19:54:55 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-ba-2.230	
598	19:57:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-la-2.231	
598	19:59:51 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-1.232	
598	20:02:19 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-2.233	
598	20:04:47 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-2237-3.234	
598	20:07:14 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 ms.235	
598	20:09:43 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 msd.236	
598	20:12:10 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-1 .237	
	20:14:40 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.238	pass
	20:17:08 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.239	
	20:19:37 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.240	
598	20:22:07 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-2.241	
598	20:24:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-3.242	
598	20:27:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-4.243	
598	20:29:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-5.244	
598	20:31:57 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-6.245	
598	20:34:24 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-7.246	
598	20:36:53 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-ba-3.247	
598	20:39:21 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180327-la-3.248	
598	20:41:48 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 ms.249	
598	20:44:16 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 msd.250	
	20:46:45 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.251	pass
	20:49:14 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.252	
	20:51:42 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.253	
598	20:54:11 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-2 .254	
598	20:56:39 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-1.255	
598	20:59:06 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-3.256	
598	21:01:34 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-4.257	
598	21:04:02 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-5.258	
598	21:06:29 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1974-f-6.259	
598	21:08:58 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\autosampler check.260	
598	21:11:27 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-ba-7.261	
598	21:13:55 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\180326-la-7.262	
598	21:16:23 Tue 27-Mar-18	water	W:\dataset\2018\180327B1\18-03-1942-f-1 ms.263	
	21:18:53 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCV - 0.5 x STD-1.264	pass
	21:21:21 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.265	
	21:23:49 Tue 27-Mar-18		W:\dataset\2018\180327B1\CCB.266	
	21:26:16 Tue 27-Mar-18		W:\dataset\2018\180327B1\Blank.267	
	21:28:44 Tue 27-Mar-18		W:\dataset\2018\180327B1\STD-1 - MS021518A.268	

Reviewed/Assign to Logbook Date: 03-28-18
[illegible]: 6020 / 200.8 [illegible]: 776
Logbook Page: 40 [illegible]: ICP/MS3

EPA 200.8 ICP/MS Metals

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PREPARATION LOGS

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Metals Sample Preparation Logbook (Aqueous)

METHOD	MATRIX	EQUIPMENT ID #	REAGENT ID #	STANDARD ID #
☐ EPA 3005A ☐ EPA 200.7	Aqueous	Thermometer NA (CF °C)	HNO_3 MM101778 1.0 mL	Spike 1 M042018B
☐ EPA 3010A ☒ EPA 200.8		Block Digester NA	HCl NA ____ mL	Spike 2 M042018B
☐ EPA 3020A ☐ 5% HNO_3		Pipetter / Dispenser P316/P-032/M0032/P889	(Specify)	Spike 3 MS101618B

BATCH NUMBER	SUPPLY LOT #	ACID PRESERVATION AND FILTRATION	TURBIDITY ANALYSIS
MS/MSD 180327SA3	Digestion Tube 160613	☐ None ☑ Lab Filtered ☐ Lab Preserved	☐ Yes ☐ No ☒ N/A
(Specify)	Filter P76A90840	Book # 22 Page # 17	Book # ____ Page # ____

DIGESTION														
	START			END						SAMPLE		SPIKE STANDARD		
DATE	TIME	TEMP W/O CF (°C)	PREP TECH ID #	TIME	TEMP W/O CF (°C)	PREP TECH ID #	INITIAL pH	ECI ID #	ANALYTE(S)	INITIAL (mL)	FINAL (mL)	1 (µL)	2 (µL)	3 (µL)
03/27/18	NA	NA	1058	NA	NA	1058	>12	MS 18-03-1974-2C	Metals	50	50	50	50	250
"	"	"	"	"	"	"	>2	MSD "	"	"	"	"	"	"
								LCS 180327LA3						
								LCSD / MB 180327BA3						
							>2	18-03-1974-1C						
							>2	" 2C						
							>2	3C						
							>2	4C						
							>2	5C						
							>2	6C						
							>2	18-03-1943-1B						
"	"	"	"	"	"	"	>2	" 2B	"	"	"	"	"	"

COMMENTS:

Acid Preservation and Filtration Logbook

CEL ID #	SAMPLING DATE	INITIAL pH < 2	FILTER AND DIGEST *	FILTER AND PRESERVE **	PRESERVE ONLY	SAMPLE FILTRATION (IF ANY) DATE	LOT # a) FILTER b) DIGESTION TUBE	ACID PRESERVATION (1) 1:1 HNO$_3$; (2) 5-mL/L BrCl; (3) 12-N HCl D = DATE T = TIME	N = NAME L = LOT #	AMOUNT	DIGESTATE FILTRATION (IF ANY) DATE	FILTER LOT #	ANALYST	COMMENTS
18-03-1924-3A	03/20/18	Y (N)			X	~~03/22/18~~ 1058	a) b)	D) 03/22/18 T) 18:00	N) (1) 2 3 L) MR110IATA	1ML			1058	
4A		Y (N)			X		a) b)	D) T)	N) 1 2 3 L)					
18-03-1943-1B	03/22/18	Y (N)		X		03/22/18	a) R7GA90840 b) 160613	D) T)	N) 1 2 3 L)					
2B		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-1979-1C	03/22/18	Y (N)		X		03/22/18	a) R7GA90840 b) 160613	D) 03/22/18 T) 18:00	N) (1) 2 3 L) MR110IATA	1ML			1058	
2C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
3C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
4C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
5C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
6C		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
~~18-03-1943-1E~~		Y N		"			a) b)	D) T)	N) 1 2 3 L)					
18-03-2106-1A	03/22/18	Y (N)		X		03/23/18	a) R7GA90840 b) 160613	D) 03/23/18 T) 16:00	N) (1) 2 3 L) MR110IATA	1ML			1058	
2A		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
3A		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
4A		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
5A		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
6A		Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-2014-1-5D	03/22/18	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-2111-1-5F	03/23/18	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					
18-03-2107-19C	03/23/18	Y (N)		X			a) b)	D) T)	N) 1 2 3 L)					

* FILTER AND DIGEST: If the sample was filtered in the lab and digested immediately, mark **x** in the cell.

** FILTER AND PRESERVE: If the sample was filtered in the lab and preserved prior to digestion, mark **x** in the cell.

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EPA 200.8 ICP/MS Metals

Filtered

STANDARD PREPARATION LOGBOOKS

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
03/10/17	M031017B	ORL.P6	Calib STD	M040816A	0.1ml	1000ppm	20ml	5ppm	Calib blk	R1122160I	03/11/17	598	
	C				0.02ml			1ppm					
	D				5ml			0.2ppm					
	E		ICV		0.1ml			5ppm					
03/20/17	M032017A	6020/200.8	Cal Std #2	M006-041-13	0.5mL	100ppm	25mL	200ppb	2.5mL HNO3	M006-[illegible]	2/20/18	598	
			Cal Std #3	M006-041-14	2.5mL	1000ppm		10ppm					
			BORON	M032017B	1.25mL	100ppm		500ppb					
	M032017B		BORON ICV+Fe - SP	M006-024-04	10mL	1000ppm	100mL	100ppm	DI-WATER	D032017A	3/20/18		
			598 3/20/17 -SP2										
			-Fe										
03/23/17	M032317A	1631	100 ppb STD	M021517A	1mL	10ppm	100mL	100ppb	2mL HCl	Mode: 337-2	04/23/17	1010	
	M032317B		100ppb ICV	M021517B	1mL	10ppm	100mL	100ppb					
	M032317C		100ppt STD	M032317A	1mL	100ppb	100mL	100ppt					
	M032317D		100ppt ICV	M032317B	1mL	100ppb	100mL	100ppt					
	M032317E	1631	5ppb	M032317A	0.5	100ppb	10mL	5ppb					

Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
4/18/17	M041817B	6010/200.7	ICV - Li	M006-38-20	9.01mL	10,000 PPM	100mL	1 PPM	6% HNO_3 5% HCl	M006-38-25 M006-38-24	4/18/18	945	
			- Bi	M006-038-21	0.1mL	1,000 PPM							
			- S	M006-038-19	0.01mL	10,000 PPM							
4/20/17	M042017A	Metals	Ag Std. Spike 2	M006-40-19	5.0mL	1000 PPM	1.0L	50 PPM	100mL HNO_3 DI H_2O	M006-41-22	4/20/18	1030	
			Al Std.	M006-40-14	10.0mL	10000 PPM	1.0L	100 PPM					
			Ba Std.	M006 40-02									
			Boron Std.	M006-40-15									
			Si Std.	M006-40-09									
			Na Std.	M006-39-20	100mL			1000 PPM					
			K Std.	M006 41-03									
	M042017B	Metals	Sb Std. Spike 1	M006 39-23	10.0mL	1000 PPM	1L	100 PPM	100mL HNO_3 DI H_2O	M006 041-22	04/20/18	1030	
			As	M006-038-09									
			Be	M006-39-25									
			Cd	M006-41-05									
			Ca	M006-40-01									

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
04/20/17	M042017B	Metals	Cr Std. Spike	M006-40-21	10mL	10,000ppm	1 L	100ppm	100mL HNO_3 DI H_2O	M006-41-22	04/20/18	1030	
			Co	M006-40-22									
			Cu	M006-39-24									
			Fe	M006-39-11									
			Pb	M006-39-17									
			Mg	M006-39-12									
			Mn	M006-39-19									
			Mo	M006-41-06									
			Ni	M006-40-23									
			P	M006-41-02									
			Se	M006-39-16									
			Sr	M006-39-14									
			TL	M006-39-13									
			Sn	M006-39-21									
			Ti	M006-39-15									

Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
04/20/17	M042017B	Metals	V Std. Spike 1	M006-40-25	10.0mL	10.000 ppm	1L	100ppm	100mL HNO_3 DI H_2O	M006-41-22	04/20/18	1030	
			Zn Std. Spike 1	M006-39-18									
04/25/17	M042517A	1631	10 ppm Std. Hg ~~M042517A~~	M021517A	1.0mL	10ppm	100mL	100ppb	20mL HCl DI H_2O	M006-37-22	05/25/17	1030	
	M042517B		10ppm ICV Hg 04/25/17 ~~M042517B~~	M021517B									
	M042517C		100ppb Std Hg	M042517A	0.1mL	100ppb		100ppt					
	M042517D		100ppb ICV Hg	M042517B									
	M042517E		10~~0~~ppb Std. Hg	M042517A	2mL	100ppb	40mL	5ppb					
04/26/17	M042617A	6010/200.7	ICP-MCS-1 4/28/17	~~M006-41-17~~ ~~M006-41-18~~	15mL	See SOP App. C	1L	See SOP App. C	60mL HNO_3 50mL HCl DI H_2O	M006-41-22 ~~M006-41-23~~ M006-41-24 4/28/17	~~04/26/18~~ 10/13/17	1030	Cal. Std 3 ICP
			ICP-MCS-7	~~M006-41-18~~ ~~M006-41-17~~	15mL								
			ICP-MCS-8	M006-41-16	60mL								
			ICP-MCS-10	M006-38-13	7.5mL								
			ICP-AM-11	M006-41-19	6.0mL								
			Na Std.	M006-41-01	6.0mL	~~1000~~ 935 ppm 4/28/17							
			K Std.	M006-38-16	3.0mL								
			P Std.	M006-40-09	1.2mL								

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
4/27/17	M042717A	6010/200.7	Na [10,000 PPM]	M006-123-23	1 ml	see SOP Apdx C	200 ml	see SOP Apdx C	12 ml HNO3 10 ml HCl	M006-041-22 ~~M006-042-23~~	12/31/17 ~~04/27/18~~ ~~12/13/17~~	935	
			Sn [10,000 PPM]	-16	0.05 ml					M006-~~041~~-24 4/28/17			
			Si [1,000 PPM]	M006-~~039~~ 040-03 935 4/27/17	1.77 ml								
4/27/17	M042717B	1640	100 ppm Se	M006-42-11	0.2759 g	powder	1 L	100 ppm	H2O	N/A	4/27/18	KO	
4/29/17	M042717C	6020/200.8	Internal std Conc.										
			Sc	M006-042-04	100 mL	1000 ppm	500 mL	200 ppm	5 mL HNO3	M006-41-22	3 hr	STr	05/2021
			Li6	M006-042-03	50 mL			100 ppm					11/2021
			Ga	M006-042-05	50 mL								11/2020
			In	M006-13-24	10 mL			20 ppm					02/2018
			Ho	M006-042-07	10 mL								04/2022
			Tb	M006-042-06	10 mL								08/2021
			Bi	M006-042-08	10 mL								04/2022
	M042717D		Internal std	M042717C	5 mL	200 ppm	1 L (3)	0.1-1 ppm	10 mL HNO3				
~~4~~ 5/3/17	M050317A	Hg	100 ppm Hg	M006-36-15	10 mL	1000 ppm	100 mL	100 ppm	5 mL HNO3	M006-41-22	12/26/17	SLB	
	M050317B		1 ppm STD	M050317A	1 mL	100 ppm	100 mL	1 ppm	5 mL HNO3	M006-41-22	6/3/17	SLB	

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL		FINAL		SOLVENT		EXPIR. DATE	PREP BY	COMMENTS
					AMOUNT	CONC.	VOLUME	CONC.	NAME	ID #			
07/07/17	M070717F	Org. Pb.	ICV	M060817H	0.1mL	1000ppm	20mL	5 ppm	Cal BLK	R1122160i	07/08/17	1080	7/7/17 1080
07/11/17	M071117A	6020/200.8	ICV #1 - Sp1	M042017B	0.1 mL	100 ppm	100 mL	100 ppb	1mL HNO3	M006-042-21	04/20/18	776	* 776 7/11/17
			Fe	M006-039-11	0.049mL	10,000 ppm		5 ppm					
	M071117B		ICV #2 - Sp2	M042017A	0.1 mL	100 ppm		100 ppb					
	M071117C		10ppm Spike #1	M042017B	5 mL	100 ppm	50 mL	10 ppm	5mL HNO3 5mL HCl	M006-042-21 M006-042-22			
			#2	M042017A	5 mL								
7/14/17	M071417A	Org. Pb	Cal STD	M060817G	0.2mL	1000ppm	20mL	10ppm	Cal blk	R1122160i	7/15/17	1080	
	B				0.1mL			5ppm					
	C				0.04mL			2ppm					
	D				0.02mL			1 ppm					
	E				5mL			0.2ppm					
	F		ICV	M060817H	0.1mL	1000ppm	20mL	5 ppm	Cal blk	R1122160i			
7/18/17	M071817A	6020/200.8	Cal STD - U	M005-22-14	0.02mL	1000ppm	100 mL	200ppb	1mL HNO3	M006-042-21	03/31/18	776	
	M071817B		ICV - U	M006-039-11	1 mL	10 ppm	100 mL	100 ppb			09/30/17		
07/20/17	M072017A	1631	100ppm STD.	M006-043-07	10mL	100ppm	100mL	10ppm	2 mL HCl	M006-037-22	12/20/17	1030	

Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	092117	E	org. Pb	MP-060/P-015	M060817G	5 mL	R06091701	20ml	0.2 ppm	9/22/17	1080
MS	"	F	"	"	M060817H	0.1 mL	"	"	5 "	"	"
MS	092217	A	1631	P007/P-109/P-030	M072017A	1.0mL	M006-37-22	100mL	100ppb	10/22/17	1030
MS	"	B	"	"	M072017B	1.0mL	"	"	100 ppb	"	"
MS	"	C	"	"	M092217A ~~M082517~~ 9/22/17 1030	100mL	"	"	100ppt	"	"
MS	"	D	"	"	M092217B	100mL	"	"	100ppt	"	"
MS	"	E	"	"	M092217A	500mL	"	10mL	5ppb	"	"
MS	092817	A	6020/200.8	MP-058/MP-056	M006-044-01	0.5 mL	M006-043-08 5mL	500 mL	1.0 ppb	08/30/18	776
MS	"	B	"	"	M006-043-24	5 mL	"	"	~~0.2 - 200~~ ppm	776 9/28/17	"
MS	"	C	"	"	M006-043-24 M006-043-25	5 mL 0.5 mL	"	"	~~0.2 1/200~~ ppm 5 - 20 ppb	"	"
MS	092817	D	Org Pb	MP-060/P-015	M060817G	0.2mL	R06091701	20mL	10 ppm	9/29/17	1080
MS	"	E	"	"	"	0.1	"	"	5	"	"
MS	"	F	"	"	"	0.04	"	"	2	"	"
MS	"	G	"	"	"	0.02	"	"	1	"	"
MS	"	H	"	"	"	5	"	"	0.2	"	"
MS	"	I	"	"	M060817H	0.1	"	"	5	"	"
MS	092917	A	6020/200.8	MP-053/MP-058/MP-056 ~~Cal STD~~	M005-022-14	0.02 mL	M006-043-08 1 mL	100 mL	200 ppb	03/31/18	776
MS	"	B	"	~~Ical~~	M006-044-01	1 mL	"	"	100 ppb	08/30/18	"

776 9/29/17

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Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	100517	A	Org. Pb	MP-060/P015	M060817G	0.2 mL	R0609170 1	20mL	10 ppm	10/10/17	SH
MS		B				0.1 mL			5 ppm		
MS		C				0.04mL			2 ppm		
MS		D				0.02mL			1 ppm		
MS		E				5 mL			0.2 ppm		
MS		F			M060817H	0.1 mL			5 ppm		
MS	100617	A	Org Pb.	MP-060/P015	M060817G	0.2 mL	R0609170 1	20mL	10 ppm	10/7/17	1080
MS		B				0.1 mL			5		
MS		C				0.04mL			2		
MS		D				0.02mL			1		
MS		E				5 mL			0.2		
MS		F			M060817H	0.1 mL			5		
MS	10/0/17	A	6020/200.8	MP-053/MP-058/MP-056	M06-040-I1	10 mL	M06-044-I7 1mL M06-041-I2 1mL	100mL	1000 ppm	10/10/18	776
MS					M06-035-08						
MS					M06-044-19						
MS	101117	A	Org Pb	MP-060/P-015	M060817G	0.2 mL	R0609170 1	20mL	10 ppm	11/12/17	1080
MS		B				0.1mL			5		
MS		C				0.04 mL			2		

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Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	020518	A	6020/200.8	MP-058/P-117	M006-041-13 M006-041-14 M032017B	0.5 mL 2.5 mL 1.25 mL	M006-041-02 2.5	250mL	0.2 ppm 10.2 ppm 0.5 ppm	2/5/18	SJ
MS		B		MP-056/MP-058	M0U0 12 B M006-014-19	0.1 mL 0.045 mL	M006-041-02 1.0	100mL	100 ppb		
MS		C			M042017 A	0.1			100 ppb		
MS		D			MS 101017 A	0.5			5 ppm		
MS		E		P-117	M006-045-16 M006-041-17 M006-094-15	100 mL 10 mL 10 mL	M006-045-DL 10 mL M006-041-N 10	1 L	1000 ppm	4/30/23	
MS	02/21/18	A		MP-058/P-117	M006-045-21 M006-045-22 M032017B	4 mL 20 mL 10 mL	M006-045-DL 20 mL	2 L	0.2 ppm 10.2 ppm 0.5 ppm	2/21/18	SJ
MS		B		MP-056/P-117	M042017B M006-044-15 N	~~2.00 mL~~ 1.0 mL ~~0.05 mL~~ 0.49	M006-045-DL 10 mL	1 L ~~250 mL~~ SJ 2/21/18	100 ppb 5 ppm	4/5/18	
MS		C			M042017 A	1.0 mL ~~[illegible]~~ SJ 2/21/18			100 ppb		
MS		D			MS 101017 A	5 mL		1 L	5 ppm		
MS	~~02/2~~ 021518	A		MP-056/P-117	M006-045-23 M006-045-22 M02~~[illegible]~~18 B	4 mL 20 mL 10 mL	M006-045-N 20 mL	2 L	0.2 ppm 10.2 ppm 0.5 ppm	1/30/19	SJ
MS	021718	A	Org Pb	P115/P-015	MS121417A	0.2 mL	MK121417P	20mL	10 ppm	2/18/19	LDO
MS		B				0.1			5		
MS		C				0.04			2		
MS		D				0.02			1		
MS		E				0.004			0.2		
MS		F			MS012418A	0.1			5		
MS	032118	A	1631	P-007/P109/P-030	CID MS011618 A	1.0 mL	HCl M006-037-22	100mL	100ppb	3/21/18	LDO
MS		B			ICV MS011618 B	1.0 mL			100ppb		

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Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	032018	A	ICP/MS	MY-058/P117	M006-042-04	10 mL	5 mL HNO3 M006-045-02	500 mL	200 ppm	11/30/20	SJR
MS					M006-042-03	50 mL			100 ppm		
MS					M006-042-05						
MS					M006-041-14	10 mL			20 ppm		
MS					M006-042-07						
MS					M006-025-11						
MS					M006-042-18						
MS	032018	B			M032018A	5 mL	10 mL HNO3 M006-045-02	1 L	0.2 ppm → 1 ppm		
MS	032018	C			M006-045-21	0.2 mL			200 ppb	1/31/19	
MS					M006-045-22	0.05 mL			0.80 ppm		
MS					MS020718J	1 mL			1 ppm		
MS					MS032018C	0.3 mL			0.06-0.5 ppm		
MS											
MS											
MS											
MS											
MS											
MS											

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Reagent Preparation Logbook

PREP DATE	NEW REAGENT ID #	TEST METHOD	REAGENT DESCRIPTION	SOURCE CHEMICAL(S) NAME	SOURCE CHEMICAL(S) ID #	SOURCE CHEMICAL(S) INITIAL AMOUNT	SOLVENT NAME	SOLVENT ID #	FINAL VOLUME	EXPIR. DATE	PREP BY	COMMENTS
07/31/17	R07311701	Metal	1N. NaOAC	Sodium Acetate	Med-17-4	2720g	DI H2O	NA	20L	07/30/18	805	03/13/19
08/01/17	R08011701	metals	1:1 HNO3	HNO3	M006-042-08	1L 25x30	DI H2O	NA	2.5 x 30	08/01/18	710	
8/2/17	R08021701	Hg	1N NaCl·NH2OH	NH2OH·Cl NaCl	M006-43-12 M006-47-20	1.2 kg 1.2 kg	DI H2O	NA	10L	8/2/18	808	
08/09/17	R08091701	TCLP	1N NaOH	NaOH	M006-34-15	160g	DI H2O	D08091701 NA	4L x 8	08/08/18	805	Source = 02/22/21.
08/11/17	R08111701	metals	1:2 HCl	HCl	M006-41-23	800 x 20	DI H2O	NA	24L x 20	08/11/18	710	
8/11/17	R08111702	↓	1:1 HNO3	HNO3	M006-043-08	250ml ~~500ml~~	DI H2O	N/A	500ml	8/11/18	935	
↓	R08111703	↓	1:1 HCl	HCl	M006-042-22	935 8/11/17 ↓	↓	↓	↓	↓	↓	
8/14/17	R08141701	1640	BUFFER	HAc NH4OH	M006-34-13 G007-79-14	140 mL 160 mL	DI H2O	N/A	1L x 2 ~~2L~~ 53 8/14/17	8/14/18	53	
	R08141701		Hydride H2O2	HNO3 H2O2	M006-43-09 M006-40-16	4mL 20mL			1L			
	R08141703		Hydride	NaOH NaBH4	M006-19-24 M006-12-01	0.45 4.0g			200mL x 2			
	R08141704		4M HCl	HCl	M006-37-22	200mL			500mL x 2			
	R08141705		1% HNO3 (1L)	HNO3	M006-43-09	10mL			1L			
	R08141706		1% HNO3 (2L)			20mL			2L x 2			
	R08141707		Sea Water Blank		M006-43-09 M006-44-03	10mL 33.33mL			1L			
8/2/17	R08021702	Hg	5% KMnO4	KMnO4	M006-31-01	500g	DI H2O	NA	10L	8/2/18	808	
							Book Closed					

Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	120717	A	metals	—	M006-045-01	833mL	Di-H2O	2.5L	1:2 HCl	12/7/18	1080
MR	121117	A	6010/200.7	D044 / F002	M006-045-02 M006-045-01	60mL 50 mL	Di-H2O	1LX2	6% HNO3, 5% HCl	12/11/18	935
MR	↓	B	↓	↓	↓	↓	↓	↓	↓	↓	↓
MR	↓	C	↓	↓	↓	100mL 100mL	↓	1L x4	10% HNO3 10% HCl	↓	↓
MR	↓	D	↓	↓	↓	↓	↓	1L X2	↓	↓	↓
MR	121217	A	SPLP	—	M006-44-21 H2SO4 M006-45-02 HNO3	60ml 40ml >100ml	DI-H2O	100 ml	60% H2SO4 40% HNO3	12/11/18	805
MR	121417	A	org. Pb	Pipette 04072016 MIBK D-054	Aliquot 336 M006-35-24	20mL	M006-039-02 MIBK 180mL	200mL	10% .336/MIBK	6/14/18	1080
MR	121417	B	org. Pb	Pipette 04072016 MIBK D-054	10% .336/MIBK MR121417A	20mL	M006-039-02 MIBK 180mL	200mL	1% .336/MIBK	6/14/18	1080
MR	121417	C	org Pb	Balance 61 pipette 04072016	Iodine G007-04-19	6g	M006-09-09 Benzene	200mL	I_2 3%	6/14/18	1080
MR	121417	D	org Pb	D-054/D-055/pipette 04072016	xylene M006-044-14	200mL	—	—	BLANKS	6/14/18	1080
MR	↓	↓	↓	↓	MIBK M006-039-02	250mL	↓	↓	↓	↓	↓
MR	↓	↓	↓	↓	1% .336 MR121417B	50mL	↓	↓	↓	↓	↓
MR	↓	↓	↓	↓	3% I_2	1mL	↓	↓	↓	↓	↓
MR	121617	A	metals	—	M006-045-02	1.25L	Di-H2O	2.50L	1:1 HNO3	12/16/18	1080
MR	011218	A	Hg	Bal #59	M006-43-01	~~50~~ 1000g	DI-H2O	20L	5% KMnO4	1/12/19	868
MR	011218	B	Hg	Bal #59	M006-43-025 M006-42-20	1.2 kg 1.2 kg	DI-H2O	10L	12% NaCl·NH2OH	1/12/19	868
MR	013018	A	METALS	—	M006-045-09	4X ~~1.25L~~ 500 ml 1/31/18	DI-H2O	4X 1000 mL	1:1 HNO3	01/30/19	710
MR	013118	A	metals	—	M006-042-22	833mL	Di-H2O	2.5L	1:2 HCl	1/31/19 (19/4/18 1080)	1080

Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	03/2/18	Q	metals	—	M006-04601	1.25L	DI H2O	2.5L	1:1 HNO_3	3/2/19	[illegible]
MR		R									
MR		S									
MR		T									
MR		U									
MR		V									
MR		W									
MR		X									
MR	03/13/18	A	Teflon	P-117	M006-0450L	10mL	DI-H_2O	1L	1% HNO_3	3/13/19	[illegible]
MR		B				10mL			1%		
MR		C				20mL			2%		
MR		D			M006-045-02 M006-045-01	120 mL 80 mL		4L	3% HNO_3 2% HCl		
MR		E									
MR		F									
MR											
MR											
MR											
MR											

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1	Hydroxylamine	Acros	5476-11-1	A0332752	10/1/16	500g x 20	P	10/1/13	769	10/1/13	769	
2	Multielement Calib. STD- #1	High-Purity	ICP-MCS-1	~~1312925~~ 1227704	09/26/14	250ml	P	10/03/13	469	10/03/13	469	
3	↓ -7	↓	-7	469 10/13 1312219	↓	↓	↓	↓	↓	↓	↓	
4	-8		-8	1312925		500ml x 2						
5	-10		↓ -10	1319312		125ml						
6	↓ -11		ICP-AM-11	1307750	↓	↓						
7	Tungsten Standard	↓	100063-3	1309114	3/26/15	↓	↓	↓	↓	↓	↓	
8	Nitric Acid	EMD	NX-0407-2	53099	10/7/16	2.5L x8	G	10/6/13	879	10/8/13	879	
9	HCL	EMD	HX0607-2	53010	10/7/16	2.5L x8	G	10/6/13	879	10/8/13	879	
10	Sulfuric Acid	EMD	SX1247-2	53128	10/15/16	2.5L x 5	G	10/15/13	769	10/15/13	769	
11	Nitric Acid	EMD	NX0407-2	53099	10/15/16	2.5L x 8	G	10/15/13	879	10/16/13	879	
12	Nitric Acid	EMD	NX0407-2	53055	10/24/16	2.5L x 10	G	10/24/13	TL	10/24/13	TL	
13	HCL	EMD	HX0607-2	53010	10/29/16	2.5L x8	G	10/29/13	879	10/29/13	879	
14	Indium	Accustandard	ICP-MS-2TAL 0.1X-1	213025049	03/2018	100ml	P	11/01/13	572	11/01/13	572	
15	Scandium		ICP-MS-50N 0.1X-1	213055044	05/2018							
16	Boron		ICP-07W-1	212055017	10/2017							
17	Tungsten		ICP-65W-1	211105145	11/2016							
18	Lithium											
19	Acetic Acid	Fisher	A38C-212	133363		2.5L x 6	G	11/05/13	805	11/05/13	805	CTF: ICP #3 P15-15 Hg #3 P15-16
20	HNO_3	EMD	NX.0407-2	53099	11/05/16	2.5L x 10	G	11/05/13	781	11/05/13	781	
21	↓	↓	NX0407/4	52174	↓	2.5L x 02	↓	↓	↓	↓	↓	
22	Lithium 6	HIGH-PURITY	100025-6I	1231246	05/01/15	100ml	P	11/07/13	572	11/07/13	572	
23	HNO_3	EMD	NX.0407-2	53099	11/13/16	2.5L x 10	G	11/13/13	781	11/13/13	781	
24	HCL	EMD	HX0607-2	53010	11/13/16	2.5L x 15	G	11/14/13	805	11/14/13	805	
25	Hydrogen Peroxide H_2O_2	EMD	HX0635-2	53115331	5/31/2015	1L x 8	P	11/25/13	879	11/26/13	879	

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1	Nitric Acid	EMD	NX0407-2	55006	5-27-18	2.5x10	G	5-27-15	710	5-27-15	710	
2	Hydrochloric Acid	EMD	HX0607-2	54169	5-27-18	2.5x4	G	5-27-15	710	5-27-15	710	
3	Sulfuric Acid	EMD	SX-1247-2	54132	4/24/18	2.5Lx4	G	5/27/15	Ecr	5/28/15	Ecr	
4	Boron	AccuStandard	ICP-07W-1	214065136	7/1/15	100mL	P	5/27/15	STJ	5/27/15	STJ	
5	QCS-01-1	|	QCS-01-1	214105086	10/4/16	100mL	P	|	|	|	|	
6	QCS-02-1	SPEX	QCS-02-1	213125093-01	11/13/16	100mL	|	|	|	|	|	
7	CL-CAL-3	~~AccuStandard~~ CL-CAL-3 STJ	CL-CAL-3 ~~CLH-54449~~	CL11-54444 STJ 5/19/15	5/30/16	125mL	|	|	|	|	|	
8	CL-~~CAL~~INT-A1 STJ 5/27/15	~~AccuStandard~~ ~~CL-INT-A1~~ STJ 5/27/15 SPEX	CL-INT-A1 ~~CL12-6544PP~~	CL12-69444	|	|	|	|	|	|	|	
9	Nitric Acid	EMD	NX0407	55006	5-29-18	2.5x6	G	5-29-15	710	5-29-15	710	
10	Hydrochloric Acid	EMD	HX0607-2	54310	5-29-18	2.5x3	G	5-29-15	710	5-29-15	710	
11	Ytterbium	High Purity	10M66-1	1401628	11/20/16	100ml	P	6/1/15	935	6/1/15	935	
12	Holmium	|	10M23-1	1400209	|	|	|	|	|	|	|	
13	Terbium	|	10M57-1	1425501	|	|	|	|	|	|	|	
14	Li6	|	100029-6I	1428030	11/20/16	100mL	P	6/3/15	STJ	6/3/15	STJ	
15	Calibration Std. 3	SPEX	CL-CAL-3	CL12-70444	5/30/16	125mL x2	P	~~6/3/15~~ 6/3/15 STJ	STJ	5/30/16	STJ	
16	NaCl	Fischer	S-271-10 6/4/15 Ecr	146640	6/4/18	10 kg	Bucket	6/4/15	9Ecr	6/4/15	915	
17	SnCl₂	Fischer	~~T142-500~~ ~~A403-500~~	148075	6/4/18	500g x1/2	B	6/4/15	9Ecr	6/4/15	Ecr	
18	$K_2S_2O_8$	Fischer	P-281-500	147150	6/4/18	500g x1	B	6/4/15	Ecr	6/4/15	Ecr	
19	$SnCl_2 \cdot 2H_2O$	↓	T169-500	148074	6/4/18	500g	P	6/4/15	110	6/4/15	110	
20	H_2O_2	↓	H325-500	148097	6/4/17	500g	P	6/4/15	110	6/4/15	110	
21	HCl	↓	A508-P212	411450	6/4/17	~~2x2.5L~~	P	6/4/15	110	6/4/15	110	
22	HNO_3	↓	A467-2	1214670	7/24/17	2x2.5L 2x2L	P	6/4/15	110	6/4/15	110	
23	Hydrogen Peroxide	Fisher	H325-4	147967	6/9/18	4Lx4	P	6/9/15	710	6/9/15	710	
24	Nitric Acid	EMD	NX0407-2	55006	06/12/18	2.5Lx8	G	06/12/15	942	06/12/15	942	
25	↓	↓	↓	54339	↓	2.5Lx2	↓	↓	↓	↓	↓	

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1	HCl	EMD	HX0607-2	55253	03/24/19	2.5Lx10	G	03/24/16	1039	03/24/16	1039	
2	Aluminum Standard	ULTRA	ICP-113	CM-1334	04/30/22	125 ml	P	03/28/16	110	03/28/16	110	#1
3	Beryllium Standard		ICP-104	CP-0170	02/28/23	125	P					#2
4	Chromium Standard		ICP-124	CM-6110	12/31/22	125 mL	P					
5	Iron Standard		ICP-126	CP-0549	02/28/23	125 mL	P					
6	Zinc Standard		ICP-130	CP-0155	02/28/23	125 mL	P					
7	Manganese Standard		ICP-125	CM-2432	06/30/22	125 mL	P					
8	Magnesium Standard		ICP-112	CM-4445	09/30/22	125 mL	P					
9	Calcium Standard		ICP-120	CP-0877	04/30/23	125 mL	P					
10	Silicon Standard		ICP-014	T00497	05/31/21	125 mL	P					
11	Terbium standard		ICP-065	CM-4138	08/31/22	125 mL	P					
12	Xylene	Fisher	XS-4	158943	4/1/19	4Lx4	G	4/1/16	air		.	
13	HNO_3	EMD	NX0407-2	55323	04/13/17	2.5Lx10	G	04/13/16	1039	04/13/16	1039	
14	BOILING STONES	SAINT-GOBAIN	D1064103	K774-4K016	04/19/2021	450g x 2	P	04/19/16	710	04/19/16	710	
15				R674-6A002		450g x 2						
16				S071-6A030		450g x 2						
17	Citric Acid Anhydrous	Fisher	A940-1	1604179	04/20/2021	1kg x 12	P	04/21/16	805	04/21/16	805	[illegible]
18	$K_2S_2O_8$	Acros	AN-1492	A0367996	4/21/21	500g x 2	P	4/4/16	aw	4/12/16	aw	
19	Azure dububble Soln.	Life technologies	A10496	1745205	4/21/19	50ml	P	4/21/16	air	4/21/16	air	
20	H_2SO_4	EMD	SX1244-2	53128	4/27/19	2.5x4	G	4/27/16	710	4/27/16	710	*
21	Hydrochloric Acid	EMD	HX0607-2	55777	05/02/19	2.5x8	G	05/02/16	710	05/2/16	710	[illegible]
22	Nitric Acid	EMD	NX0407-2	55148	05/02/19	2.5x11	G	05/02/16	710	05/02/16	710	
23	Nitric Acid	Fisher	UN2031	1216010	05/20/19							*
24	Aliquat 336	Aldrich	205613-250mL	MKBV4736V	5/24/16	250mL	G	5/24/16	53t	5/24/16	53t	
25	HNO_3	EMD	HX0407-2	55323	04/13/17	2.5L x26	G	05/26/16	1030	05/26/16	1030	

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1	Hydrochloric Acid	EMD	~~HX0607-2~~ 56027	56027	10/21/19	2.5x10	G	10/21/16	710	10/21/16	710	
2	Nitric Acid	↓	NX0407-2	56020	1030 11/01/16	2.5x11	↓	↓	↓	↓	↓	
3	ICS-INT-01-1	AccuStandard	INT-01-1	2150315036-01	~~05/31/18~~ 06/30/18	100mL	P	11/01/16	1030	11/01/16	1030	
4	ICS-INT-02-1	↓	INT-02-1	21207502303-03	06/30/18	↓	↓	↓	↓	↓	↓	
5	ICS-INT-03-01		INT-03-01	216065010	06/30/18							
6	ICS-INT-04-5	↓	INT-04-5	213065097-02	05/31/18	500mL	↓	↓	↓	↓	↓	
7	HNO3	EMD	NX0407-2	5-6048	9/19/19	25x20	G	11/09/16	710	11/09/16	710	
8	HCl	EMD	HX0607-2	56027	11/19/19	2.5x11	G	↓	↓	↓	↓	
9	Arsenic Standard	ULTRA	ICP-133	CP-5391	11/30/23	125mL	P	11/9/16	996	11/9/16	996	
10	ICP Multielement Cal. Std. #1	High Purity	ICP-MCS-1	1515602	10/13/17	250mL	P	11/10/16	935	11/10/16	935	
11	#7		ICP-MCS-7	1518601 8	935 11/10/16	↓						
12	#8		ICP-MCS-8	1520834	-	500mL x2						
13	#10		ICP-MCS-10	1515415		250mL						
14	#11		ICP-AM-11	1623105	↓	↓						
15	Sodium - Std.		#10M52-1	1609122	4/13/18	125mL						
16	Potassium - Std.		#10M41-1	1625027								
17	Phosphorus - Std.		#10M39-1K	1609716								
18	Zinc - Std.		#10M68-1	1617621		↓	↓					
19	Sulfur - Std		#10M54-5	1528619								
20	Lithium - Std.		#10M29-1	1604136		↓						
21	Bismuth - Std.		#10006-1	1605722 935 11/10/16	10 ↓	60mL	↓					
22	$NaBH_4$	Alfa Aesar	16940-66-2	P08C022	11/22/22	100g x2	P	11/22/16	55x	11/22/16	55x	
23	Xylenes	fisher	X5-4	166464	11/28/19	4Lx4	G	11/28/16	955	11/28/16	955	
24	HCL	EMD	HX0607-2	562098	12/02/19	2.5x10	G	12/02/16	1058	12/02/16	1058	
25	HNO3	EMD	NX0407-2	56020	12/02/19	2.5x17	G	12/02/16	1058	12/02/16	1058	

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1	SCP Science 50ml Digitubes	SCP Science	010-500-263	J232266-6300	NA	500 px	P	12/14/16	805	12/14/16	805	LGF=verify fix p. 12-13
2	Methyl iso-Butyl Ketone	Fisher Chem.	M213-4	162092	12/14/19	4L x 4	G	12/14/16	935	12/14/16	935	
3	Hydrogen Peroxide	EMD	HX0635-2	56678639	12/16/19	20 x 1L	P	12/16/16	1058	12/16/16	1058	
4	Mixed Standard Solution I	Ultra	ICM-601	CP-1893	5/31/20	125ml	P	12/15/16	935	12/15/16	935	
5	II		ICM-602	CM-3432	7/31/19	125ml						
6	III		ICM-603	CP-3418	8/31/20	125ml						
7	IV		ICM-604	T00621	6/30/18	125ml						
8	V		ICM-605	T00611	6/30/18	125ml						
9	Interference Check Std #1		ICM-221	R01207	12/31/17	50ml						
10	Silicon 1000 mg/ml	High Purity	100050-3	1514036	9/30/17	60ml						
11	Iron	Ultra	ICP-126	CP-4457	5/30/27	125ml	P	12/20/16	53	12/20/16	53	
12	Magnesium		ICP-112	CM-4445	9/30/22							
13	Thallium		ICP-181	CP-2010	05/31/23							
14	Strontium		ICP-138	CM-4363	03/30/22							
15	Titanium		ICP-122	CM-1138	04/30/22							
16	Selenium		ICP-134	CM-5316	11/30/22							
17	Lead		ICP-182	CM-3300	7/31/22							
18	Zinc		ICP-130	CP-0155	2/28/23							
19	Manganese		ICP-125	M00334	4/30/18							
20	Sodium		ICP-111	CP-3178	05/30/23							
21	Tin		ICP-150	T00753	7/31/21							
22	Potassium		ICP-119	CP-0352	2/28/23							
23	Antimony		ICP-151	CP-2412	6/30/23							
24	Copper		ICP-129	R00892	5/30/20							
25	Beryllium		ICP-104	CP-0170	2/28/23							

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1	Calcium	Ultra	ICP-120	CP-4462	3/30/18	125mL	P	12/20/16	SH	12/21/16	SH	
2	Barium	"	ICP-156	CM-6544	1/31/23	"	"	"	"	"	"	
3	Silicon	"	ICP-114	CP-1238	4/30/23	"	"	"	"	"	"	
4	Nitric Acid	EMD	NX0407-2	56048	12/30/16	2.5x3L	G	12/30/16	710	12/30/16	710	
5	Hydrochloric Acid	EMD	HX0607-2	58208	12/30/16	2.5L	G	12/30/16	710	12/30/16	710	
6	H_2SO_4	EMD	SX1247-2	55329	01/09/20	2.5L	G	01/09/17	996	01/09/17	996	
7	HNO_3	EMD	NX0407-2	56020	01/11/20	2.5L x 2	G	01/11/17	1058	01/11/17	1058	
8	HNO_3	EMD	NX0407-2	56018	01/11/20	2.5x2	G	01/11/17	1058	01/11/17	1058	
9	Phosphorus 10,000 mg/mL	High Purity	10M39-1	1630829	7/10/18	125ml	P	1/11/17	935	1/11/17	935	
10	PH Tape	Micro Essential	#140	216814	06/15/17	4 Rolls	P	01/16/17	1058	01/16/17	1058	
11	HNO3	Fisher	~~A509-P212~~ A509-P215 ~~UN2031~~ UN2031	1116080	~~03/26/2018~~ 03/26/2018	2.5L x 18	P	01/23/17	710	01/23/17	710	
12	HCl	↓	~~A508-P212~~ ~~UN1789~~	4116060	07/26/19	2.5x14	P	01/23/17	710	01/23/17	710	
13	H_2O_2	EMD	HX0635-2 710 01/23/17	56258639	~~09/30/18~~ 09/30/2018	~~1~~ 2 L x 6	P	02/06/17	710	2/06/17	710	4 710 2/6/17
14	AL Standard	Ultra	ICP-113	CP 3976	9/30/2023	125mL	P	02/06/17	1030	02/06/17	1030	
15	Boron	Ultra	ICP-105	K00924A	11/31/21	125mL	P	02/06/17	1030	02/06/17	1030	
16	Hydrogen peroxide	Fisher	H325-500	165728	2/10/2020	500ml x2	P	2/10/17	110			
17	Nitric Acid	Fisher	A467-2	1216080	09/07/2019	2L x 2	P	2/10/17	110			Clean room
18	Nitric Acid	Fisher	A509-P212	1116100	11/10/2018	2.5 x 2	P	2/13/17	710	02/17/17	710	metals DI
19	Silver	Ultra	ICP 047	CP-4409	04/20/23	125mL	P	2/20/17	1030	02/20/17	1030	
20	Silver	Ultra	ICP 147	CP-4495	09/30/23	125mL	P					"
21	Chromium		ICP-124	CP-1768	05/31/23							
22	Cobalt		ICP-127	CP-2011								
23	Nickel		ICP-128	CP-0006	02/23/23							
24	Sulfur		ICP-116	CM-5373	11/30/22							
25	Vanadium		ICP-123	CP-3591	08/31/23							

COMMENTS: _____

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1	Sodium	Ultra	ICP-111	CP 3948	9/30/23	125 mL	P	2/20/17	1070	2/20/17	1030	
2	Phosphorus		ICP-115	CP-4381								
3	Potassium		ICP-119	CP-0352	2/28/23							
4	Lithium		ICP-103	T80356	5/31/21							
5	Cadmium		ICP-148	CP-0856	2/28/23							
6	Molybdenum		ICP-142	CL-7860	08/31/21							
7	Bismuth		ICP-183	CP-2127	6/30/23							
8	Sulfuric Acid.	EMD	SX1247-2	~~SX1247-2~~ 65329	2/20/20	2.5L	G	2/20/17	868	2/20/17		
9	Potassium Persulfate	Acros Organics	424185000	A0377662	2/17/19	500g x 12	P	2/27/17	868	2/27/17		
10	Sodium Chloride	AMRESCO	0562	25152	2/17/20	25x2lb	P	2/17/17	110	2/27/17	110	
11	HNO3	Fisher	A509-P212	1116100	11/10/18	2.5L x 10	P	2/28/17	1058	2/28/17	1058	
12	HCl	Fisher	A508-P212	4116090	10/19/19	2.5L x 20	P	2/28/17	1058	2/28/17	1058	
13	Instrument calibration standard 2	SPEX	CL-CAL2	CL1-179MKBY	2/22/18	125mL x 2	P	3/10/17	SL	3/10/17	TM	
14	1 S	SPEX	CL-CAL3	CL2-117MKBY	2/22/18	125mL x 4	P	1	1	1	1	
15	ICP Multielement Calibration Std-10	High Purity	ICP-MCS-10	1515415	2/21/18	250mL	P	3/22/17	935	3/22/17	935	
16	-8		ICP-MCS-8	1637121		500mL x 2						
17	-1		ICP-MCS-1	1515602		500mL						
18	-7		ICP-MCS-7	1705326	2/24/18	500mL						
19	-11		ICP-~~MCS~~ AM11 (3/22/17)	1705327		125mL						
20	Acetic Acid, Glacial	Fisher	A38C-212 (2.5L)	Lot# 166899	04/03/20	2.5L x 4	G	04/04/17	805	04/04/17	805	
21	Nitric Acid	Fisher	A509-P212	1116080	08/26/2018	2.5L	P	4/06/17	710	4/06/17	710	
22	↓	↓	↓	1116100	11/10/2018	2.5L x 18	P	↓	↓	↓	↓	
23	↓	↓	↓	1116080	11/30/2018	2.5L x 8	P	↓	↓	↓	↓	
24	HCl	Fisher	A508-P212	4116090	11/19/2019	2.5L x 20	P	↓	↓	↓	↓	
25	Sodium Borohydride	Fisher	S678-25	161188	4/10/2022	2 x 25g	P	4/10/17	110	4/10/17	110	

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1	Sodium Selenate decahydrate	Aldrich	450294-5G	MKCB477V	4/00	5g	G	4/10/17	110	4/13/17	110	
2	Ammonium Hydroxide	Fisher	A572-P500	#711090	10/16/2018	500mLx6	P	04/17/17	805	04/19/17	805	
3	Ci-6	Accustd.	ICP-MS-15-L16-10X-1	216115011	11/2021	100mL	P	04/20/17	53r	04/20/17	53r	
4	Sc	|	ICP-MS-50N-0.1X-1	216055006	05/2021	100mL	P	|	|	|	|	
5	Ga	|	ICP-MS-WN 0.1X-1	215110067	11/2020	100mL	P	|	|	|	|	
6	Tb	|	ICP-MS-53N-0.1X-1	2131251260-01	02/2021	100mL	P	|	|	|	|	
7	Ho	|	ICP-MS-24N-0.1X-1	217045020	04/2022	100mL	P	|	|	|	|	
8	Bi	|	ICP-MS-06N-0.1X-1	217045044	04/2022	100mL	P	|	|	|	|	
9	Stannous Chloride Dihydrate	Fisher	T163-500	163999	04/2022	500g X6	P	04/25/17	1030	04/25/17	1030	
10	Hydro chloric Acid	Analytical Ultra	87003-216	4216110	01/2020	500mL	P	|	|	|	|	
11	Na_2SeO_4	Alfa Aesar	11613	71408-04	04/2022	50g	G	04/25/17	|	|	|	
12	$SnCl_2$	Fisher	T1-141-500	145293A	4/2020	500g x 12	P	4/25/17	868	4/26/17	868	
13	~~Boiling~~ Stones	Saint-Gobain	D1069103	Lot# T74-TC002	04/2022	450g x 8	P	04/27/17	805	04/27/17	805	CTF: # 3 P30-24 P30-25
14	Xylene	Fisher	XS-4	168622	4/28/20	4L x 4	G	4/28/17	52r	4/28/17	52r	
15	HCL	Fisher	A508-P212	4116090	~~4/2~~ 10/9/19	2.5 x 20	P	4/28/17	710	4/28/17	710	710 4/28/19
16	HNO3	Fisher	A509-P212	1116110	11/30/18	2.5 x 20	P	4/28/17	710	4/28/17	710	
17	Sodium [10,000µg/mL]	Ultra	ICP-111	CP-3978	9/30/23	1L	P	5/2/17	935	5/2/17	935	
18	Potassium [10,000 µg/mL]	|	ICP-119	CR-0917	4/30/24	1L	P	5/2/17	935	5/2/17	935	
19	Hydrogen Peroxide	EMD	HX0635-2	56258639	09/30/18	1L	P	05/05/17	710	5/5/17	710	
20	Sodium Chloride	Fisher	S271-10	161535	5/15/20	10kg	P	5/15/17	868	5/15/17	868	
21	Nitric Acid	Fisher	A509-P212	1117010	~~5/23/19~~ 12/31/19	2.5 x 20	P	5/23/17	710	5/23/17	710	# 710 5/23/17
22	HCl	Fisher	A508-P212	4116090	10/9/19	2.5 x 20	P	5/23/17	710	5/23/17	710	
23	Hydrogen peroxide	EMD	HX0635-2	56273642	10/31/18	1L x 5	P	5/26/17	710	5/26/17	710	
24	Lead II Chloride	Alfa Aesar	12345	M22B018	5/31/23	50g	P	5/31/17	52r	5/31/17	52r	
25	Buffer pH7.200 Solution (STD)	Fisher	SB56-500	171346	~~06/06/19~~ 03/31/2019 805 06/06/19	500mL x 1	P	06/06/17	805	06/06/17	805	CTF: # 3. P31-03

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1	Potassium Permanganate	VWR	~~231-140~~ 97065-626	3166C309	7/15/16		P	7/18/16	868	6/13/17	868	*Frige! [illegible]
2	PH Tape	Micro Essential LAB	~~21575~~ 140	216315	06/15/18	10 rolls	P	06/07/17	1058	06/07/17	1058	
3	ADPC	Sigma	[illegible]	[illegible]	6/15/21	100 g	G	6/6/17	[illegible]	6/6/17	[illegible]	
4	H_2SO_4	Fisher	~~211-5080~~ UN1830	3115080	11/25/18	2.5 L	P	06/22/17	1070	06/22/17	1070	
5	Nitric Acid	Fisher	A467-2	1216120	01/04/20	2.5 L	T	6/28/17	53r	6/28/17	[illegible]	
6	Acetic Acid	|	A30074-6	56120	6/28/20	2L X 2	T	|	[illegible]	|	[illegible]	
7	100 µg/mL Hg	SPEX	PLHG2-1Y	22-93HGY	6/30/18	125 mL	P	6/29/17	868	6/29/17	868	
8	HNO3	Fisher	A509-P212	1116120	~~7/14/17~~ 12/16/2018*	2L X 2.5	P	7/14/17	710	7/14/17	710	* [illegible] 7/14/17
9	Nitric Acid	Fisher	A467-2	1217010	01/31/20	2L X 2	T	7/27/17	53r	7/27/17	53r	
10	Sodium Chloride	Alfa Aesar	10862	25313	7/31/22	500 g	P	7/31/17	[illegible]	7/31/17	53r	
11	Sodium Chloride	|	|	25152	|	25 g	|	|	|	|	|	
12	Hydroxylamine Hydrochloride	Fisher	H330-500	163471	~~[illegible]~~ 8/2/22	500g X 6	P	7/24/17	868	8/2/17	868	
13	|	|	|	164543	8/2/22	500g X 6	P	|	|	|		
14	Sulfuric Acid	Fisher		3116090	11/2/19	2.5 L	G P	8/7/17	868	8/7/17	868	
15	Tetraethyl Lead	SPEX	SVO-CSEL-8-500	TS170731012	8/2/18	500 mL	G	8/8/17	1080	8/8/17	1080	
16	Gold III Chloride	Acros	43708	A0366219	8/11/22	5 g	G	8/4/17	110	8/4/17	110	
17	ICP-MS-QC2-1	AccuStandard	ICP-MS-QC2-1	215075097-02	06/30/19	100 mL	P	08/11/17	53r	08/11/17	53r	
18	Beryllium ICP-MS-05N-0.01X-1	|	ICP-MS-05N-0.01X-1	217015012	01/09/22	100 mL	P	|	|	|	|	
19	Manganese ICP-MS-33N-0.01X-1	|	ICP-MS-33N-0.01X-1	217035131	03/28/22	100 mL	P	|	|	|	|	
20	Aluminum ICP-MS-01N-0.1X-1	|	ICP-MS-01N-0.1X-1	217045036	04/14/22	100 mL	P	|	|	|	|	
21	Zinc ICP-MS-70N-0.1X-1	|	ICP-MS-70N-0.1X-1	216035086	03/23/21	100 mL	P	|	|	|	|	
22	Iron ICP-MS-27N-0.1X-1	|	ICP-MS-27N-0.1X-1	216015101	02/17/21	100 mL	P	|	|	|	|	
23	Chromium ICP-MS-13N-0.1X-1	|	ICP-MS-13N-0.1X-1	216055077	05/25/21	100 mL	P	|	|	|	|	
24	Interferents A	SPEX	CL-INT-A1	CL3-158MKBY	08/30/18	125 mL	P	08/11/17	776	08/11/17	776	
25	Analytes B	SPEX	CL-INT-B1	CL3-14MKBY	08/30/18	125 mL	P	08/11/17	776	08/11/17	776	

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1	Tuning Solution 1	SPEX	CL-TUNE-1	CL3-79MKBY	08/30/18	125mL	P	08/11/17	996	08/11/17	996	
2	Sodium	SPEX	PLNA2-3Y	A017-4NAY	08/30/18	125mL	P	08/11/17	996	08/11/17	996	
3	Ultrapure Sodium Chloride	ESI	SeaBlock-0500	170341	08/14/20	500mLx3	P	08/14/17	SR	08/14/17	SR	
4	Nitric Acid	Fisher	A467-2	121701G	08/16/20	2LX2	T	8/16/17	SR	8/16/17	SR	
5	Nitric Acid	Fisher	A467-2	1116120	12/16/2018	2.5LX5	P	08/23/17	1030	08/23/17	1040	
6	Nitric Acid	Fisher	A509-P212	1116111	03/15/19	2.5LX19	P	08/23/17	1030	08/23/17	1030	
7	HCl	Fisher	A508-P212	141609O	10/19/19	2.5LX20	P	08/23/17	1030	08/23/17	1030	
8	Sodium Selenate decahydrate	Aldrich	450224-50	MKBN4778V	09/15/20	10g	G	09/15/17	1030	09/15/17	1030	
9	Hydrogen Peroxide	EMD	HX0635-2	56273642	10/31/18	1LX6	P	9/15/17	1080	09/15/17	1080	
10	Nitric Acid	Fisher	A467-2	121702G	02/22/20	2LX4	T	09/18/17	SR	09/18/17	SR	
11	Ultrapure Sodium Chloride	ESI	SeaBlock-0500	170610	09/20/20	500mLX2	P	9/20/17	SR	9/20/17	SR	
12	Hydrogen Peroxide	EMD	HX0635-2	56321712	11/30/18	1LX14	P	9/27/17	1080	9/27/17	1080	
13	Puradisc 25mm 1.0µm	whatman	6780-2510	9816517	02/2022	2Box x50	P	09/27/17	1058	09/27/17	1058	
14	Xylenes	Fisher	X5-4	173323	9/29/20	4LX4	G	9/29/17	1080	9/29/17	1080	
15	Ultra Pure Sodium Chloride	ESI	SeaBlock-0500	170603	10/02/20	500mX3	P	10/2/17	SR	10/2/17	SR	
16	PTFE BOILING STONES-450GRAM	chemware	D1069103	225690G	~~10/06/17~~ N/A	(450gm) 1602x3	P	10/06/17	710	10/06/17	710	710 10/06/17
17	Nitric Acid	Fisher	A509-P212	1117040	04/05/2019	2.5LX18	P	10/06/17	710	10/06/17	710	
18	Sodium Iodide	ACROS ORGANICS	20050250	AC34348G	10/06/22	25gX4	G	10/09/17	SR	10/09/17	SR	
19	Iron Standard	ULTRA	ICP-126-L	CR-3137	08/31/24	1L	P	10/10/17	996	10/10/17	996	
20	Soda Lime	Teledyne LeeMan Labs	606-00015	6061-28-B	N/A	200gX2	P	10/18/17	1080	10/18/17	1080	
21	Sulfuric Acid	Omni Trade	SX1247-2	561175	10/25/18	2.5L	G	10/25/17	846	10/25/17	846	
22	ICP Analytical Mixture 11	High Purity	ICP-AM-11	1705327	10/18	125mL	P	10/30/17	935	10/30/17	935	
23	ICP Multi-element Cal. Standard 8	↓	ICP-MCS-8	1635121	↓	500mLX2	↓	↓	↓	↓	↓	
24	Potassium (10,000 mg/mL)	↓	10M41-1	1723447	4/19	125mL	↓	↓	↓	↓	↓	
25	APDC	SIGMA	P8765-100G	BCBR189V	10/31/22	100g	G	10/31/17	996	10/31/17	996	

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1	HCl	Fisher	A508-P212	4117010	03/02/20	2.5x20	P	11-09-17	710	11-09-17	710	
2	(HNO3) Nitric Acid	↓	A509-P212	1117042	05/05/19	2.5x12	P	↓	↓	↓	↓	
3	Buffer pH 4.0 Solution (I.C.V.)	VWR	E452-500mL	1257C312	11/15/18	500ml x 1	P	11/16/17	805	11/16/17	805	For: pH #5 REF: pH #C Logbook p.97
4	M.I.B.K	Fisher	M213-4	171549	11/21/20	4L x 4	G	11/20/17	935	11/21/17	935	
5	P Hydroxylamine Hydrochloride	Fisher	H336-500	172066	12/1/22	500g x 12	P		848	12/1/17	848	
6	Zirconium	BICCA	MSZRIKN...	4711426	4/2017	100mL	P	12/06/17	53r	12/06/17	53r	
7	Buffer pH 4.0 Solution (Standard)	Fisher	SB101-500	173425	04/30/19	500ml x 2	P	12/12/17	805	12/12/17	805	REF: pH Logbook # 10 p.60
8	Buffer pH 7.0 Solution (I.C.V.)	Fisher	SB108-500	170679	01/31/19	500ml x 2	P	12/12/17	805	12/12/17	805	REF: pH Logbook # p.60
9	Nitric Acid	Fisher	A509-212	1117060	06/15/19	2.5x20	P	11/17/17	710	11/17/17	710	
10	Interferents A	SPEX	CL-INT-A1	CL3-157 MEBY	12/30/18	125mL	P	12/19/17	53r	12/19/17	53r	
11	Terbium 10,000 µg/mL	High Purity	10M57-1	1716539	6/2019	125ml	P	12/19/17	935	12/19/17	935	
12	0.45 PVDF Filters (For STLC)	MILLEX	SLHVU33NK	R7CA9640	01/08/21	NA	P	01/09/18	805	01/09/18	805	REF: CTF #3, P.3-1-6
13	EPA Method 200.7 Int. Check STD#1	Ultra	ICM-221	R01207A	3/31/21	50ml	P	1/10/17	935	1/10/18	935	
14	EPA Method 6010A Mixed STD. Sol. V	↓	ICM-605	CR-3299	8/31/20	125ml	↓	1/10/17	935	1/10/17	935	
15	Hg mercury 1000µg/mL 2% HCl	High purity standards	100033-2	1723615	7/1/19	250mL	P	1/11/17	1080	1/11/17	1080	
16	Calcium	Ultra	ICP-120-L	CR-3808	9/30/24	1L	P	1/11/18	53r	1/15/18	53r	
17	Magnesium	|	ICP-112-L	CP-0678	9/30/23	1L	P	|	|	|	|	
18	Lead(II) Chloride	ALDRICH	203572-10G	MKCC3373	1/22/2023	10g	P	1/22/18	710	—		
19	Sodium hydroxide monohydrate	Alfa Aesar	41200	61701011	1/22/23	25g	P	1/22/18	53r	1/22/18	53r	
20	Sulfuric Acid	Fisher	A510-P212	3116493	5/4/20	2.5L	P	1/31/18	805	1/31/18	848	
21	Instrument Calibration Standard 2	SPEX	CL-CAL-2	CL4-41MEBY	01/30/19	125mL	P	1/31/18	53r	1/31/18	53r	
22	Instrument Calibration Standard 3	|	CL-CAL-3	CL4-01MEDY	01/30/19	125mL x 4	|	|	|	|	|	
23	Glass Microfiber TCLP filter	Whatman	1810-090	9691301	NA	4	NA	04/25/17	805	04/25/17	805	REF: CTF #3, P.3-1-6
24	Hydrogen Peroxide (H_2O_2)	EMD	~~HX~~ HX0635-2 (2-2-18)	56273642	10/31/18	12x10	P	02/02/18	710	02/02/18	710	
25	HNO3	Fisher	A509-P212	1117062	07/12/19	2.5x15	P	02/02/18	710	02/02/18	710	

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EPA 245.1 Mercury

Total

Initial Calibration
ICV/ICB
CCV/CCB

Sample Data

Quality Control
Method Blank
LCS/LCSD
MS/MSD
PDS/PDSD

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EPA Method 245.1
Initial Calibration Verification

Work Order No.: 18-03-1974

Instrument ID: HG 7 (G)

Concentration Unit: µg/L Test Method: EPA 245.1

Analyte	Initial Calibration Verification			
	True	ICV-1 Observed	ICV-1 %REC	Control Limit
Mercury	5.000000	4.729983	95	95 - 105

2018-03-30 12:31

ICV-1 File: ICV MS030518B 03/28/2018 01:10:03 PM

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EPA Method 245.1
Continuing Calibration Verification

Work Order No.: 18-03-1974
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Continuing Calibration Verification									
		CCV-1		CCV-2		CCV-3		CCV-4		Control
Analyte	True	Observed	%REC	Observed	%REC	Observed	%REC	Observed	%REC	Limit
Mercury	2.000000	1.955477	98	1.947275	97	1.947802	97	1.897963	95	90 - 110

2018-03-29 18:54

CCV-1 File: CCV 0.2x10ppb 03/28/2018 03:39:27 PM
CCV-2 File: CCV 0.2x10ppb 03/28/2018 04:06:43 PM
CCV-3 File: CCV 0.2x10ppb 03/28/2018 04:34:00 PM
CCV-4 File: CCV 0.2x10ppb 03/28/2018 04:59:02 PM

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EPA Method 245.1
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1974
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Initial and Continuing Calibration Blanks					
Analyte	ICB-1	CCB-1	CCB-2	CCB-3	CCB-4	RL (No PF)
Mercury	-0.029817	-0.023231	-0.029936	-0.030014	-0.029746	0.100000

2018-03-29 18:54

ICB-1 File: ICB 03/28/2018 01:12:18 PM
CCB-1 File: CCB 03/28/2018 03:41:43 PM
CCB-2 File: CCB 03/28/2018 04:08:59 PM
CCB-3 File: CCB 03/28/2018 04:36:16 PM
CCB-4 File: CCB 03/28/2018 05:01:18 PM
Note: Preparation Factor (PF) = 2 L/L

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 15:55
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:13

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-1.icp

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0006S005**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000226	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 15:57
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:13

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-2.icp

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0007S011**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000330	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 15:59
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:13

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-3.icp

 # 3 **CLIENT SAMPLE NUMBER: EVBMP0002S022**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000142	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:02
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:13

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-4.icp

 # 4 **CLIENT SAMPLE NUMBER: EVBMP0007S010**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000349	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 15:48
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:13

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-5.icp

 # 5 **CLIENT SAMPLE NUMBER: EVBMP0008S013**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000228	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:04
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:13

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-6.icp

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0009S011**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000317	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:11
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:13

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-7.icp

 # 7 **CLIENT SAMPLE NUMBER: FBQW1853Q001**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA1	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000409	1.00	ND	0.000200	

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METHOD BLANK ASSOCIATION SUMMARY
FOR METHOD: EPA 245.1

MB SAMPLE ID:	**099-16-484-23**	ANALYZED BY:	868
MB BATCH ID:	180328LA1	D/T ANALYZED:	2018-03-28 15:43
INSTRUMENT:	Mercury 07	REVIEWED BY:	309
EXTRACTION:	EPA 245.1 Total	D/T REVIEWED:	2018-03-29 14:12
D/T EXTRACTED:	2018-03-28 00:00	MATRIX:	Water

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-B-A1.icp

CLIENT WORK ORDER: 18-03-1974

S#	RUN TYPE	CLIENT SAMPLE ID	D/T ANALYZED	DATA FILE
1		A2BMP0006S005	2018-03-28 15:55	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-1.icp
2		A2BMP0007S011	2018-03-28 15:57	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-2.icp
3		EVBMP0002S022	2018-03-28 15:59	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-3.icp
4		EVBMP0007S010	2018-03-28 16:02	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-4.icp
5		EVBMP0008S013	2018-03-28 15:48	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-5.icp
6		EVBMP0009S011	2018-03-28 16:04	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-6.icp
7		FBQW1853Q001	2018-03-28 16:11	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-7.icp

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**099-16-484**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 15:43
EXTRACTION :	EPA 245.1 Total	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:12

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-B-A1.icp

 # MB **CLIENT SAMPLE NUMBER: Method Blank**

LCS/MB BATCH:	180328LA1	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000281	1.00	ND	0.000200	

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LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 245.1

LCS SAMPLE ID:	**099-16-484- 23**	EXTRACTION :	EPA 245.1 Total	ANALYZED BY:	868
LCS/MB BATCH ID:	180328LA1	D/T EXTRACTED:	2018-03-28 00:00	D/T ANALYZED:	2018-03-28 15:46
INSTRUMENT:	Mercury 07			REVIEWED BY:	309
				D/T REVIEWED:	2018-03-29 14:12

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-L-A1.icp

COMPOUND NAME	CONC ADDED	CONC REC	%RECOVERY	%REC CONTROL LIMIT	STATUS	QUALIFIERS
Mercury	0.01000	0.009463	95	80-120	PASS	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 245.1

SPIKED SAMPLE ID: **18-03-1974-5**
MS/MSD BATCH: 180328SA1
INSTRUMENTS:
SAMPLE: Mercury 07
MS: Mercury 07
MSD: Mercury 07

EXTRACTION: EPA 245.1 Total
D/T EXTRACTED:
SAMPLE: 2018-03-28 00:00
MS: 2018-03-28 00:00
MSD: 2018-03-28 00:00

ANALYZED BY: 868
D/T ANALYZED:
SAMPLE: 2018-03-28 15:48
MS: 2018-03-28 15:50
MSD: 2018-03-28 15:53
REVIEWED BY: 309
D/T REVIEWED: 2018-04-18 13:20

COMMENT:

COMPOUND NAME	SAMPLE	INITIAL	FINAL	MS CONC	% MS.REC	MSD CONC	% MSD.REC	% REC CL	RPD	RPD CL	STATUS	QUALIFIERS
Mercury	ND	0.005000	0.01000	0.008656	87	0.009065	91	75-125	5	0-20	PASS	

Data Files:

TYPE	DATA FILE	DATA FILE PATH
MS	18-03-1974-5 MS.icp	W:\MERCURY_DATA\FINAL\180328G1\
MSD	18-03-1974-5 MSD.icp	W:\MERCURY_DATA\FINAL\180328G1\

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Analysis Begun

Logged In Analyst: us26_usr_instrument
Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560
Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1
Autosampler Location: 1
Sample ID: Calib blank_868
Date Collected: 3/28/2018 11:53:35 AM
Analyst: 268
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution:
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1

Replicate Data: Calib blank_868
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0001	0.0014	0.0001	11:54:39 AM	Yes
2		[0.00]	0.0001	0.0009	0.0001	11:55:24 AM	Yes
Mean:		[0.00]	0.0001				
SD:		0.0000	0.0000				
%RSD:		0.00%	9.98				

Auto-zero performed.

Sequence No.: 2
Autosampler Location: 2
Sample ID: 0.025ppb 0.005x5ppb
Date Collected: 3/28/2018 11:55:49 AM
Analyst: 861
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution:
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1

Replicate Data: 0.025ppb 0.005x5ppb
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.025]	0.0002	0.0018	0.0003	11:56:52 AM	Yes
2		[0.025]	0.0001	0.0014	0.0003	11:57:37 AM	Yes
Mean:		[0.025]	0.0002				
SD:		0.00000	0.0000				
%RSD:		0.00%	17.32				

Standard number 1 applied. [0.025]
Correlation Coef.: 1.000000 Slope: 0.00620 Intercept: 0.00000

Sequence No.: 3
Autosampler Location: 3
Sample ID: 0.10ppb MS030518AAX0.0001
Date Collected: 3/28/2018 11:58:02 AM
Analyst: 268
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution:
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1

Replicate Data: 0.10ppb MS030518AAX0.0001
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.100]	0.0006	0.0030	0.0008	11:59:06 AM	Yes
2		[0.100]	0.0007	0.0029	0.0008	11:59:51 AM	Yes
Mean:		[0.100]	0.0007				
SD:		0.00000	0.0000				
%RSD:		0.00%	5.08				

Standard number 2 applied. [0.100]
Correlation Coef.: 0.999857 Slope: 0.00666 Intercept: -0.00000

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Sequence No.: 4 Autosampler Location: 4
Sample ID: 1.00ppb MS030518AAX0.0001 Date Collected: 3/28/2018 12:00:17 PM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 1.00ppb MS030518AAX0.0001 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.000]	0.0078	0.0295	0.0079	12:01:22 PM	Yes
2		[1.000]	0.0078	0.0293	0.0079	12:02:07 PM	Yes
Mean:		[1.000]	0.0078				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.21				

Standard number 3 applied. [1.000]
Correlation Coef.: 0.999913 Slope: 0.00782 Intercept: -0.00005

Sequence No.: 5 Autosampler Location: 5
Sample ID: 2.00ppb MS030518AAX0.002 Date Collected: 3/28/2018 12:02:33 PM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 2.00ppb MS030518AAX0.002 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.000]	0.0154	0.0583	0.0156	12:03:37 PM	Yes
2		[2.000]	0.0154	0.0584	0.0155	12:04:22 PM	Yes
Mean:		[2.000]	0.0154				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.23				

Standard number 4 applied. [2.000]
Correlation Coef.: 0.999964 Slope: 0.00774 Intercept: -0.00004

Sequence No.: 6 Autosampler Location: 6
Sample ID: 5.00ppb MS030518AAX0.005 Date Collected: 3/28/2018 12:04:49 PM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 5.00ppb MS030518AAX0.005 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[5.000]	0.0380	0.1428	0.0382	12:05:52 PM	Yes
2		[5.000]	0.0381	0.1437	0.0382	12:06:37 PM	Yes
Mean:		[5.000]	0.0381				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.12				

Standard number 5 applied. [5.000]
Correlation Coef.: 0.999974 Slope: 0.00763 Intercept: 0.00002

Sequence No.: 7 Autosampler Location: 7
Sample ID: 10.0ppb MS030518AAX0.01 Date Collected: 3/28/2018 12:07:02 PM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 10.0ppb MS030518AAX0.01 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

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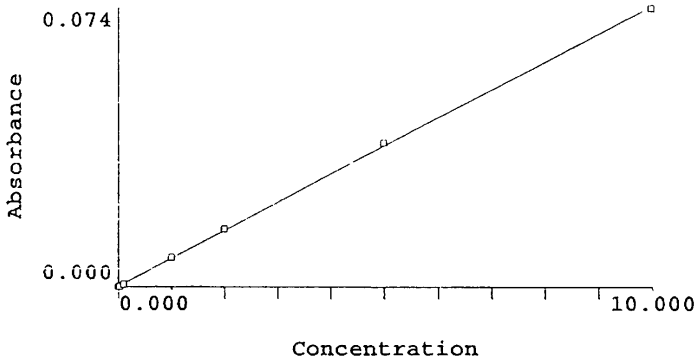
1	[10.00]	0.0741	0.2805	0.0742	12:08:06 PM	Yes
2	[10.00]	0.0741	0.2808	0.0743	12:08:50 PM	Yes
Mean:	[10.00]	0.0741				
SD:	0.0000	0.0000				
%RSD:	0.00%	0.04				

Standard number 6 applied. [10.00]
Correlation Coef.: 0.999893 Slope: 0.00743 Intercept: 0.00021



Calibration data for Hg 253.7 Equation: Linear, Calculated Intercept

ID	Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD
Calib blank_868	0.0000	0	-0.027920	0.00	9.98
0.025ppb 0.005x5ppb	0.0002	0.025	-0.007066	0.00	17.32
0.10ppb MS030518AAX0.0001	0.0007	0.100	0.061175	0.00	5.08
1.00ppb MS030518AAX0.0001	0.0078	1.000	1.017491	0.00	0.21
2.00ppb MS030518AAX0.002	0.0154	2.000	2.044385	0.00	0.23
5.00ppb MS030518AAX0.005	0.0381	5.000	5.094186	0.00	0.12
10.0ppb MS030518AAX0.01	0.0741	10.00	9.942749	0.00	0.04

Correlation Coef.: 0.999893 Slope: 0.00743 Intercept: 0.00021

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Analysis Begun

Logged In Analyst: us26_usr_instrument
Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560
Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1
Autosampler Location: 8
Sample ID: ICV MS030518B
Date Collected: 3/28/2018 1:08:13 PM
Analyst: 868 HG-7
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution:
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1.0000

Replicate Data: ICV MS030518B
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00476	4.76	0.0356	0.1413	0.0357	1:09:18 PM	Yes
2	0.00470	4.70	0.0351	0.1383	0.0353	1:10:03 PM	Yes
Mean:	0.00473	4.73	0.0354				
SD:	0.000047	0.047	0.0004				
%RSD:	1.00%	1.00%	1.00				

QC value within limits for Hg 253.7 Recovery = 94.60%
All analyte(s) passed QC.

Sequence No.: 2
Autosampler Location: 1
Sample ID: ICB
Date Collected: 3/28/2018 1:10:29 PM
Analyst: 868 HG-7
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution:
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1.0000

Replicate Data: ICB
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000029	-0.0286	-0.0000	0.0004	0.0001	1:11:33 PM	Yes
2	-0.000031	-0.0311	-0.0000	0.0004	0.0001	1:12:18 PM	Yes
Mean:	-0.000030	-0.0298	-0.0000				
SD:	0.0000018	0.00176	0.0000				
%RSD:	5.89%	5.89%	92.66				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 3
Autosampler Location: 9
Sample ID: CRQL 0.25
Date Collected: 3/28/2018 1:12:43 PM
Analyst: 868 HG-7
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution: 2X
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1

Replicate Data: CRQL 0.25
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.000461	0.230	0.0019	0.0079	0.0020	1:13:48 PM	Yes
2	0.000475	0.237	0.0020	0.0080	0.0021	1:14:33 PM	Yes
Mean:	0.000468	0.234	0.0019				
SD:	0.0000099	0.0049	0.0000				
%RSD:	2.11%	2.11%	1.89				

Return to Contents

Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 3:37:36 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00195	1.95	0.0147	0.0602	0.0149	3:38:41 PM	Yes
2	0.00196	1.96	0.0148	0.0603	0.0149	3:39:27 PM	Yes
Mean:	0.00196	1.96	0.0147				
SD:	0.000004	0.004	0.0000				
%RSD:	0.19%	0.19%	0.18				

QC value within limits for Hg 253.7 Recovery = 97.77%
All analyte(s) passed QC.

Sequence No.: 2 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 3:39:54 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000022	-0.0217	0.0000	0.0017	0.0002	3:40:57 PM	Yes
2	-0.000025	-0.0247	0.0000	0.0014	0.0002	3:41:43 PM	Yes
Mean:	-0.000023	-0.0232	0.0000				
SD:	0.0000021	0.00214	0.0000				
%RSD:	9.20%	9.20%	45.57				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 3 Autosampler Location: 45
Sample ID: 180328-B-A1 Date Collected: 3/28/2018 3:42:08 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 180328-B-A1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000055	-0.0273	0.0000	0.0012	0.0001	3:43:12 PM	Yes
2	-0.000058	-0.0290	-0.0000	0.0008	0.0001	3:43:58 PM	Yes
Mean:	-0.000056	-0.0281	-0.0000				
SD:	0.0000024	0.00119	0.0000				
%RSD:	4.21%	4.21%	574.11				

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Sequence No.: 4
Sample ID: 180328-L-A1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 46
Date Collected: 3/28/2018 3:44:24 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 180328-L-A1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00946	4.73	0.0354	0.1397	0.0355	3:45:29 PM	Yes
2	0.00947	4.73	0.0354	0.1399	0.0355	3:46:14 PM	Yes
Mean:	0.00946	4.73	0.0354				
SD:	0.000007	0.003	0.0000				
%RSD:	0.07%	0.07%	0.07				

Sequence No.: 5
Sample ID: 18-03-1974-X5
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

3.09
03/28/18

Autosampler Location: 47
Date Collected: 3/28/2018 3:46:40 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-X5 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000046	-0.0229	0.0000	0.0009	0.0002	3:47:45 PM	Yes
2	-0.000045	-0.0227	0.0000	0.0012	0.0002	3:48:30 PM	Yes
Mean:	-0.000046	-0.0228	0.0000				
SD:	0.0000003	0.00017	0.0000				
%RSD:	0.73%	0.73%	3.27				

Sequence No.: 6
Sample ID: 18-03-1974-5 MS
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 48
Date Collected: 3/28/2018 3:48:57 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-5 MS Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00869	4.34	0.0325	0.1297	0.0326	3:50:02 PM	Yes
2	0.00863	4.31	0.0323	0.1291	0.0324	3:50:47 PM	Yes
Mean:	0.00866	4.33	0.0324				
SD:	0.000043	0.021	0.0002				
%RSD:	0.49%	0.49%	0.49				

Sequence No.: 7
Sample ID: 18-03-1974-5 MSD
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 49
Date Collected: 3/28/2018 3:51:14 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-5 MSD Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00910	4.55	0.0340	0.1371	0.0342	3:52:19 PM	Yes
2	0.00903	4.51	0.0338	0.1364	0.0339	3:53:04 PM	Yes
Mean:	0.00907	4.53	0.0339				
SD:	0.000053	0.026	0.0002				
%RSD:	0.58%	0.58%	0.58				

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Sequence No.: 8
Sample ID: 18-03-1974-1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 50
Date Collected: 3/28/2018 3:53:32 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000049	-0.0245	0.0000	0.0005	0.0002	3:54:36 PM	Yes
2	-0.000041	-0.0207	0.0001	0.0008	0.0002	3:55:21 PM	Yes
Mean:	-0.000045	-0.0226	0.0000				
SD:	0.0000054	0.00269	0.0000				
%RSD:	11.88%	11.88%	50.89				

Sequence No.: 9
Sample ID: 18-03-1974-2
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 51
Date Collected: 3/28/2018 3:55:48 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000067	-0.0335	-0.0000	0.0002	0.0001	3:56:52 PM	Yes
2	-0.000065	-0.0325	-0.0000	0.0002	0.0001	3:57:38 PM	Yes
Mean:	-0.000066	-0.0330	-0.0000				
SD:	0.0000015	0.00073	0.0000				
%RSD:	2.22%	2.22%	14.40				

Sequence No.: 10
Sample ID: 18-03-1974-3
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 52
Date Collected: 3/28/2018 3:58:04 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000030	-0.0148	0.0001	0.0004	0.0002	3:59:08 PM	Yes
2	-0.000027	-0.0136	0.0001	0.0010	0.0002	3:59:54 PM	Yes
Mean:	-0.000028	-0.0142	0.0001				
SD:	0.0000017	0.00086	0.0000				
%RSD:	6.01%	6.01%	6.26				

Sequence No.: 11
Sample ID: 18-03-1974-4
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 53
Date Collected: 3/28/2018 4:00:20 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000068	-0.0340	-0.0000	-0.0001	0.0001	4:01:25 PM	Yes
2	-0.000071	-0.0357	-0.0001	-0.0001	0.0001	4:02:10 PM	Yes
Mean:	-0.000070	-0.0349	-0.0001				
SD:	0.0000025	0.00124	0.0000				
%RSD:	3.54%	3.54%	17.77				

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Sequence No.: 12
Sample ID: 18-03-1974-6
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 54
Date Collected: 3/28/2018 4:02:36 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000061	-0.0304	-0.0000	0.0003	0.0001	4:03:41 PM	Yes
2	-0.000066	-0.0330	-0.0000	0.0000	0.0001	4:04:26 PM	Yes
Mean:	-0.000063	-0.0317	-0.0000				
SD:	0.0000036	0.00180	0.0000				
%RSD:	5.69%	5.69%	47.60				

==========

Sequence No.: 13
Sample ID: CCV 0.2x10ppb
Analyst: 868 HG-7
Initial Sample Wt:
Dilution:
Wash Time (before sample): 0

Autosampler Location: 5
Date Collected: 3/28/2018 4:04:53 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00197	1.97	0.0149	0.0577	0.0150	4:05:58 PM	Yes
2	0.00192	1.92	0.0145	0.0572	0.0146	4:06:43 PM	Yes
Mean:	0.00195	1.95	0.0147				
SD:	0.000033	0.033	0.0002				
%RSD:	1.69%	1.69%	1.66				

QC value within limits for Hg 253.7 Recovery = 97.36%
All analyte(s) passed QC.

==========

Sequence No.: 14
Sample ID: CCB
Analyst: 868 HG-7
Initial Sample Wt:
Dilution:
Wash Time (before sample): 0

Autosampler Location: 1
Date Collected: 3/28/2018 4:07:10 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000029	-0.0291	-0.0000	0.0004	0.0001	4:08:14 PM	Yes
2	-0.000031	-0.0308	-0.0000	0.0001	0.0001	4:08:59 PM	Yes
Mean:	-0.000030	-0.0299	-0.0000				
SD:	0.0000012	0.00117	0.0000				
%RSD:	3.90%	3.90%	57.99				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

==========

Sequence No.: 15
Sample ID: 18-03-1974-7
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 55
Date Collected: 3/28/2018 4:09:24 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-7 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000080	-0.0401	-0.0001	-0.0002	0.0000	4:10:29 PM	Yes
2	-0.000084	-0.0418	-0.0001	-0.0003	0.0000	4:11:14 PM	Yes
Mean:	-0.000082	-0.0409	-0.0001				

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SD:	0.0000025	0.00126	0.0000
%RSD:	3.08%	3.08%	9.67

Sequence No.: 16
Sample ID: 18-03-1968-4
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 56
Date Collected: 3/28/2018 4:11:40 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1968-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000047	-0.0236	0.0000	-0.0001	0.0002	4:12:45 PM	Yes
2	-0.000039	-0.0197	0.0001	-0.0000	0.0002	4:13:30 PM	Yes
Mean:	-0.000043	-0.0216	0.0000				
SD:	0.0000056	0.00279	0.0000				
%RSD:	12.87%	12.87%	44.42				

Sequence No.: 17
Sample ID: 180327-B-A2
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 57
Date Collected: 3/28/2018 4:13:56 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 180327-B-A2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000072	-0.0359	-0.0001	-0.0002	0.0001	4:15:01 PM	Yes
2	-0.000076	-0.0378	-0.0001	-0.0004	0.0001	4:15:46 PM	Yes
Mean:	-0.000074	-0.0368	-0.0001				
SD:	0.0000026	0.00130	0.0000				
%RSD:	3.54%	3.54%	14.61				

Sequence No.: 18
Sample ID: 180327-L-A2
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 58
Date Collected: 3/28/2018 4:16:12 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 180327-L-A2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00957	4.78	0.0358	0.1404	0.0359	4:17:17 PM	Yes
2	0.00944	4.72	0.0353	0.1390	0.0354	4:18:02 PM	Yes
Mean:	0.00950	4.75	0.0355				
SD:	0.000093	0.046	0.0003				
%RSD:	0.98%	0.98%	0.97				

Sequence No.: 19
Sample ID: 18-03-1723-F-1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 59
Date Collected: 3/28/2018 4:18:29 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000065	-0.0323	-0.0000	-0.0001	0.0001	4:19:33 PM	Yes
2	-0.000063	-0.0317	-0.0000	-0.0001	0.0001	4:20:18 PM	Yes
Mean:	-0.000064	-0.0320	-0.0000				

Return to Contents

SD:	0.0000009	0.00043	0.0000
%RSD:	1.33%	1.33%	10.36

Sequence No.: 20 Autosampler Location: 60
Sample ID: 18-03-1723-F-1 MS Date Collected: 3/28/2018 4:20:45 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 MS Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00914	4.57	0.0342	0.1377	0.0343	4:21:50 PM	Yes
2	0.00920	4.60	0.0344	0.1378	0.0345	4:22:35 PM	Yes
Mean:	0.00917	4.58	0.0343				
SD:	0.000042	0.021	0.0002				
%RSD:	0.46%	0.46%	0.46				

Sequence No.: 21 Autosampler Location: 61
Sample ID: 18-03-1723-F-1 MSD Date Collected: 3/28/2018 4:23:02 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 MSD Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00915	4.57	0.0342	0.1358	0.0343	4:24:07 PM	Yes
2	0.00907	4.54	0.0339	0.1353	0.0341	4:24:53 PM	Yes
Mean:	0.00911	4.55	0.0341				
SD:	0.000053	0.026	0.0002				
%RSD:	0.58%	0.58%	0.58				

Sequence No.: 22 Autosampler Location: 62
Sample ID: 18-03-1723-F-2 Date Collected: 3/28/2018 4:25:20 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000067	-0.0335	-0.0000	-0.0005	0.0001	4:26:25 PM	Yes
2	-0.000066	-0.0332	-0.0000	-0.0001	0.0001	4:27:10 PM	Yes
Mean:	-0.000067	-0.0333	-0.0000				
SD:	0.0000004	0.00020	0.0000				
%RSD:	0.59%	0.59%	3.60				

Sequence No.: 23 Autosampler Location: 63
Sample ID: 18-03-1974-F-1 Date Collected: 3/28/2018 4:27:36 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000074	-0.0368	-0.0001	-0.0005	0.0001	4:28:41 PM	Yes
2	-0.000066	-0.0331	-0.0000	-0.0002	0.0001	4:29:26 PM	Yes
Mean:	-0.000070	-0.0350	-0.0001				

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SD:	0.0000052	0.00261	0.0000
%RSD:	7.48%	7.48%	37.12

Sequence No.: 24 Autosampler Location: 64
Sample ID: 18-03-1974-F-2 Date Collected: 3/28/2018 4:29:53 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000077	-0.0386	-0.0001	-0.0005	0.0000	4:30:58 PM	Yes
2	-0.000070	-0.0351	-0.0001	-0.0000	0.0001	4:31:43 PM	Yes
Mean:	-0.000074	-0.0368	-0.0001				
SD:	0.0000049	0.00247	0.0000				
%RSD:	6.70%	6.70%	27.73				

Sequence No.: 25 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 4:32:09 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00196	1.96	0.0148	0.0567	0.0149	4:33:14 PM	Yes
2	0.00194	1.94	0.0146	0.0569	0.0147	4:34:00 PM	Yes
Mean:	0.00195	1.95	0.0147				
SD:	0.000016	0.016	0.0001				
%RSD:	0.83%	0.83%	0.82				

QC value within limits for Hg 253.7 Recovery = 97.39%
All analyte(s) passed QC.

Sequence No.: 26 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 4:34:27 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000032	-0.0323	-0.0000	0.0000	0.0001	4:35:30 PM	Yes
2	-0.000028	-0.0277	0.0000	0.0001	0.0001	4:36:16 PM	Yes
Mean:	-0.000030	-0.0300	-0.0000				
SD:	0.0000033	0.00329	0.0000				
%RSD:	10.97%	10.97%	157.20				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 27 Autosampler Location: 65
Sample ID: 18-03-1974-F-3 Date Collected: 3/28/2018 4:36:41 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-3 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000050	-0.0251	0.0000	-0.0002	0.0001	4:37:46 PM	Yes
2	-0.000046	-0.0228	0.0000	0.0003	0.0002	4:38:31 PM	Yes
Mean:	-0.000048	-0.0239	0.0000				
SD:	0.0000032	0.00160	0.0000				
%RSD:	6.69%	6.69%	40.04				

Sequence No.: 28 Autosampler Location: 66
Sample ID: 18-03-1974-F-4 Date Collected: 3/28/2018 4:38:58 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000077	-0.0384	-0.0001	-0.0002	0.0000	4:40:02 PM	Yes
2	-0.000072	-0.0361	-0.0001	-0.0001	0.0001	4:40:48 PM	Yes
Mean:	-0.000075	-0.0373	-0.0001				
SD:	0.0000033	0.00167	0.0000				
%RSD:	4.48%	4.48%	17.88				

Sequence No.: 29 Autosampler Location: 67
Sample ID: 18-03-1974-F-5 Date Collected: 3/28/2018 4:41:14 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-5 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000073	-0.0367	-0.0001	-0.0004	0.0001	4:42:19 PM	Yes
2	-0.000070	-0.0349	-0.0001	-0.0003	0.0001	4:43:04 PM	Yes
Mean:	-0.000072	-0.0358	-0.0001				
SD:	0.0000026	0.00132	0.0000				
%RSD:	3.70%	3.70%	16.83				

Sequence No.: 30 Autosampler Location: 68
Sample ID: 18-03-1974-F-6 Date Collected: 3/28/2018 4:43:31 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000071	-0.0357	-0.0001	-0.0003	0.0001	4:44:35 PM	Yes
2	-0.000072	-0.0359	-0.0001	-0.0002	0.0001	4:45:20 PM	Yes
Mean:	-0.000072	-0.0358	-0.0001				
SD:	0.0000003	0.00017	0.0000				
%RSD:	0.48%	0.48%	2.19				

Sequence No.: 31 Autosampler Location: 69
Sample ID: 18032[illegible]-B-A3 Date Collected: 3/28/2018 4:45:47 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18032[illegible]-B-A3 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000073	-0.0363	-0.0001	-0.0002	0.0001	4:46:52 PM	Yes
2	-0.000070	-0.0350	-0.0001	-0.0001	0.0001	4:47:37 PM	Yes
Mean:	-0.000071	-0.0356	-0.0001				
SD:	0.0000018	0.00089	0.0000				
%RSD:	2.49%	2.49%	11.53				

Sequence No.: 32 Autosampler Location: 70
Sample ID: 18032%-L-A3 Date Collected: 3/28/2018 4:48:04 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18032%-L-A3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00919	4.59	0.0344	0.1410	0.0345	4:49:08 PM	Yes
2	0.00924	4.62	0.0346	0.1410	0.0347	4:49:54 PM	Yes
Mean:	0.00921	4.61	0.0345				
SD:	0.000039	0.020	0.0001				
%RSD:	0.42%	0.42%	0.42				

Sequence No.: 33 Autosampler Location: 71
Sample ID: 180327-L-A3D Date Collected: 3/28/2018 4:50:20 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18032%-L-A3D Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00927	4.63	0.0346	0.1406	0.0348	4:51:25 PM	Yes
2	0.00929	4.64	0.0347	0.1413	0.0349	4:52:10 PM	Yes
Mean:	0.00928	4.64	0.0347				
SD:	0.000016	0.008	0.0001				
%RSD:	0.17%	0.17%	0.17				

Sequence No.: 34 Autosampler Location: 72
Sample ID: 18-03-1957-F-6 Date Collected: 3/28/2018 4:52:37 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1957-F-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000049	-0.0247	0.0000	0.0002	0.0002	4:53:42 PM	Yes
2	-0.000047	-0.0234	0.0000	0.0002	0.0002	4:54:27 PM	Yes
Mean:	-0.000048	-0.0241	0.0000				
SD:	0.0000019	0.00093	0.0000				
%RSD:	3.87%	3.87%	24.11				

Sequence No.: 35 Autosampler Location: 73
Sample ID: 18-03-1676-1 Date Collected: 3/28/2018 4:54:54 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1676-1 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000088	-0.0439	-0.0001	-0.0006	0.0000	4:56:00 PM	Yes
2	-0.000082	-0.0412	-0.0001	-0.0008	0.0000	4:56:45 PM	Yes
Mean:	-0.000085	-0.0426	-0.0001				
SD:	0.0000038	0.00190	0.0000				
%RSD:	4.47%	4.47%	12.98				

Sequence No.: 36 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 4:57:12 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00189	1.89	0.0143	0.0564	0.0144	4:58:17 PM	Yes
2	0.00190	1.90	0.0143	0.0567	0.0145	4:59:02 PM	Yes
Mean:	0.00190	1.90	0.0143				
SD:	0.000004	0.004	0.0000				
%RSD:	0.22%	0.22%	0.22				

QC value within limits for Hg 253.7 Recovery = 94.90%
All analyte(s) passed QC.

Sequence No.: 37 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 4:59:29 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000030	-0.0303	-0.0000	-0.0001	0.0001	5:00:33 PM	Yes
2	-0.000029	-0.0292	-0.0000	0.0002	0.0001	5:01:18 PM	Yes
Mean:	-0.000030	-0.0297	-0.0000				
SD:	0.0000008	0.00079	0.0000				
%RSD:	2.67%	2.67%	43.44				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

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180328G1

Carrier solution R06141703 **Reducing Agent R06141702**

Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
Calib blank_868	868 HG-7		Hg 253.7	3/28/2018	11:55:24 AM		ug/L		mg/L	
0.025ppb 0.005x5ppb	868 HG-7		Hg 253.7	3/28/2018	11:57:37 AM		ug/L		mg/L	
0.10ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/28/2018	11:59:51 AM		ug/L		mg/L	
1.00ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/28/2018	12:02:07 PM		ug/L		mg/L	
2.00ppb MS030518AAX0.002	868 HG-7		Hg 253.7	3/28/2018	12:04:22 PM		ug/L		mg/L	
5.00ppb MS030518AAX0.005	868 HG-7		Hg 253.7	3/28/2018	12:06:37 PM		ug/L		mg/L	
10.0ppb MS030518AAX0.01	868 HG-7		Hg 253.7	3/28/2018	12:08:50 PM		ug/L		mg/L	
ICV MS030518B } *	868 HG-7		Hg 253.7	3/28/2018	12:47:40 PM	0.172897	ug/L	0.000173	mg/L	0.999893
ICV MS030518B } *	868 HG-7		Hg 253.7	3/28/2018	1:10:03 PM	4.729983	ug/L	0.00473	mg/L	0.999893
ICB	868 HG-7		Hg 253.7	3/28/2018	1:12:18 PM	-0.02982	ug/L	-2.98E-05	mg/L	0.999893
CRQL 0.25	868 HG-7		Hg 253.7	3/28/2018	1:14:33 PM	0.233944	ug/L	0.000468	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	1:16:50 PM	1.963562	ug/L	0.001964	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	1:19:06 PM	-0.03086	ug/L	-3.09E-05	mg/L	0.999893
CCV 0.2x10ppb **	868 HG-7		Hg 253.7	3/28/2018	3:39:27 PM	1.955477	ug/L	0.001955	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	3:41:43 PM	-0.02323	ug/L	-2.32E-05	mg/L	0.999893
180328-B-A1	868 HG-7		Hg 253.7	3/28/2018	3:43:58 PM	-0.02813	ug/L	-5.63E-05	mg/L	0.999893
180328-L-A1	868 HG-7		Hg 253.7	3/28/2018	3:46:14 PM	4.731277	ug/L	0.009463	mg/L	0.999893
18-03-1974-5	868 HG-7		Hg 253.7	3/28/2018	3:48:30 PM	-0.02283	ug/L	-4.57E-05	mg/L	0.999893
18-03-1974-5 MS	868 HG-7		Hg 253.7	3/28/2018	3:50:47 PM	4.3281	ug/L	0.008656	mg/L	0.999893
18-03-1974-5 MSD	868 HG-7		Hg 253.7	3/28/2018	3:53:04 PM	4.532539	ug/L	0.009065	mg/L	0.999893
18-03-1974-1	868 HG-7		Hg 253.7	3/28/2018	3:55:21 PM	-0.02264	ug/L	-4.53E-05	mg/L	0.999893
18-03-1974-2	868 HG-7		Hg 253.7	3/28/2018	3:57:38 PM	-0.033	ug/L	-6.60E-05	mg/L	0.999893
18-03-1974-3	868 HG-7		Hg 253.7	3/28/2018	3:59:54 PM	-0.01424	ug/L	-2.85E-05	mg/L	0.999893
18-03-1974-4	868 HG-7		Hg 253.7	3/28/2018	4:02:10 PM	-0.03487	ug/L	-6.97E-05	mg/L	0.999893
18-03-1974-6	868 HG-7		Hg 253.7	3/28/2018	4:04:26 PM	-0.03171	ug/L	-6.34E-05	mg/L	0.999893

* failed, reran - passed
** time gap

Reviewed/Assign to Logbook Date: 03-28-18
Analysis Hg Chemist ID: 309
Logbook Page: 32 Instrument ID: Hg-7

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Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:06:43 PM	1.947275	ug/L	0.001947	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	4:08:59 PM	-0.02994	ug/L	-2.99E-05	mg/L	0.999893
18-03-1974-7	868 HG-7		Hg 253.7	3/28/2018	4:11:14 PM	-0.04095	ug/L	-8.19E-05	mg/L	0.999893
18-03-1968-4	868 HG-7		Hg 253.7	3/28/2018	4:13:30 PM	-0.02165	ug/L	-4.33E-05	mg/L	0.999893
180328-B-A2	868 HG-7		Hg 253.7	3/28/2018	4:15:46 PM	-0.03684	ug/L	-7.37E-05	mg/L	0.999893
180328-L-A2	868 HG-7		Hg 253.7	3/28/2018	4:18:02 PM	4.751384	ug/L	0.009503	mg/L	0.999893
18-03-1723-F-1	868 HG-7		Hg 253.7	3/28/2018	4:20:18 PM	-0.03202	ug/L	-6.40E-05	mg/L	0.999893
18-03-1723-F-1 MS	868 HG-7		Hg 253.7	3/28/2018	4:22:35 PM	4.58476	ug/L	0.00917	mg/L	0.999893
18-03-1723-F-1 MSD	868 HG-7		Hg 253.7	3/28/2018	4:24:53 PM	4.55445	ug/L	0.009109	mg/L	0.999893
18-03-1723-F-2	868 HG-7		Hg 253.7	3/28/2018	4:27:10 PM	-0.03334	ug/L	-6.67E-05	mg/L	0.999893
18-03-1974-F-1	868 HG-7		Hg 253.7	3/28/2018	4:29:26 PM	-0.03496	ug/L	-6.99E-05	mg/L	0.999893
18-03-1974-F-2	868 HG-7		Hg 253.7	3/28/2018	4:31:43 PM	-0.03681	ug/L	-7.36E-05	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:34:00 PM	1.947802	ug/L	0.001948	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	4:36:16 PM	-0.03001	ug/L	-3.00E-05	mg/L	0.999893
18-03-1974-F-3	868 HG-7		Hg 253.7	3/28/2018	4:38:31 PM	-0.02392	ug/L	-4.78E-05	mg/L	0.999893
18-03-1974-F-4	868 HG-7		Hg 253.7	3/28/2018	4:40:48 PM	-0.03727	ug/L	-7.45E-05	mg/L	0.999893
18-03-1974-F-5	868 HG-7		Hg 253.7	3/28/2018	4:43:04 PM	-0.03579	ug/L	-7.16E-05	mg/L	0.999893
18-03-1974-F-6	868 HG-7		Hg 253.7	3/28/2018	4:45:20 PM	-0.0358	ug/L	-7.16E-05	mg/L	0.999893
180328-B-A3	868 HG-7		Hg 253.7	3/28/2018	4:47:37 PM	-0.03563	ug/L	-7.13E-05	mg/L	0.999893
180328-L-A3	868 HG-7		Hg 253.7	3/28/2018	4:49:54 PM	4.607026	ug/L	0.009214	mg/L	0.999893
180328-L-A3D	868 HG-7		Hg 253.7	3/28/2018	4:52:10 PM	4.638428	ug/L	0.009277	mg/L	0.999893
18-03-1957-F-6	868 HG-7		Hg 253.7	3/28/2018	4:54:27 PM	-0.02406	ug/L	-4.81E-05	mg/L	0.999893
18-03-1676-1	868 HG-7		Hg 253.7	3/28/2018	4:56:45 PM	-0.04256	ug/L	-8.51E-05	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:59:02 PM	1.897963	ug/L	0.001898	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	5:01:18 PM	-0.02975	ug/L	-2.97E-05	mg/L	0.999893
CCV 0.2x10ppb *	868 HG-7		Hg 253.7	3/28/2018	7:02:56 PM	1.880503	ug/L	0.001881	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	7:05:12 PM	-0.02506	ug/L	-2.51E-05	mg/L	0.999893
18-03-1116-1	868 HG-7		Hg 253.7	3/28/2018	7:07:29 PM	-0.0214	ug/L	-4.28E-05	mg/L	0.999893
18-03-1894-2 PDS	868 HG-7		Hg 253.7	3/28/2018	7:09:47 PM	4.718692	ug/L	0.009437	mg/L	0.999893

* time gap

Reviewed/Assign to Logbook Date: 03-28-18
Analysis Hg Chemist ID: 309
Logbook Page: 33 Instrument ID: Hg-7

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Preparation Log

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Mercury Sample Preparation Logbook (Aqueous)

METHOD	MATRIX	EQUIPMENT ID #	REAGENT ID #	REAGENT / STANDARD ID #
☐ EPA 7470A ☐ EPA 245.1	360 03/28/18 Aqueous	Thermometer GT-04 (CF 0.0 °C) Block Digester 3 Pipetter / Dispenser P67	HNO_3 M006-43-08 1.25 mL H_2SO_4 M006-45-20 2.5 mL 5% $KMnO_4$ MR011218A	5% $K_2S_2O_8$ MR090817A 4 mL NaCl-H_3NO·HCl MR011218B mL Spike MS030518AA

BATCH NUMBER	SUPPLY LOT #	ACID PRESERVATION AND FILTRATION	STANDARD ID #
MS/MSD 180328-SA1 (Specify)	Digestion Tube 170164 Filter	☑ None ☐ Lab Filtered ☐ Lab Preserved Book # _____ Page # _____	IC MS030518AA ICV B

DIGESTION									SAMPLE			
	START			END							5% $KMnO_4$	SPIKE OR IC/ICV
DATE	TIME	TEMP W/O CF (°C)	PREP TECH ID #	TIME	TEMP W/O CF (°C)	PREP TECH ID #	INITIAL pH	ECI ID #	INITIAL (mL)	FINAL (mL)	V (mL)	V (µL)
3/28/18	10:36	95	808	12:30	95	808	≤2	MS 18-03-1974-5A	50	100	7.5	500
							≤2	MSD "	808			"
								LCS 180328-LA1	03/28/18			
								LCSD / MB 180328-BA1				
							≤2	18-03-1974-1A				
							≤2	2				
							≤2	3				
							≤2	4				
							≤2	5				
							≤2	6				
							≤2	7				
							≤2	18-03-1968-4A				
							≤2	18-03-1676-1E				
	14:10			16:10			≤2	18-03-1798-1B				
							≤2	2				
							≤2	3				
							≤2	4				
							≤2	5				
							≤2	6				
							≤2	7				
							≤2	MS 2				500
							≤2	MSD 2				1
								IC				
								ICV				
								CB				

COMMENTS: D-048 / D-047 / D-158 / D-073 / D-063

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Standards Preparation Logs

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
4/27/17	M042717A	6010/200.7	Na [10,000 PPM]	M006-023-23	1 ml	SEE SOP Apdx C	200 ml	SEE SOP Apdx C	12 ml HNO3 10 ml HCl	M006-041-22 ~~M006-042-23~~	~~04/27/18~~ 12/13/17	935	
			Sn [10,000 PPM]	-16	0.05 ml					M006-041-24 ?? 4/28/17			
			Si [1,000 PPM]	~~M006-~~ 040-03 935 4/27/17	1.77 ml								
4/27/17	M042717B	1640	100ppm Se	M006-42-11	0.2554 g	pow	1 L	100ppm	H2O	N/A	4/27/18	KO	
4/27/17	M042717C	6010/200.8	Internal std Conc.										
			Sc	M006-042-04	100 mL	1000ppm	500 mL	20ppm	5 mL HNO3	M006-41-22	3 yrs	SR	05/2021
			Li6	M006-042-03	50 mL			100ppm					11/2021
			Ga	M006-042-05	50 mL								11/2020
			In	M006-13-4	10 mL			20ppm					02/2018
			Ho	M006-042-07	10 mL								04/2022
			Tb	M006-042-06	10 mL								08/2021
			Bi	M006-042-08	10 mL								04/2022
	M042717D		Internal std	M042717C	5 mL	20ppm	1 L ×3	0.1-1ppm	10 mL HNO3				
5/3/17	M050317A	Hg	100ppm Hg	M006-36-15	10 mL	1000ppm	100 mL	100ppm	5 mL HNO3	M006-41-22	12/20/17	868	
	M050317B		1ppm STD	M050317A	1 mL	100ppm	100 mL	1ppm	5 mL HNO3	M006-41-22	6/3/17	868	

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Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	030918	C	org Pb	P-115 / P-015	MS121417A	0.04 mL	MR121417D	20 mL	2 ppm	3/10/18	1080
MS	"	D	"	"	"	0.02	"	"	1	"	"
MS	"	E	"	"	"	0.1 conc	"	"	0.2	"	"
MS	"	F	"	"	MS012418A	0.1	"	"	5	"	"
MS	030518A	A	Hg	MP-060	M006-18-04	1 mL	M006-43-05 5 mL	100 mL	1 ppm	4/5/18	865
MS	"	B	"	"	M006-43-01	"	M006-43-08 5 mL	"	"	"	"
MS											
MS											
MS											
MS											
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Reagent Preparation Logbook

PREP DATE	NEW REAGENT ID #	TEST METHOD	REAGENT DESCRIPTION	SOURCE CHEMICAL(S) NAME	SOURCE CHEMICAL(S) ID #	SOURCE CHEMICAL(S) INITIAL AMOUNT	SOLVENT NAME	SOLVENT ID #	FINAL VOLUME	EXPIR. DATE	PREP BY	COMMENTS
04/25/17	R042517-2	org. Pb	10% 336/MIBK	Aliquat 336	M006-35-24	2mL	MIBK	M006-32-24	200 mL	4/25/18	SZ	
"	R042517-03	"	1% 336/MIBK	10% 336	R042517-02	2mL	MIBK	M006-32-24	200mL	"	SZ	
04/27/17	R042717-01	GFAA/200.8	3% HNO_3	HNO_3	M006-041-11	100mL	DI water	D042717-01	4L x 5	4/27/18	SZ	
04/28/17	R042817-01	Hg	Aqua Regia 1:1	HCl HNO_3	M006-041-24 M006-041-12	300mL 100mL	$DI H_2O$	N/A	800mL	4/28/18	SZ	Daily
04/28/17	R042817-02	Hg	5% $KMnO_4$	~~KMnO4 M006-37-01 SZ 4/28/17~~ $KMnO_4$	M006-37-01	50g	$DI H_2O$	NA	1L	4/28/18	SZ	
06/08/17	R060817-01	Hg	12% $NH_2OH \cdot Cl$	$NH_2OH \cdot HCl$ NaCl	M006-36-02 ~~M006-25-16~~ SZ 6/8/17 42-20	1.2kg 1	DIH_2O	NA	1L	6/08/18	SZ	
06/09/17	R060917-01	org. Pb	RGM-6	Xylene	M006-042-24	200mL	NA	NA	100mL XY	12/09/17	SZ	
"		"	"	MIBK	M006-032-24	250mL						
"		"	"	10% 336	R060917-03	50mL						
"		"	"	3% I_2	R060917-04	1mL						
"	R060917-05	"	10% 336/MIBK	Aliquat 336	M006-35-24	20mL	MIBK	M006-032-24	200mL	"	"	
"	R060917-06	"	1% 336/MIBK	10% 336/MIBK	R060917-05	10mL	MIBK	"	200mL	"	"	
"	R060917-04	"	I_2 3%	Iodine	G007-04-19	6g	Benzene	M006-050-24	200mL	"	"	2/23/25
6/14/17	R061417-01	Hg	Aqua Regia	HCl HNO_3	M006-041-24 M006-041-12	300mL 100mL	$DI H_2O$	NA	800mL	6/14/18	SZ	Daily
"	R061417-02	"	$SnCl_2 \cdot 2H_2O$ Reducing agent	$SnCl_2 \cdot 2H_2O$	M006-42-22 M006-41-12	60mL 22g	~~DI H_2O 60mL HCl~~	~~NA M006-41-12~~	2L x 2	6/14/18	SZ	Daily
"	R061417-03	"	3% HCl carrier solution	HCl	M006-41-12	66mL	$DI H_2O$ 06/14/17 SZ	NA	2L x 2	6/14/18	"	"
6/20/17	R062017-01	metals	1:1 HNO_3	HNO_3	M006-042-24	1.2L x 30	$DI H_2O$	NA	2.5 x 30	06/20/18	SZ	
06/27/17	R062717-01	Hg	$NH_2OH \cdot HCl$	$NH_2OH \cdot HCl$	M006-34-24	60g	DIH_2O	NA	200mL	10/3/17	SZ	
06/28/17	R062817-01	metals	1:1 HNO_3	HNO_3	M006-041-11	500mL	$DI H_2O$	NA	1000mL	6/28/18	SZ	
06/28/17	R062817-02	"	1:2 HCl	HCl	M006-042-24	800mL	DIH_2O	NA	2000 mL 30	6/28/18	SZ	

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MR	081717	A	metals		HNO3 M006-043-08	500mL	~~Nano Pure~~ Type 1 grade water 8/17/17	reagent 1000mL	1:1 HNO3	08/17/18	1080
MR	083117	A	200.7 metals		8/31/17 1080 ~~HNO3~~ HCl ~~M006-044-06~~	500mL	Type 1 grade water	2000mL	1:4 HCl	08/31/18	1080
MR					M006-042-22						
MR	090517	A	Hg	Balance 59	M006-41-09	500g	8L8 9/8/17 ~~Nano~~ DI H_2O	100mL	5% $K_2S_2O_8$	9/8/18	8L8
MR	091917	A	metals		M006-042-15	833mL	Type 1 grade water	2.5L	1:2 HCl	9/19/18	1080
MR	092717	A	metals		~~M006-44-06~~	1.25L	DI H_2O Type 1	2.5L	1:1 HNO3 ~~HCl~~ aqua regia	~~09/27/18~~	710
MR	10/10/17-01	A	TCLP		NAOH M006-34-15	160gram	DI-H2O	4L x8	1N	10/09/18	805
MR	10/10/17-04	A	STLC		NAOH M006-38-15	640gram	DI-H2O	4L x8	4N	10/09/18	805
MR	101117	A	1631	Balance 64	M006-043-12	60g	DI-H2O	200mL	$NH_2OH \cdot HCl$	10/11/18	776
MR	102817	A	metals		M006-44-07	833mL	Type 1 grade water	2.5L	1:2 HCl	10/28/18	1080
MR	110117	A	Metals	D-044	M006-44-17	250mL	DI-H2O	500mL	1:1 HNO3	11/01/18	1058
MR	110117	B	1	F-002	M006-41-23	250mL	DI-H2O	50mL	1:1 HCl	11/01/18	1058
MR	~~110417~~	~~A~~	~~1631~~		~~M006-43-12~~	~~60g~~	200mL DI-H2O	~~200mL~~	11/4/17 1080		
MR	110317	A	1631	Balance 64	M006-032-04 ~~G007-016-19~~	2.16g 3.04g	M006-036-24 HCl	200mL	BrCl	11/3/18	1080
MR	111617	A	metals	D-044	M006-045-02	100mL	DI-H2O	2L	5% HNO_3	11/16/18	5TK
MR	112717	A	TCLP		M006-44-07	8.33x4	DI-H2O	100 x4 = 400 mL	1N	11/26/18	805
MR	11/21/17	A	METALS	D-044 F-002	M006-045-01 M006-45-01	120mL 320mL	DI-H2O	2L	6% HNO_3 16% HCl	11/21/18	5T8
MR	12/1/17	A	Hg	Balance 59	M006-42-10 M006-45-05	1.2kg 1.2kg	DI-H_2O	10L	12% NaCl · NH_4OH	12/1/18	8L8

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MR	120717	A	metals	—	M006-045-01	833mL	Di-H2O	2.5L	1:2 HCl	12/7/18	1080
MR	121117	A	6010/200.7	D044 / F002	M006-045-02 M006-045-01	60mL 50 mL	Di-H2O	1LX2	6% HNO3 5% HCl	12/11/18	935
MR	↓	B	↓	↓	↓	↓	↓	↓	↓	↓	↓
MR	↓	C	↓	↓	↓	100mL 100mL	↓	1L x4	10% HNO3 10% HCl	↓	↓
MR	↓	D	↓	↓	↓	↓	↓	1L X2	↓	↓	↓
MR	121217	A	SPLP	—	C006-44-21 H2SO4 M006-45-02 HNO3	60ml 40ml >100ml	DI-H2O	100 ml	60% H2SO4 40% HNO3	12/11/18	805
MR	121417	A	Org. Pb	pipette 04072016 MIBK D-054	Aliquot 336 M006-35-24	20mL	M006-059-02 MIBK 180mL	200mL	10% .336/MIBK	6/14/18	1080
MR	121417	B	Org. Pb	pipette 04072016 MIBK D-054	10% .336/MIBK MR121417A	20mL	M006-059-02 MIBK 180mL	200mL	1% .336/MIBK	6/14/18	1080
MR	121417	C	Org. Pb	Balance 61 pipette 04072016	Iodine G007-04-19	6g	M006-09-09 Benzene	200mL	I_2 3%	6/14/18	1080
MR	121417	D	Org. Pb	04072016 D-054/D-055/pipette	xylene M006-044-14	200mL	—	—	BLANKS	6/14/18	1080
MR	|	|	|	|	MIBK M006-059-02	250mL	|	|	|	|	|
MR	|	|	|	|	1% .336 MR121417B	50mL	|	|	|	|	|
MR	|	|	|	|	3% I_2	1mL	|	|	|	|	|
MR	121617	A	metals	—	M006-045-02	1.25L	Di-H2O	2.50L	1:1 HNO3	12/16/18	1080
MR	011218	A	Hg	Bal #59	M006-43-01	~~50~~ 1000g	DI-H2O	20L	5% KMnO4	1/12/19	868
MR	011218	B	Hg	Bal #59	M006-43-025 M006-42-20	1.2 kg 1.2 kg	DI-H2O	10L	12% NaCl·NH2OH	1/12/19	868
MR	013018	A	METALS	—	M006-045-09	4X ~~1.25L~~ 500ml	DI-H2O	4X 1200 mL	1:1 HNO3	01/30/19	710
MR	013118 ~~013018~~	A	metals	—	M006-042-22	833mL	Di-H2O	2.5L	1:2 HCl	1/31/19 ~~18~~	1080

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1	Nitric Acid	EMD	NX0407/4	52088	8/31/15	2.5L x2	G	8/31/12	469	8/31/12	469	
2	Hydrochloric Acid	EMD	HX0607/4	51122	8/31/15	2.5L x2	G	8/31/12	469	8/31/12	469	
3	↓	EMD	HX0607/4	51258	↓	2.5L x2	G	8/31/12	↓	↓	↓	
4	Instrument Calibration STD #3	SPEX	CL-6AC-3	CL43-8443	08/30/13	125mL x2	P	09/06/12	SP	09/06/12	SP	
5	Instrument Calibration STD #2	SPEX	CL-CAL-2	CL5-1184P	08/30/13	1LT mL	P	09/06/12	SP	09/06/12	SP	
6	H C L Acid	EMD	HX0607/4	51258	09/09/15	2.5L x7	G	09/09/12	JDS	09/09/12	JDS	
7	↓	↓	HX0607/4	51122	↓	2.5L x3	G	↓	↓	↓	↓	
8	↓	↓	HX0607/4	51181	↓	2.5L x1	G	↓	↓	↓	↓	
9	Nitric Acid	EMD	NX0407/4	52012	09/06/15	2.5L x10	G	09/07/12	JDS	09/07/12	JDS	
10	↓	↓	↓	52028	↓	2.5L x1	G	↓	↓	↓	↓	
11	H C L Acid	EMD	HX0607/4	51258	09/13/15	2.5L x8	G	09/14/12	JDS	09/14/12	JDS	
12	Nitric Acid	EMD	NX0407/4	52012	09/13/15	2.5L x8	G	09/14/12	JDS	09/14/12	↓	
13	Stannous Chloride	VWR	BDH0304-500g	131863	NA	500g x5	P	9/17/12	769	9/17/12	769	
14	Potassium Permanganate	Fisher	P279-212	116168	9/18/17	2.5kg x4	G	9/18/12	769	9/18/12	769	
15	Acetic Acid, Glacial	Amresco	0714-2.5L	2372C462	02/30/13	2.5L x4	G	09/18/12	JDS	09/18/12	JDS	CTF 3 p3-28
16	Hydrogen Peroxide	EMD	HX0635-2	51283217	10/31/13	1L x6	P	9/26/12	769	9/26/12	769	
17	Nitric Acid	EMD	NX0407/1	52012	9/27/15	500mL	G	9/27/12	SP	9/27/12	SP	
18	↓	↓	↓	51331	↓	500mL x8	↓	↓	↓	↓	↓	
19	Nitric Acid	Fisher	A467-2	121020	2/23/15	2L x2	T	10/3/12	776	10/3/12	776	
20	Acetic Acid	Fisher	A507-P212	611007	6/2014	2.5L x2	P	10/3/12	776	10/3/12	776	
21	Potassium Persulfate	Fisher	P281-500	120909	10/5/17	500g x12	P	10/5/12	769	10/5/12	769	
22	Hydroxylamine Hydrochloride	ACROS	41205000	A0315671	10/5/17	500g x6	↓	↓	↓	↓	↓	
23	Nitric Acid	EMD	NX0407/4	52012	10/08/15	2.5L x5	G	10/08/12	JDS	10/08/12	JDS	
24	Hydroxylamine Hydro	ALDRICH	431362-50G	MKBL3154V	10/8/17	50g	P	10/8/12	776	10/8/12	776	
25	Stannous Chloride Dihydrate	Fisher	T163-500	122943	10/9/17	500g x6	P	10/9/12	776	10/9/12	776	

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1	Zinc Standard	Accu Trace	ICP-MS-70N-0.1X-1	214045001	4/2019	100ml	P	4/8/14	769	4/8/14	769	
2	Iron Standard		ICP-MS-27N-0.1X-1	213015021	1/2018	100ml						
3	Chromium Standard		ICP-MS-13N-0.1X-1	213025146	3/2018	100ml						
4	Mercury Standard		ICP-MS-34N-0.1X-1	213115080	11/2018	100ml						
5	Nitric Acid	EMD	NX0407-2	53358	4-10-17	2.5Lx5	G	4-11-14	879	4-11-14	879	
6	Hydrochloric Acid	EMD	HX0607-2	54028	4-10-17	2.5Lx5	G	4-11-14	879	4-11-14	879	
7	Hydrochloric Acid	EMD	HX0607-2	53010	4-14-17	2.5Lx8	G	4-15-14	879			Lot # verified
8	Nitric Acid	EMD	NX0407-2	53358	4-20-17	2.5Lx5	G	4-21-14	879	4-21-14	879	Lot # verified
9	Hydrochloric Acid	EMD	HX0607-2	54028	4-20-17	2.5Lx5	G	4-21-14	879	4-21-14	879	Lot # verified
10	Hydrogen Peroxide	Fisher	H325-500	140441	4/17/~~12~~	500ml	P	4/21/14	110	4/21/14	110	
11	Hydrogen Peroxide	EMD	HX-0635-2	54044409	2/28/16	1Lx10	P	4/24/14	879	~~4-24-14~~	~~879~~	Lot # verified
12	Hydroxylamine Hydrochloride	Reagent world	5470-11-1	FZ0661	4/25/17	500gx15	P	4/25/14	769	4/25/14	769	
13	Hydrochloric Acid	EMD	HX067-2	54028	4/29/17	2.5Lx5	G	4/29/14	914	4/29/14	914	
14	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	4/29/14	914	4/29/14	914	
15	Ammonium Hydroxide	BDH	87003-214	724010	3/04/17	2x 500ml	P	4/30/14	110	4/30/14	110	
16	Hydrochloric Acid	EMD	HX0607-4	52310	4/30/17	2.5x5	G	4/30/14	914	4/30/14	914	
17	Hydrochloric Acid	EMD	HX0607-4	54028	4/30/17	2.5Lx5	G	5/5/14	879	6/9/14	915	Lot # verified
18	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/5/14	879	5/6/14	879	Lot # verified
19	Nitric Acid	EMD	NX0407-2	53157	05/21/17	2.5Lx2	G	05/22/14	805	05/22/14	805	
20	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/22/14	879	5/22/14	879	Lot # verified
21	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/23/14	879	5/27/14	879	Lot verified
22	Hydrochloric Acid	EMD	~~HX0607-4~~	54028	4/30/17	2.5Lx5	G	5/23/14	879	6/2/14	915	HX0607-2
23	Sulfuric Acid 93-98%	EMD 915 5/30/14	SX-1247-2	53128	3/24/17	2.5L	G	5/30/14	915	5/30/14	915	
24	KMnO4	Fisher	0279 212	136746	5/30/19	2.5Kgx2	G	5/30/14	915	6/4/14	915	
25	Nitric Acid	Fisher	A467-2	121310	11/24/16	2Lx2	T	6/4/14	[illegible]	6/4/14	[illegible]	

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1	Potassium Permanganate	EMD	PX1550-5	16B11600 2	7/27/18	2.5x5	P	7/22/16	8US	7/27/16	868	
2	ICV 10X - Solution - A	High Purity	SM-2011-003 S.A	1619 011	7/18/17	250 ml	P	7/27/16	975	7/27/16	975	
3	- B		-B	1619738								
4	- C		-C	1619 013								
5	- D		-D	1619 014								
6	Spike #1		SM-2011-004	1619 015		1L						
7	Spike #2		SM-2011-001	1619 010								
8	HNO_3	EMD	NX0407-2	56020	08/03/19	18x 2.5L	G	08/01/16	1030	08/03/16	1030	
9	Hydrogen Peroxide	Fisher	H325-500	162633	08/04/19	500 mL	P	08/04/16	776	08/04/16	776	
10	HCL	EMD	HX0607-2	55320	08/04/19	2.5L	G	08/04/16	1030	08/04/16	1030	
11	TETRAETHYL LEAD	SPEX	SVO-CSEL-8-500	EN1608 18001	8/18/17	500mL	G	8/19/16	53	8/15/16	53	
12	Hydrogen peroxid	EMD	~~500~~ HX0635-2	56039624	8/22/19	1L	P	8/22/16	710	9/2/16	710	710 [illegible]
13	HNO_3	EMD	NX0407-2	553-3	9/1/19	2.5Lx20	G	9/1/16	53	9/1/16	53	
14	Citric Acid Anhydrous	Fisher	A940-1	160994	09/01/21	1 Kg X8	P	09/01/16	1030	09/01/16	1030	
15	HCL	EMD	HX-0607-2	56027	09/26/19	2.5LX10	G	09/26/16	1030	09/26/16	1030	
16	HNO_3	EMD	HX-0407-2	56020	09/26/19	2.5LX~~24~~ 18 09/26/16	G	09/26/16	1030	09/26/16	1030	
17	TUNE	SPEX	CL-TUNE-1	CL1-16MKBY	05/30/17	125mL	P	05/30/16	53	05/30/16	53	
18	Cal Std #3		CL-CAL-3	CL1-36MKBY		125mL						
19	Interferents A		CL-INT-A1	CL1-123MKBY		125mLx2						
20	Analytes B		CL-INT-B1	CL1-90MKBY		125mL						
21	Nitric Acid	Fisher	A467-2	1216050	05/31/19	2L x 2	P	10/03/16	776	10/03/16	776	
22	Hydrochloric Acid	Fisher	A508-P212	4116040	05/13/19	2.5L x4	P					
23	Zr	Accustandard	ICP-MS-71N-0.1X-1	214045089-02	06/2021	100mL	P	10/13/16	53	10/13/16	53	
24	Li 6		ICP-MS-IS-LI6-10X-1	216025072	02/15/2021	100mL	P	10/14/16	53	10/14/16	53	
25	Hydrogen peroxide	EMD	HX0635-2	56039624	10/19/19	1L	P	10/19/16	710	10/19/16	710	

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1	HCl	EMD	HX0607-2	55320	05/26/17	2.5L x 26	G	05/26/16	1030	05/26/16	1030	710 5/26/15
2	Hydroxylamine Hydrochloride	Fisher	H330-500	149336A	06/30/21	500g x 12	P	5/26/16	868	5/31/16	868	
3	Nitric Acid	Fisher	UN2031	216010	06/26/19	2L x 2	P	06/08/16	110			
4	SnCl2·2H2O	Fisher	UN3260	158453	06/08/21	500g x 6	P	06/08/16	110			
5	Soda lime	Teledyne Instruments LABS	PN...	8006-28-8	06/09/2021	2kg x 1	P	06/09/16	110	06/09/16	110	
6	H3NO · HCl	Fisher	H330-500	156156	06/20/21	500g x 6	P	06/20/16	868	6/20/16	710	
7	Instrument Cal Std #2	SPEX	CL-CAC-2	CL1-119...	6/30/17	125 mL	P	6/20/16	5R	6/20/16	5R	
8	#3		CL-CAC-3	CL1-36...	6/30/17							
9	Mercury		PLHG2-1Y	21-44HG	6/30/17							
10	Lithium		PLLI2-2F	21-57LI	6/30/17							
11	SnCl2	Fisher	T142-500	138452	6/21/19	500g x 12	P	6/21/16	776	6/21/16	776	
12	Hydrogen Peroxide	EMD	HX0635-2	55314605	11/30/17	1L x 18	P	06/23/16	1030	06/23/16	1030	
13	HNO3	EMD	NX0407-2	55323	04/13/17	2.5L x 10	G	06/23/16	1030	06/23/16	1030	
14	HCl	EMD	HX0607-2	56027	06/23/19	2.5L x 15	G	06/23/16	1030	06/23/16	1030	
15	Mercury	High-Purity	100033-2	1604609	12/20/17	120 mL	P	06/29/16	776	06/29/16	776	
16	Terbium		10MS7-1	1603539	12/20/17							
17	Spike 1		SM-2011-004	1616806	06/20/17	250 mL						
18	Spike 2		SM-2011-001	1616805								
19	Buffer pH 4.0 Solution (STD)	Fisher	SB101-500	160779	01/31/18	500mL x 2	P	06/29/16	805	06/29/16	805	ETF: #3, p.28-3
20	Buffer pH 7.0 Solution (STD)	Fisher	SB107-500	162805	04/30/18	500mL x 2	P	06/29/16	805	06/29/16	805	ETF: #3, p.28-4
21	Buffer pH 10.0 Solution (STD)	Fisher	SB115-500	162803	04/30/18	500mL x 2	P	06/29/16	805	06/29/16	805	ETF: #3 p.28-5
22	Buffer pH 7.00 Solution (ICV)	Fisher	SB108-500	158639	12/31/17	500mL x 2	P	06/29/16	805	06/29/16	805	ETF: #3 p.28-6
23	Isopropyl Alcohol	Fisher	A451-4	157378	07/05/19	4L x 2	G	07/06/16	805	07/06/16	805	ETF:
24	Hydrochloric Acid	Fisher	A508-P212	4116020	03/17/19	2.5L x 2	P	07/21/16	776	07/21/16	776	
25	Acetic Acid	EMD	AX0078-6	55223	07/21/19	1L x 3	P	07/21/16	776	07/21/16	776	

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1	Calcium	Ultra	ICP-120	CP-4462	9/30/23	125mL	P	12/20/16	SJL	12/21/16	SJL	
2	Barium	|	ICP-156	CM-6544	11/31/23	|	|	|	|	|	|	
3	Silicon	|	ICP-114	CP-1238	4/30/23	|	|	|	|	|	|	
4	Nitric Acid	EMD	NX0407-2	56048	12/30/19	2.5x30	G	12/30/16	710	12/30/16	710	
5	hydrochloric Acid	EMD	HX0607-2	58208	12/30/19	2.5x20	G	12/30/16	710	12/30/16	710	
6	H_2SO_4	EMD	SX1247-2	55329	01/09/20	2.5L	G	01/09/17	776	01/09/17	776	
7	HNO_3	EMD	NX0407-2	56020	01/11/20	2.5Lx~~7~~ 24	G	01/11/17	1056	01/11/17	1058	
8	HNO_3	EMD	NX0407-2	56018	01/11/20	2.5x2	G	01/11/17	1058	01/11/17	1058	
9	Phosphorus 10,000 mg/mL	High Purity	10M39-1	1630829	7/10/18	125ml	P	1/11/17	935	1/11/17	935	
10	PH Tape	Micro Essential	#140	216814	06/15/17	4 Rolls	P	01/16/17	1058	01/16/17	1058	
11	HNO_3	Fisher	A509-P212 ~~UN2031~~	1116080	08/26/2018	2.5L/18	P	01/23/17	710	01/23/17	710	
12	HCL	↓	A508-P212 ~~UN1789~~	4116060	07/26/19	2.5X/4	P	01/23/17	710	01/23/17	710	
13	H_2O_2	EMD	HX0635-2	56258639	~~02/06/18~~ 9/30/18	~~2~~ 1/20	P	02/06/17	710	2/06/17	710	710 2/6/17
14	AL Standard	Ultra	ICP-113	CP-3976	9/30/2023	125mL	P	02/06/17	1030	02/06/17	1030	
15	Boron	Ultra	ICP-105	K00924A	11/31/21	125mL	P	02/06/17	1030	02/06/17	1030	
16	Hydrogen peroxide	Fisher	H325-500	165728	2/10/2020	500ml x2	P	2/10/17	110			
17	Nitric Acid	Fisher	A467-2	1216080	08/07/2019	2Lx2	P	2/10/17	110			Clean room or
18	Nitric Acid	Fisher	A509-P212	1116100	11/10/2018	2.5x20	P	2/13/17	710	02/13/17	710	metals DPD
19	Silver	Ultra	ICP-047	CP-4409	09/20/23	125mL	P	2/20/17	1030	02/20/17	1030	
20	Silver	Ultra	ICP-047	CP-4495	09/30/23	125mL	P	|	|	|	|	
21	Chromium	|	ICP-124	CP-1768	05/31/23	|	|	|	|	|	|	
22	Cobalt	|	ICP-127	CP-2011	|	|	|	|	|	|	|	
23	Nickel	|	ICP-128	CP-0006	02/28/23	|	|	|	|	|	|	
24	Sulfur	|	ICP-116	CM-5373	11/30/22	|	|	|	|	|	|	
25	Vanadium	|	ICP-123	CP-3591	08/31/23	|	|	|	|	|	|	

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1	Sodium	Ultra	ICP-111	CP 3478	9/30/23	125 mL	P	2/20/17	1070	2/20/17	1030	
2	Phosphorus		ICP-115	CP-4381								
3	Potassium		ICP-119	CP-0352	2/28/23							
4	Lithium		ICP-103	T30356	5/31/21							
5	Cadmium		ICP-148	CP-0186	2/28/23							
6	Molybdenum		ICP-142	CL-7860	08/31/21							
7	Bismuth		ICP-183	CP-2124	6/30/23							
8	Sulfuric Acid.	EMD	SX1244-2	~~SA1244-2~~ 65329	2/20/20	2.5L	G	2/20/17	848	2/20/17		
9	Potassium Persulfate	Acros Organics	424185000	A0371062	2/17/19	500g x12	P	2/27/17	848	2/27/17		
10	Sodium Chloride	AEPR	6862	25152	2/17/20	25x2lb	P	2/17/17	110	2/27/17	110	
11	HNO3	Fisher	A509-P212	1116100	11/10/18	2.5L x10	P	2/28/17	1058	2/28/17	1058	
12	HCl	Fisher	A508-P212	4116090	10/19/19	2.5L x20	P	2/28/17	1058	2/28/17	1058	
13	Instrument calibration standard 2	SPEX	CL-CAL2	CL1-179MKBY	2/28/18	125mL x2	P	3/20/17	SY	3/20/17	SY	
14	1 S	SPEX	CL-CAL3	CL2-117MKBX	2/28/18	125mL x4	P	1	1	1	1	
15	ICP Multielement Calibration Std-10	High Purity	ICP-MCS-10	1515415	2/21/18	250mL	P	3/22/17	935	3/22/17	935	
16	-8		ICP-MCS-8	1635121		500mL x2						
17	-1		ICP-MCS-1	1515602		500mL						
18	-7		ICP-MCS-7	1705326	2/24/18	500mL						
19	-11		ICP-~~MCS~~-AH11 (2.5L 3/22/17)	1705327		125mL						
20	Acetic Acid, Glacial	Fisher	A38C-212 (2.5L)	LOT# 166899	04/03/20	2.5L x4	G	04/04/17	805	04/04/17	805	
21	Nitric Acid	Fisher	A509-P212	1116080	08/26/2018	2.5L x1	P	4/06/17	710	4/06/17	710	
22	↓	↓	↓	1116100	11/10/2018	2.5L x18	P	↓	↓	↓	↓	
23	↓	↓	↓	1116080	11/30/2018	2.5L x8	P	↓	↓	↓	↓	
24	HCl	Fisher	A508-P212	4116090	11/19/2019	2.5L x20	P	↓	↓	↓	↓	
25	Sodium Borohydride	Fisher	S678-25	161188	4/10/2022	2 x 25g	P	4/10/17	110	4/10/17	110	

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								DATE	WHO	DATE	WHO	
1	Sodium Selenate decahydrate	Aldrich	450294-5G	MKCB4772V	4/02	5g	G	4/10/17	110	4/13/17	110	
2	Ammonium Hydroxide	Fisher	A512-P500	#711090	10/16/2018	500mLx6	P	04/17/17	805	04/19/17	805	
3	Ci-6	AccuStd.	ICP-MS-15-CIG-10X-1	216115041	11/2021	100mL	P	04/20/17	53r	04/20/17	53r	
4	Sc		ICP-MS-50N-0.1X-1	216055006	05/2021	100mL	P					
5	Ga		ICP-MS-31N-0.1X-1	215110067	11/2020	100mL	P					
6	Tb		ICP-MS-13N-0.1X-1	213125126-01	02/2021	100mL	P					
7	Ho		ICP-MS-24N-0.1X-1	217045020	04/2022	100mL	P					
8	Bi		ICP-MS-06N-0.1X-1	217045044	04/2022	100mL	P					
9	Stannous Chloride Dihydrate	Fisher	T163-500	163999	04/2022	500g X6	P	04/25/17	1030	04/25/17	1030	
10	Hydro Chloric Acid	Aristar Ultra	87003-216	4216110	01/2020	500mL	P					
11	Na_2SeO_4	Alfa Aesar	11613	71408-04	04/2022	50g	G	04/25/17				
12	$SnCl_2$	Fisher	T141-500	145293A	4/2020	500g×12	P	4/25/17	868	4/26/17	868	
13	Boiling Stones	Saint-Gobain	D1069103	Lot# T714-7C002	04/30/2022	450g X8	P	04/27/17	805	04/27/17	805	CTF:#3 P30-24 P30-25
14	Xylene	Fisher	XS-4	168622	4/28/20	4L X4	G	4/28/17	53r	4/28/17	53r	
15	HCL.	Fisher	A508-P212	4116090	~~4/28~~ 10/9/19	2.5x20.	P	4/28/17	710	4/28/17	710	710 4/28/19
16	HNO3	Fisher	A509-P212	1116110	11/30/18	2.5X20	P	4/28/17	710	4/28/17	710	
17	Sodium [10,000mg/mL]	Ultra	ICP-111	CP-3978	9/30/23	1L	P	5/2/17	935	5/2/17	935	
18	Potassium [10,000ug/mL]		ICP-119	CR-0917	4/30/24	1L	P	5/2/17	935	5/2/17	935	
19	Hydrogen Peroxide	EMD	HX0635-2	56258639	09/30/18	1L	P	05/05/17	710	5/5/17	710.	
20	Sodium Chloride	Fisher.	S271-10	161535	05/15/22	10Kg	P	5/15/17	868	5/15/17	868	
21	Nitric Acid	Fisher	A509-P212	1117010	~~5/23/19~~ 10/31/18	2.5x20	P	5/23/17	710	5/23/17	710	# 710 5/23/17
22	HCl	Fisher	A508-P212	4116090	10/9/19	2.5X20	P	5/23/17	710	5/23/17	710	
23	Hydrogen peroxide	EMD	HX0635-2	56273642	10/31/18	1LX5	P	5/26/17	710	5/26/17	710	
24	Lead II Chloride	Alfa Aesar	12345	M22B018	5/31/23	50g	P	6/3/17	53r	6/3/17	53r	
25	Buffer pH7.00 Solution (STD)	Fisher	SB96-500	171346.	03/31/2019 ~~06/06/19~~ 805 06/06/17	500mLx1	P	06/06/17	805	06/06/17	805	CTF:#3. P31-03

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1	Potassium Permanganate	VWR	~~231-1607~~ 97065-426	3166C309	7/15/16		P	7/18/16	868	6/13/17	868	Purge!
2	PH TAPE	Micro Essential Lab	~~216315~~ 140	216315	06/15/18	10 rolls	P	06/07/17	1058	06/07/17	1058	
3	ADPC	Sigma	2?765-?NG	?CBGC4HV	6/19/22	100g	G	6/15/17	53r	6/15/17	53r	
4	H_2SO_4	Fisher	~~A300-212~~ UN1830	3115080	11/25/18	2.5 L	P	06/27/17	1070	06/27/17	1070	
5	Nitric Acid	Fisher	A467-2	1216120	01/04/20	2.5 L	T	6/28/17	53r	6/28/17	53r	
6	Acetic Acid		A?0?1-6	56/20	6/28/20	1L X 2	T		53r		53r	
7	100 ug/mL Hg	SPEX	PLHG2-1Y	22-93HGY	6/30/18	125 mL	P	6/29/17	868	6/19/17	868	
8	HNO_3	Fisher	A509-P212	1116120	~~7/14/17~~ 12/16/2018	2 1 X 2.5 L	P	7/14/17	710	7/14/17	710	* 710 7/14/17
9	Nitric Acid	Fisher	A467-2	1217010	01/31/20	2L X 2	T	7/27/17	53r	7/27/17	53r	
10	Sodium Chloride	Alfa Aesar	10862	25313	7/31/22	500g	P	7/31/17	53r	7/31/17	53r	
11	Sodium Chloride			25152		25g						
12	Hydroxylamine Hydrochloride	Fisher	H330-500	163471	~~1/1/17~~ 8/2/22	500g X 6	P	7/24/17	868	8/2/17	868	
13				164843	868 8/2/22	500g x 6	P					
14	Sulfuric Acid	Fisher		3116090	11/2/19	2.5 L	~~G~~ P	8/7/17	868	8/7/17	868	
15	Tetraethyl Lead	SPEX	SVC-CSEL-8-500	TS170731012	8/2/18	500 mL	G	8/8/17	1080	8/8/17	1080	
16	Gold III Chloride	ACROS	43708	A0366219	8/11/22	5g	G	8/4/17	110	8/4/17	110	
17	ICP-MS-QC2-1	AccuStandard	ICP-MS-QC2-1	215075097-02	06/30/19	100 mL	P	08/11/17	53r	08/11/17	53r	
18	Beryllium ICP-MS-05N-0.01X-1		ICP-MS-05N-0.01X-1	217015012	01/09/22	100 mL	P					
19	Manganese ICP-MS-33N-0.01X-1		ICP-MS-33N-0.01X-1	217035131	03/28/22	100 mL	P					
20	Aluminum ICP-MS-01N-0.1X-1		ICP-MS-01N-0.1X-1	217045036	04/14/22	100 mL	P					
21	Zinc ICP-MS-70N-0.1X-1		ICP-MS-70N-0.1X-1	216035086	03/23/21	100 mL	P					
22	Iron ICP-MS-27N-0.1X-1		ICP-MS-27N-0.1X-1	216015101	02/17/21	100 mL	P					
23	Chromium ICP-MS-13N-0.1X-1		ICP-MS-13N-0.1X-1	216055077	05/25/21	100 mL	P					
24	Interferents A	SPEX	CL-INT-A1	CL3-158MKBY	08/30/18	125 mL	P	08/11/17	996	08/11/17	996	
25	Analytes B	SPEX	CL-INT-B1	CL3-14MKBY	08/30/18	125 mL	P	08/11/17	996	08/11/17	996	

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1	Tuning Solution 1	SPEX	CL-TUNE-1	CL3-79MKBY	08/30/18	125 mL	P	08/11/17	776	08/11/17	776	
2	Sodium	SPEX	PLNA2-3Y	A017-4NAY	08/30/18	125 mL	P	08/11/17	776	08/11/17	776	
3	Ultrapure Sodium Chloride	ESI	SeaBlank-0500	170341	08/14/20	500mL x3	P	08/14/17	SJr	08/14/17	SJr	
4	Nitric Acid	Fisher	A467-2	1217010	08/16/20	2L x2	T	8/16/20	SJr	8/16/20	SJr	
5	Nitric Acid	Fisher	A467-2	1116120	12/16/2018	2.5L X5	P	08/23/17	1030	08/23/17	1030	
6	Nitric Acid	Fisher	A509-P212	1116111	03/15/19	2.5L X19	P	08/23/17	1030	08/23/17	1030	
7	HCL	Fisher	A508-P212	4116090	10/19/19	2.5L X20	P	08/23/17	1030	08/23/17	1030	
8	Sodium Selenate decahydrate	Aldrich	450294-50G	MKBN4778V	09/15/20	1	G	09/15/17	1030	09/15/17	1030	
9	Hydrogen Peroxide	EMD	HX0635-2	56273642	10/31/18	1L X6	P	9/15/17	1080	09/15/17	1080	
10	Nitric Acid	Fisher	A467-2	1217020	09/22/20	2L X4	T	09/18/17	SJr	09/18/17	SJr	
11	Ultrapure Sodium Chloride	ESI	SeaBlank-0500	170610	09/20/20	500mL X2	P	9/20/17	SJr	9/20/17	SJr	
12	Hydrogen Peroxide	EMD	HX0635-2	56321712	11/30/18	1L X14	P	9/27/17	1080	9/27/17	1080	
13	Puradisc 25 mm 1.0 µM	Whatman	678-0-2510	98165117	02/2022	2 Box x 50	P	09/27/17	1058	09/27/17	1058	
14	Xylenes	Fisher	XS-4	173323	9/29/20	4L X4	G	9/29/17	1080	9/29/17	1080	
15	Ultra Pure Sodium Chloride	ESI	SeaBlank-0500	170603	10/02/20	500mL X 3	P	10/2/17	SJr	10/2/17	SJr	
16	PTFE BOILING STONES - 450 GRAM	Chemware	D1069103	22569094	~~10/06/17~~ N/A	(450 gm) 16 OZ AC	P	10/06/17	710	10/06/17	710	710 10/06/17
17	Nitric Acid	Fisher	A509-P212	1117040	04/05/2019	2.5L X 18	P	10/06/17	710	10/06/17	710	
18	Sodium borohydride	Acros Organics	200050250	AC353486	10/06/22	25g X4	G	10/09/17	SJr	10/09/17	SJr	
19	Iron Standard	ULTRA	ICP-126-L	CR-3137	08/31/24	1L	P	10/10/17	776	10/10/17	776	
20	Soda Lime	Teledyne Leeman Labs	606-00015	E006-28-B	N/A	200g X2	P	10/18/17	1080	10/18/17	1080	
21	Sulfuric Acid	Omni Trace	SX1247-2	56175	10/25/18	2.5 L	G	10/25/17	868	10/25/17	868	
22	ICP Analytical Mixture 11	High Purity	ICP-AM-11	1705327	10/18	125 mL	P	10/30/17	935	10/30/17	935	
23	ICP Multi-element Cal. Standard 8	↓	ICP-MCS-8	1635121	↓	500mL X2	↓	↓	↓	↓	↓	
24	Potassium (10,000 mg/mL)	↓	10M41-1	1723447	4/19	125 mL	↓	↓	↓	↓	↓	
25	APDC	SIGMA	P8765-100G	BCBR189V	10/31/22	100g	G	10/31/17	776	10/31/17	776	

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1	HCl	Fisher	A508-P212	4117010	03/02/20	2.5x20	P	11-09-17	710	11-09-17	710	
2	(HNO3) Nitric Acid	↓	A509-P212	1117042	05/05/19	2.5x12	P	↓	↓	↓	↓	
3	Buffer pH 4.0 Solution (I.C.V.)	VWR	E452-500mL	1257C312	11/15/18	500mL x 1	P	11/16/17	805	11/16/17	805	For: pH #5 REF: pH #C Logbook p.97
4	M.I.B.K	Fisher	M213-4	171549	11/21/20	4L x 4	G	11/21/17	935	11/21/17	935	
5	P Hydroxylamine Hydrochloride	Fisher	H330-500	172066	12/1/22	500g x 12	P		868	12/1/17	868	
6	Zirconium	BICCA	MSZR1KN...	4711426	4/2017	100mL	P	12/06/17	SR	12/06/17	SR	
7	Buffer pH 4.0 Solution (Standard)	Fisher	SB101-500	173425	04/30/19	500mL x 2	P	12/12/17	805	12/12/17	805	REF: pH Logbook #1C p.60
8	Buffer pH 7.0 Solution (I.C.V.)	Fisher	SB108-500	170679	01/31/19	500mL x 2	P	12/12/17	805	12/12/17	805	REF: pH Log book pg.60
9	Nitric Acid	Fisher	A509-P212	1117060	06/15/19	2.5x20	P	11/17/17	710	11/17/17	710	
10	Interferents #	SPEX	CL-INT. A1	CL3-157 MLBY	12/30/18	125mL	P	12/13/17	SR	12/13/17	SR	
11	Terbium 10,000 μg/mL	High Purity	10M57-1	1716539	6/2019	125ml	P	12/19/17	935	12/19/17	935	
12	0.45 PVDF Filters (For S.T.L.C.)	MILLEX	SLHVU33NK	R7CA90140	01/08/21	NA	P	01/09/18	805	01/09/18	805	REF: CTF #3 p.3
13	EPA Method 200.7 Int. Check STD #1	Ultra	ICM-221	R01207A	3/31/21	50ml	P	1/10/17	935	1/10/18	935	
14	EPA Method 6010A Mixed STD. Sol. V	↓	ICM-605	CR-3299	8/31/20	125ml	↓	1/10/17	935	1/10/17	935	
15	Hg Mercury 1000μg/mL 2% HCl	High purity standards	100033-2	1723645	7/1/19	250mL	P	1/11/17	1080	1/11/17	1080	
16	Calcium	Ultra	ICP-120-L	CR-3808	9/30/24	1L	P	1/11/18	SR	1/15/18	SR	
17	Magnesium	|	ICP-112-L	CP-0578	4/30/23	1L	P	|	|	|	|	
18	Lead (II) Chloride	ALDRICH	203572-10G	MKCC3373	1/22/2023	10g	P	1/22/18	710	—		
19	Sodium hydroxide monohydrate	Alfa Aesar	41200	61701011	1/22/23	25g	P	1/22/18	SR	1/22/18	SR	
20	Sulfuric Acid	Fisher	A300-P212	3116U973	5/4/20	2.5L	P	1/31/18	868	1/31/18	868	
21	Instrument Calibration Standard 2	SPEX	CL-CAL-2	CL4-51MLBY	01/30/19	125mL	P	1/31/18	SR	1/31/18	SR	
22	Instrument Calibration Standard 3	|	CL-CAL-3	CL4-01MLBY	01/30/19	125mL x 4	|	|	|	|	|	
23	Glass Microfiber TCLP filter	Whatman	1810-090	9691301	NA	4	NA	04/25/17	805	04/25/17	805	REF: CTF #3 p.30
24	Hydrogen Peroxide (H_2O_2)	EMD	~~HX~~ HX0635-2 (2-2-18 710)	56273642	10/31/18	1L x 10	P	02/02/18	710	02/02/18	710	
25	HNO3	Fisher	A509-P212	1117062	07/12/19	2.5x15	P	02/02/18	710	02/02/18	710	

COMMENTS:

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EPA 245.1 Mercury

Filtered

RAW DATA

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EPA 245.1 Mercury

Filtered

Initial Calibration
ICV/ICB
CCV/CCB

Sample Data

Quality Control
Method Blank
LCS/LCSD
MS/MSD
PDS/PDSD

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EPA Method 245.1
Initial Calibration Verification

Work Order No.: 18-03-1974

Instrument ID: HG 7 (G)

Concentration Unit: µg/L Test Method: EPA 245.1

Analyte	Initial Calibration Verification			
	True	ICV-1 Observed	ICV-1 %REC	Control Limit
Mercury	5.000000	4.729983	95	95 - 105

2018-03-30 12:31

ICV-1 File: ICV MS030518B 03/28/2018 01:10:03 PM

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EPA Method 245.1
Continuing Calibration Verification

Work Order No.: 18-03-1974
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Continuing Calibration Verification									
		CCV-1		CCV-2		CCV-3		CCV-4		Control
Analyte	True	Observed	%REC	Observed	%REC	Observed	%REC	Observed	%REC	Limit
Mercury	2.000000	1.955477	98	1.947275	97	1.947802	97	1.897963	95	90 - 110

2018-03-29 18:54

CCV-1 File: CCV 0.2x10ppb 03/28/2018 03:39:27 PM
CCV-2 File: CCV 0.2x10ppb 03/28/2018 04:06:43 PM
CCV-3 File: CCV 0.2x10ppb 03/28/2018 04:34:00 PM
CCV-4 File: CCV 0.2x10ppb 03/28/2018 04:59:02 PM

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EPA Method 245.1
Initial and Continuing Calibration Blanks

Work Order No.: 18-03-1974
Instrument ID: HG 7 (G)
Concentration Unit: µg/L
Test Method: EPA 245.1

	Initial and Continuing Calibration Blanks					
Analyte	ICB-1	CCB-1	CCB-2	CCB-3	CCB-4	RL (No PF)
Mercury	-0.029817	-0.023231	-0.029936	-0.030014	-0.029746	0.100000

2018-03-29 18:54

ICB-1 File: ICB 03/28/2018 01:12:18 PM
CCB-1 File: CCB 03/28/2018 03:41:43 PM
CCB-2 File: CCB 03/28/2018 04:08:59 PM
CCB-3 File: CCB 03/28/2018 04:36:16 PM
CCB-4 File: CCB 03/28/2018 05:01:18 PM
Note: Preparation Factor (PF) = 2 L/L

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:29
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:27

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-1.icp

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0006S005**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000350	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:31
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:27

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-2.icp

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0007S011**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000368	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:38
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:27

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-3.icp

 # 3 **CLIENT SAMPLE NUMBER: EVBMP0002S022**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000239	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:40
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:27

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-4.icp

 # 4 **CLIENT SAMPLE NUMBER: EVBMP0007S010**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000373	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:43
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:27

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-5.icp

 # 5 **CLIENT SAMPLE NUMBER: EVBMP0008S013**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000358	1.00	ND	0.000200	

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**18-03-1974**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:45
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:27

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-6.icp

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0009S011**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:	180328SA2	FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT: Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000358	1.00	ND	0.000200	

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METHOD BLANK ASSOCIATION SUMMARY
FOR METHOD: EPA 245.1

MB SAMPLE ID:	**099-16-520-20**	ANALYZED BY:	868
MB BATCH ID:	180328LA2F	D/T ANALYZED:	2018-03-28 16:15
INSTRUMENT:	Mercury 07	REVIEWED BY:	309
EXTRACTION:	EPA 245.1 Filt.	D/T REVIEWED:	2018-03-29 14:27
D/T EXTRACTED:	2018-03-28 00:00	MATRIX:	Water

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-B-A2.icp

CLIENT WORK ORDER: 18-03-1974

S#	RUN TYPE	CLIENT SAMPLE ID	D/T ANALYZED	DATA FILE
1		A2BMP0006S005	2018-03-28 16:29	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-1.icp
2		A2BMP0007S011	2018-03-28 16:31	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-2.icp
3		EVBMP0002S022	2018-03-28 16:38	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-3.icp
4		EVBMP0007S010	2018-03-28 16:40	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-4.icp
5		EVBMP0008S013	2018-03-28 16:43	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-5.icp
6		EVBMP0009S011	2018-03-28 16:45	W:\MERCURY_DATA\FINAL\180328G1\18-03-1974-F-6.icp

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RAW DATA SHEET
FOR METHOD: EPA 245.1

WORK ORDER:	**099-16-520**	ANALYZED BY:	868
INSTRUMENT:	Mercury 07	D/T ANALYZED:	2018-03-28 16:15
EXTRACTION :	EPA 245.1 Filt.	REVIEWED BY:	309
D/T EXTRACTED:	2018-03-28 00:00	D/T REVIEWED:	2018-03-29 14:27

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-B-A2.icp

 # MB **CLIENT SAMPLE NUMBER: Method Blank**

LCS/MB BATCH:	180328LA2F	SAMPLE VOLUME / WEIGHT:	DEFAULT: 50.00 ml / ACTUAL: 50.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 100.00 ml
UNITS:	mg/L	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Mercury	-0.0000368	1.00	ND	0.000200	

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LCS QUALITY CONTROL SHEET
FOR METHOD: EPA 245.1

LCS SAMPLE ID:	**099-16-520- 20**	EXTRACTION :	EPA 245.1 Filt.	ANALYZED BY:	868
LCS/MB BATCH ID:	180328LA2F	D/T EXTRACTED:	2018-03-28 00:00	D/T ANALYZED:	2018-03-28 16:18
INSTRUMENT:	Mercury 07			REVIEWED BY:	309
				D/T REVIEWED:	2018-03-29 14:27

DATA FILE: W:\MERCURY_DATA\FINAL\180328G1\180328-L-A2.icp

COMPOUND NAME	CONC ADDED	CONC REC	%RECOVERY	%REC CONTROL LIMIT	STATUS	QUALIFIERS
Mercury	0.01000	0.009503	95	80-120	PASS	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE QUALITY CONTROL SHEET
FOR METHOD: EPA 245.1

SPIKED SAMPLE ID: **18-03-1723-1**
MS/MSD BATCH: 180328SA2
INSTRUMENTS:
SAMPLE: Mercury 07
MS: Mercury 07
MSD: Mercury 07

EXTRACTION: EPA 245.1 Filt.
D/T EXTRACTED:
SAMPLE: 2018-03-28 00:00
MS: 2018-03-28 00:00
MSD: 2018-03-28 00:00

ANALYZED BY: 868
D/T ANALYZED:
SAMPLE: 2018-03-28 16:20
MS: 2018-03-28 16:22
MSD: 2018-03-28 16:24
REVIEWED BY: 309
D/T REVIEWED: 2018-03-29 14:25

COMMENT:

COMPOUND NAME	SAMPLE	INITIAL	FINAL	MS CONC	% MS.REC	MSD CONC	% MSD.REC	% REC CL	RPD	RPD CL	STATUS	QUALIFIERS
Mercury	ND	0.005000	0.01000	0.009170	92	0.009109	91	57-141	1	0-10	PASS	

Data Files:

TYPE	DATA FILE	DATA FILE PATH
MS	18-03-1723-F-1 MS.icp	W:\MERCURY_DATA\FINAL\180328G1\
MSD	18-03-1723-F-1 MSD.icp	W:\MERCURY_DATA\FINAL\180328G1\

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Analysis Begun

Logged In Analyst: us26_usr_instrument
Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560
Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1
Autosampler Location: 1
Sample ID: Calib blank_868
Date Collected: 3/28/2018 11:53:35 AM
Analyst: 268
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution:
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1

Replicate Data: Calib blank_868
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0001	0.0014	0.0001	11:54:39 AM	Yes
2		[0.00]	0.0001	0.0009	0.0001	11:55:24 AM	Yes
Mean:		[0.00]	0.0001				
SD:		0.0000	0.0000				
%RSD:		0.00%	9.98				

Auto-zero performed.

Sequence No.: 2
Autosampler Location: 2
Sample ID: 0.025ppb 0.005x5ppb
Date Collected: 3/28/2018 11:55:49 AM
Analyst: 861
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution:
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1

Replicate Data: 0.025ppb 0.005x5ppb
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.025]	0.0002	0.0018	0.0003	11:56:52 AM	Yes
2		[0.025]	0.0001	0.0014	0.0003	11:57:37 AM	Yes
Mean:		[0.025]	0.0002				
SD:		0.00000	0.0000				
%RSD:		0.00%	17.32				

Standard number 1 applied. [0.025]
Correlation Coef.: 1.000000 Slope: 0.00620 Intercept: 0.00000

Sequence No.: 3
Autosampler Location: 3
Sample ID: 0.10ppb MS030518AAX0.0001
Date Collected: 3/28/2018 11:58:02 AM
Analyst: 268
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution:
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1

Replicate Data: 0.10ppb MS030518AAX0.0001
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.100]	0.0006	0.0030	0.0008	11:59:06 AM	Yes
2		[0.100]	0.0007	0.0029	0.0008	11:59:51 AM	Yes
Mean:		[0.100]	0.0007				
SD:		0.00000	0.0000				
%RSD:		0.00%	5.08				

Standard number 2 applied. [0.100]
Correlation Coef.: 0.999857 Slope: 0.00666 Intercept: -0.00000

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Sequence No.: 4 Autosampler Location: 4
Sample ID: 1.00ppb MS030518AAX0.0001 Date Collected: 3/28/2018 12:00:17 PM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 1.00ppb MS030518AAX0.0001 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1.000]	0.0078	0.0295	0.0079	12:01:22 PM	Yes
2		[1.000]	0.0078	0.0293	0.0079	12:02:07 PM	Yes
Mean:		[1.000]	0.0078				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.21				

Standard number 3 applied. [1.000]
Correlation Coef.: 0.999913 Slope: 0.00782 Intercept: -0.00005

Sequence No.: 5 Autosampler Location: 5
Sample ID: 2.00ppb MS030518AAX0.002 Date Collected: 3/28/2018 12:02:33 PM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 2.00ppb MS030518AAX0.002 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2.000]	0.0154	0.0583	0.0156	12:03:37 PM	Yes
2		[2.000]	0.0154	0.0584	0.0155	12:04:22 PM	Yes
Mean:		[2.000]	0.0154				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.23				

Standard number 4 applied. [2.000]
Correlation Coef.: 0.999964 Slope: 0.00774 Intercept: -0.00004

Sequence No.: 6 Autosampler Location: 6
Sample ID: 5.00ppb MS030518AAX0.005 Date Collected: 3/28/2018 12:04:49 PM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 5.00ppb MS030518AAX0.005 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[5.000]	0.0380	0.1428	0.0382	12:05:52 PM	Yes
2		[5.000]	0.0381	0.1437	0.0382	12:06:37 PM	Yes
Mean:		[5.000]	0.0381				
SD:		0.00000	0.0000				
%RSD:		0.00%	0.12				

Standard number 5 applied. [5.000]
Correlation Coef.: 0.999974 Slope: 0.00763 Intercept: 0.00002

Sequence No.: 7 Autosampler Location: 7
Sample ID: 10.0ppb MS030518AAX0.01 Date Collected: 3/28/2018 12:07:02 PM
Analyst: 868 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 10.0ppb MS030518AAX0.01 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored

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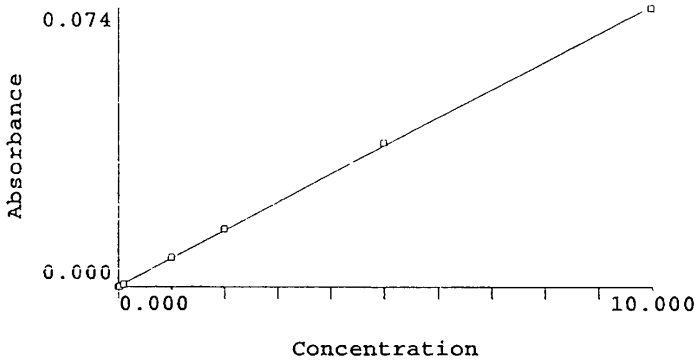
1	[10.00]	0.0741	0.2805	0.0742	12:08:06 PM	Yes
2	[10.00]	0.0741	0.2808	0.0743	12:08:50 PM	Yes
Mean:	[10.00]	0.0741				
SD:	0.0000	0.0000				
%RSD:	0.00%	0.04				

Standard number 6 applied. [10.00]
Correlation Coef.: 0.999893 Slope: 0.00743 Intercept: 0.00021



Calibration data for Hg 253.7 Equation: Linear, Calculated Intercept

ID	Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD
Calib blank_868	0.0000	0	-0.027920	0.00	9.98
0.025ppb 0.005x5ppb	0.0002	0.025	-0.007066	0.00	17.32
0.10ppb MS030518AAX0.0001	0.0007	0.100	0.061175	0.00	5.08
1.00ppb MS030518AAX0.0001	0.0078	1.000	1.017491	0.00	0.21
2.00ppb MS030518AAX0.002	0.0154	2.000	2.044385	0.00	0.23
5.00ppb MS030518AAX0.005	0.0381	5.000	5.094186	0.00	0.12
10.0ppb MS030518AAX0.01	0.0741	10.00	9.942749	0.00	0.04

Correlation Coef.: 0.999893 Slope: 0.00743 Intercept: 0.00021

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Analysis Begun

Logged In Analyst: us26_usr_instrument
Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560
Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1
Autosampler Location: 8
Sample ID: ICV MS030518B
Date Collected: 3/28/2018 1:08:13 PM
Analyst: 868 HG-7
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution:
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1.0000

Replicate Data: ICV MS030518B
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00476	4.76	0.0356	0.1413	0.0357	1:09:18 PM	Yes
2	0.00470	4.70	0.0351	0.1383	0.0353	1:10:03 PM	Yes
Mean:	0.00473	4.73	0.0354				
SD:	0.000047	0.047	0.0004				
%RSD:	1.00%	1.00%	1.00				

QC value within limits for Hg 253.7 Recovery = 94.60%
All analyte(s) passed QC.

Sequence No.: 2
Autosampler Location: 1
Sample ID: ICB
Date Collected: 3/28/2018 1:10:29 PM
Analyst: 868 HG-7
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution:
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1.0000

Replicate Data: ICB
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000029	-0.0286	-0.0000	0.0004	0.0001	1:11:33 PM	Yes
2	-0.000031	-0.0311	-0.0000	0.0004	0.0001	1:12:18 PM	Yes
Mean:	-0.000030	-0.0298	-0.0000				
SD:	0.0000018	0.00176	0.0000				
%RSD:	5.89%	5.89%	92.66				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 3
Autosampler Location: 9
Sample ID: CRQL 0.25
Date Collected: 3/28/2018 1:12:43 PM
Analyst: 868 HG-7
Data Type: Original
Initial Sample Wt:
Initial Sample Vol:
Dilution: 2X
Sample Prep Vol:
Wash Time (before sample): 0
Auto Dilution Factor: 1

Replicate Data: CRQL 0.25
Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.000461	0.230	0.0019	0.0079	0.0020	1:13:48 PM	Yes
2	0.000475	0.237	0.0020	0.0080	0.0021	1:14:33 PM	Yes
Mean:	0.000468	0.234	0.0019				
SD:	0.0000099	0.0049	0.0000				
%RSD:	2.11%	2.11%	1.89				

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Analysis Begun

Logged In Analyst: us26_usr_instrument Technique: AA FIMS-MHS
Spectrometer: FIMS-400, S/N B050-9560 Autosampler: S10

Sample Information File: C:\Users\Public\PerkinElmer Syngistix\AA\Data\Sample Information\
180328G1.sifx
Batch ID:
Results Data Set: 180328G1
Results Library: U:\MERCURY_7\Data\Results\results.mdb

Sequence No.: 1 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 3:37:36 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00195	1.95	0.0147	0.0602	0.0149	3:38:41 PM	Yes
2	0.00196	1.96	0.0148	0.0603	0.0149	3:39:27 PM	Yes
Mean:	0.00196	1.96	0.0147				
SD:	0.000004	0.004	0.0000				
%RSD:	0.19%	0.19%	0.18				

QC value within limits for Hg 253.7 Recovery = 97.77%
All analyte(s) passed QC.

Sequence No.: 2 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 3:39:54 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000022	-0.0217	0.0000	0.0017	0.0002	3:40:57 PM	Yes
2	-0.000025	-0.0247	0.0000	0.0014	0.0002	3:41:43 PM	Yes
Mean:	-0.000023	-0.0232	0.0000				
SD:	0.0000021	0.00214	0.0000				
%RSD:	9.20%	9.20%	45.57				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 3 Autosampler Location: 45
Sample ID: 180328-B-A1 Date Collected: 3/28/2018 3:42:08 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 180328-B-A1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000055	-0.0273	0.0000	0.0012	0.0001	3:43:12 PM	Yes
2	-0.000058	-0.0290	-0.0000	0.0008	0.0001	3:43:58 PM	Yes
Mean:	-0.000056	-0.0281	-0.0000				
SD:	0.0000024	0.00119	0.0000				
%RSD:	4.21%	4.21%	574.11				

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Sequence No.: 4
Sample ID: 180328-L-A1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 46
Date Collected: 3/28/2018 3:44:24 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 180328-L-A1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00946	4.73	0.0354	0.1397	0.0355	3:45:29 PM	Yes
2	0.00947	4.73	0.0354	0.1399	0.0355	3:46:14 PM	Yes
Mean:	0.00946	4.73	0.0354				
SD:	0.000007	0.003	0.0000				
%RSD:	0.07%	0.07%	0.07				

Sequence No.: 5
Sample ID: 18-03-1974-X5
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

3.09
03/28/18

Autosampler Location: 47
Date Collected: 3/28/2018 3:46:40 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-X5 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000046	-0.0229	0.0000	0.0009	0.0002	3:47:45 PM	Yes
2	-0.000045	-0.0227	0.0000	0.0012	0.0002	3:48:30 PM	Yes
Mean:	-0.000046	-0.0228	0.0000				
SD:	0.0000003	0.00017	0.0000				
%RSD:	0.73%	0.73%	3.27				

Sequence No.: 6
Sample ID: 18-03-1974-5 MS
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 48
Date Collected: 3/28/2018 3:48:57 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-5 MS Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00869	4.34	0.0325	0.1297	0.0326	3:50:02 PM	Yes
2	0.00863	4.31	0.0323	0.1291	0.0324	3:50:47 PM	Yes
Mean:	0.00866	4.33	0.0324				
SD:	0.000043	0.021	0.0002				
%RSD:	0.49%	0.49%	0.49				

Sequence No.: 7
Sample ID: 18-03-1974-5 MSD
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 49
Date Collected: 3/28/2018 3:51:14 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-5 MSD Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00910	4.55	0.0340	0.1371	0.0342	3:52:19 PM	Yes
2	0.00903	4.51	0.0338	0.1364	0.0339	3:53:04 PM	Yes
Mean:	0.00907	4.53	0.0339				
SD:	0.000053	0.026	0.0002				
%RSD:	0.58%	0.58%	0.58				

Return to Contents

Sequence No.: 8
Sample ID: 18-03-1974-1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 50
Date Collected: 3/28/2018 3:53:32 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000049	-0.0245	0.0000	0.0005	0.0002	3:54:36 PM	Yes
2	-0.000041	-0.0207	0.0001	0.0008	0.0002	3:55:21 PM	Yes
Mean:	-0.000045	-0.0226	0.0000				
SD:	0.0000054	0.00269	0.0000				
%RSD:	11.88%	11.88%	50.89				

Sequence No.: 9
Sample ID: 18-03-1974-2
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 51
Date Collected: 3/28/2018 3:55:48 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000067	-0.0335	-0.0000	0.0002	0.0001	3:56:52 PM	Yes
2	-0.000065	-0.0325	-0.0000	0.0002	0.0001	3:57:38 PM	Yes
Mean:	-0.000066	-0.0330	-0.0000				
SD:	0.0000015	0.00073	0.0000				
%RSD:	2.22%	2.22%	14.40				

Sequence No.: 10
Sample ID: 18-03-1974-3
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 52
Date Collected: 3/28/2018 3:58:04 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000030	-0.0148	0.0001	0.0004	0.0002	3:59:08 PM	Yes
2	-0.000027	-0.0136	0.0001	0.0010	0.0002	3:59:54 PM	Yes
Mean:	-0.000028	-0.0142	0.0001				
SD:	0.0000017	0.00086	0.0000				
%RSD:	6.01%	6.01%	6.26				

Sequence No.: 11
Sample ID: 18-03-1974-4
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 53
Date Collected: 3/28/2018 4:00:20 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000068	-0.0340	-0.0000	-0.0001	0.0001	4:01:25 PM	Yes
2	-0.000071	-0.0357	-0.0001	-0.0001	0.0001	4:02:10 PM	Yes
Mean:	-0.000070	-0.0349	-0.0001				
SD:	0.0000025	0.00124	0.0000				
%RSD:	3.54%	3.54%	17.77				

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Sequence No.: 12
Sample ID: 18-03-1974-6
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 54
Date Collected: 3/28/2018 4:02:36 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000061	-0.0304	-0.0000	0.0003	0.0001	4:03:41 PM	Yes
2	-0.000066	-0.0330	-0.0000	0.0000	0.0001	4:04:26 PM	Yes
Mean:	-0.000063	-0.0317	-0.0000				
SD:	0.0000036	0.00180	0.0000				
%RSD:	5.69%	5.69%	47.60				

==========

Sequence No.: 13
Sample ID: CCV 0.2x10ppb
Analyst: 868 HG-7
Initial Sample Wt:
Dilution:
Wash Time (before sample): 0

Autosampler Location: 5
Date Collected: 3/28/2018 4:04:53 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00197	1.97	0.0149	0.0577	0.0150	4:05:58 PM	Yes
2	0.00192	1.92	0.0145	0.0572	0.0146	4:06:43 PM	Yes
Mean:	0.00195	1.95	0.0147				
SD:	0.000033	0.033	0.0002				
%RSD:	1.69%	1.69%	1.66				

QC value within limits for Hg 253.7 Recovery = 97.36%
All analyte(s) passed QC.

==========

Sequence No.: 14
Sample ID: CCB
Analyst: 868 HG-7
Initial Sample Wt:
Dilution:
Wash Time (before sample): 0

Autosampler Location: 1
Date Collected: 3/28/2018 4:07:10 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000029	-0.0291	-0.0000	0.0004	0.0001	4:08:14 PM	Yes
2	-0.000031	-0.0308	-0.0000	0.0001	0.0001	4:08:59 PM	Yes
Mean:	-0.000030	-0.0299	-0.0000				
SD:	0.0000012	0.00117	0.0000				
%RSD:	3.90%	3.90%	57.99				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

==========

Sequence No.: 15
Sample ID: 18-03-1974-7
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 55
Date Collected: 3/28/2018 4:09:24 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1974-7 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000080	-0.0401	-0.0001	-0.0002	0.0000	4:10:29 PM	Yes
2	-0.000084	-0.0418	-0.0001	-0.0003	0.0000	4:11:14 PM	Yes
Mean:	-0.000082	-0.0409	-0.0001				

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SD:	0.0000025	0.00126	0.0000
%RSD:	3.08%	3.08%	9.67

Sequence No.: 16
Sample ID: 18-03-1968-4
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 56
Date Collected: 3/28/2018 4:11:40 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1968-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000047	-0.0236	0.0000	-0.0001	0.0002	4:12:45 PM	Yes
2	-0.000039	-0.0197	0.0001	-0.0000	0.0002	4:13:30 PM	Yes
Mean:	-0.000043	-0.0216	0.0000				
SD:	0.0000056	0.00279	0.0000				
%RSD:	12.87%	12.87%	44.42				

Sequence No.: 17
Sample ID: 180327-B-A2
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 57
Date Collected: 3/28/2018 4:13:56 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 180327-B-A2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000072	-0.0359	-0.0001	-0.0002	0.0001	4:15:01 PM	Yes
2	-0.000076	-0.0378	-0.0001	-0.0004	0.0001	4:15:46 PM	Yes
Mean:	-0.000074	-0.0368	-0.0001				
SD:	0.0000026	0.00130	0.0000				
%RSD:	3.54%	3.54%	14.61				

Sequence No.: 18
Sample ID: 180327-L-A2
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 58
Date Collected: 3/28/2018 4:16:12 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 180327-L-A2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00957	4.78	0.0358	0.1404	0.0359	4:17:17 PM	Yes
2	0.00944	4.72	0.0353	0.1390	0.0354	4:18:02 PM	Yes
Mean:	0.00950	4.75	0.0355				
SD:	0.000093	0.046	0.0003				
%RSD:	0.98%	0.98%	0.97				

Sequence No.: 19
Sample ID: 18-03-1723-F-1
Analyst: 868 HG-7
Initial Sample Wt:
Dilution: 2X
Wash Time (before sample): 0

Autosampler Location: 59
Date Collected: 3/28/2018 4:18:29 PM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000065	-0.0323	-0.0000	-0.0001	0.0001	4:19:33 PM	Yes
2	-0.000063	-0.0317	-0.0000	-0.0001	0.0001	4:20:18 PM	Yes
Mean:	-0.000064	-0.0320	-0.0000				

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SD:	0.0000009	0.00043	0.0000
%RSD:	1.33%	1.33%	10.36

Sequence No.: 20 Autosampler Location: 60
Sample ID: 18-03-1723-F-1 MS Date Collected: 3/28/2018 4:20:45 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 MS Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00914	4.57	0.0342	0.1377	0.0343	4:21:50 PM	Yes
2	0.00920	4.60	0.0344	0.1378	0.0345	4:22:35 PM	Yes
Mean:	0.00917	4.58	0.0343				
SD:	0.000042	0.021	0.0002				
%RSD:	0.46%	0.46%	0.46				

Sequence No.: 21 Autosampler Location: 61
Sample ID: 18-03-1723-F-1 MSD Date Collected: 3/28/2018 4:23:02 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-1 MSD Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00915	4.57	0.0342	0.1358	0.0343	4:24:07 PM	Yes
2	0.00907	4.54	0.0339	0.1353	0.0341	4:24:53 PM	Yes
Mean:	0.00911	4.55	0.0341				
SD:	0.000053	0.026	0.0002				
%RSD:	0.58%	0.58%	0.58				

Sequence No.: 22 Autosampler Location: 62
Sample ID: 18-03-1723-F-2 Date Collected: 3/28/2018 4:25:20 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1723-F-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000067	-0.0335	-0.0000	-0.0005	0.0001	4:26:25 PM	Yes
2	-0.000066	-0.0332	-0.0000	-0.0001	0.0001	4:27:10 PM	Yes
Mean:	-0.000067	-0.0333	-0.0000				
SD:	0.0000004	0.00020	0.0000				
%RSD:	0.59%	0.59%	3.60				

Sequence No.: 23 Autosampler Location: 63
Sample ID: 18-03-1974-F-1 Date Collected: 3/28/2018 4:27:36 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-1 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000074	-0.0368	-0.0001	-0.0005	0.0001	4:28:41 PM	Yes
2	-0.000066	-0.0331	-0.0000	-0.0002	0.0001	4:29:26 PM	Yes
Mean:	-0.000070	-0.0350	-0.0001				

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SD:	0.0000052	0.00261	0.0000
%RSD:	7.48%	7.48%	37.12

Sequence No.: 24 Autosampler Location: 64
Sample ID: 18-03-1974-F-2 Date Collected: 3/28/2018 4:29:53 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-2 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000077	-0.0386	-0.0001	-0.0005	0.0000	4:30:58 PM	Yes
2	-0.000070	-0.0351	-0.0001	-0.0000	0.0001	4:31:43 PM	Yes
Mean:	-0.000074	-0.0368	-0.0001				
SD:	0.0000049	0.00247	0.0000				
%RSD:	6.70%	6.70%	27.73				

Sequence No.: 25 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 4:32:09 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00196	1.96	0.0148	0.0567	0.0149	4:33:14 PM	Yes
2	0.00194	1.94	0.0146	0.0569	0.0147	4:34:00 PM	Yes
Mean:	0.00195	1.95	0.0147				
SD:	0.000016	0.016	0.0001				
%RSD:	0.83%	0.83%	0.82				

QC value within limits for Hg 253.7 Recovery = 97.39%
All analyte(s) passed QC.

Sequence No.: 26 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 4:34:27 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000032	-0.0323	-0.0000	0.0000	0.0001	4:35:30 PM	Yes
2	-0.000028	-0.0277	0.0000	0.0001	0.0001	4:36:16 PM	Yes
Mean:	-0.000030	-0.0300	-0.0000				
SD:	0.0000033	0.00329	0.0000				
%RSD:	10.97%	10.97%	157.20				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

Sequence No.: 27 Autosampler Location: 65
Sample ID: 18-03-1974-F-3 Date Collected: 3/28/2018 4:36:41 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-3 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000050	-0.0251	0.0000	-0.0002	0.0001	4:37:46 PM	Yes
2	-0.000046	-0.0228	0.0000	0.0003	0.0002	4:38:31 PM	Yes
Mean:	-0.000048	-0.0239	0.0000				
SD:	0.0000032	0.00160	0.0000				
%RSD:	6.69%	6.69%	40.04				

Sequence No.: 28 Autosampler Location: 66
Sample ID: 18-03-1974-F-4 Date Collected: 3/28/2018 4:38:58 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-4 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000077	-0.0384	-0.0001	-0.0002	0.0000	4:40:02 PM	Yes
2	-0.000072	-0.0361	-0.0001	-0.0001	0.0001	4:40:48 PM	Yes
Mean:	-0.000075	-0.0373	-0.0001				
SD:	0.0000033	0.00167	0.0000				
%RSD:	4.48%	4.48%	17.88				

Sequence No.: 29 Autosampler Location: 67
Sample ID: 18-03-1974-F-5 Date Collected: 3/28/2018 4:41:14 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-5 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000073	-0.0367	-0.0001	-0.0004	0.0001	4:42:19 PM	Yes
2	-0.000070	-0.0349	-0.0001	-0.0003	0.0001	4:43:04 PM	Yes
Mean:	-0.000072	-0.0358	-0.0001				
SD:	0.0000026	0.00132	0.0000				
%RSD:	3.70%	3.70%	16.83				

Sequence No.: 30 Autosampler Location: 68
Sample ID: 18-03-1974-F-6 Date Collected: 3/28/2018 4:43:31 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1974-F-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000071	-0.0357	-0.0001	-0.0003	0.0001	4:44:35 PM	Yes
2	-0.000072	-0.0359	-0.0001	-0.0002	0.0001	4:45:20 PM	Yes
Mean:	-0.000072	-0.0358	-0.0001				
SD:	0.0000003	0.00017	0.0000				
%RSD:	0.48%	0.48%	2.19				

Sequence No.: 31 Autosampler Location: 69
Sample ID: 18032[illegible]-B-A3 Date Collected: 3/28/2018 4:45:47 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18032[illegible]-B-A3 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000073	-0.0363	-0.0001	-0.0002	0.0001	4:46:52 PM	Yes
2	-0.000070	-0.0350	-0.0001	-0.0001	0.0001	4:47:37 PM	Yes
Mean:	-0.000071	-0.0356	-0.0001				
SD:	0.0000018	0.00089	0.0000				
%RSD:	2.49%	2.49%	11.53				

Sequence No.: 32 Autosampler Location: 70
Sample ID: 18032%-L-A3 Date Collected: 3/28/2018 4:48:04 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18032%-L-A3 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00919	4.59	0.0344	0.1410	0.0345	4:49:08 PM	Yes
2	0.00924	4.62	0.0346	0.1410	0.0347	4:49:54 PM	Yes
Mean:	0.00921	4.61	0.0345				
SD:	0.000039	0.020	0.0001				
%RSD:	0.42%	0.42%	0.42				

Sequence No.: 33 Autosampler Location: 71
Sample ID: 180327-L-A3D Date Collected: 3/28/2018 4:50:20 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18032%-L-A3D Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00927	4.63	0.0346	0.1406	0.0348	4:51:25 PM	Yes
2	0.00929	4.64	0.0347	0.1413	0.0349	4:52:10 PM	Yes
Mean:	0.00928	4.64	0.0347				
SD:	0.000016	0.008	0.0001				
%RSD:	0.17%	0.17%	0.17				

Sequence No.: 34 Autosampler Location: 72
Sample ID: 18-03-1957-F-6 Date Collected: 3/28/2018 4:52:37 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1957-F-6 Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000049	-0.0247	0.0000	0.0002	0.0002	4:53:42 PM	Yes
2	-0.000047	-0.0234	0.0000	0.0002	0.0002	4:54:27 PM	Yes
Mean:	-0.000048	-0.0241	0.0000				
SD:	0.0000019	0.00093	0.0000				
%RSD:	3.87%	3.87%	24.11				

Sequence No.: 35 Autosampler Location: 73
Sample ID: 18-03-1676-1 Date Collected: 3/28/2018 4:54:54 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: 2X Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1

Replicate Data: 18-03-1676-1 Analyte: Hg 253.7

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

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#	mg/L	ug/L	Signal	Area	Height		Stored
1	-0.000088	-0.0439	-0.0001	-0.0006	0.0000	4:56:00 PM	Yes
2	-0.000082	-0.0412	-0.0001	-0.0008	0.0000	4:56:45 PM	Yes
Mean:	-0.000085	-0.0426	-0.0001				
SD:	0.0000038	0.00190	0.0000				
%RSD:	4.47%	4.47%	12.98				

Sequence No.: 36 Autosampler Location: 5
Sample ID: CCV 0.2x10ppb Date Collected: 3/28/2018 4:57:12 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCV 0.2x10ppb Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.00189	1.89	0.0143	0.0564	0.0144	4:58:17 PM	Yes
2	0.00190	1.90	0.0143	0.0567	0.0145	4:59:02 PM	Yes
Mean:	0.00190	1.90	0.0143				
SD:	0.000004	0.004	0.0000				
%RSD:	0.22%	0.22%	0.22				

QC value within limits for Hg 253.7 Recovery = 94.90%
All analyte(s) passed QC.

Sequence No.: 37 Autosampler Location: 1
Sample ID: CCB Date Collected: 3/28/2018 4:59:29 PM
Analyst: 868 HG-7 Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time (before sample): 0 Auto Dilution Factor: 1.0000

Replicate Data: CCB Analyte: Hg 253.7

Repl #	SampleConc mg/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	-0.000030	-0.0303	-0.0000	-0.0001	0.0001	5:00:33 PM	Yes
2	-0.000029	-0.0292	-0.0000	0.0002	0.0001	5:01:18 PM	Yes
Mean:	-0.000030	-0.0297	-0.0000				
SD:	0.0000008	0.00079	0.0000				
%RSD:	2.67%	2.67%	43.44				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

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Carrier solution R06141703 **Reducing Agent R06141702**

Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
Calib blank_868	868 HG-7		Hg 253.7	3/28/2018	11:55:24 AM		ug/L		mg/L	
0.025ppb 0.005x5ppb	868 HG-7		Hg 253.7	3/28/2018	11:57:37 AM		ug/L		mg/L	
0.10ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/28/2018	11:59:51 AM		ug/L		mg/L	
1.00ppb MS030518AAX0.0001	868 HG-7		Hg 253.7	3/28/2018	12:02:07 PM		ug/L		mg/L	
2.00ppb MS030518AAX0.002	868 HG-7		Hg 253.7	3/28/2018	12:04:22 PM		ug/L		mg/L	
5.00ppb MS030518AAX0.005	868 HG-7		Hg 253.7	3/28/2018	12:06:37 PM		ug/L		mg/L	
10.0ppb MS030518AAX0.01	868 HG-7		Hg 253.7	3/28/2018	12:08:50 PM		ug/L		mg/L	
ICV MS030518B } *	868 HG-7		Hg 253.7	3/28/2018	12:47:40 PM	0.172897	ug/L	0.000173	mg/L	0.999893
ICV MS030518B } *	868 HG-7		Hg 253.7	3/28/2018	1:10:03 PM	4.729983	ug/L	0.00473	mg/L	0.999893
ICB	868 HG-7		Hg 253.7	3/28/2018	1:12:18 PM	-0.02982	ug/L	-2.98E-05	mg/L	0.999893
CRQL 0.25	868 HG-7		Hg 253.7	3/28/2018	1:14:33 PM	0.233944	ug/L	0.000468	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	1:16:50 PM	1.963562	ug/L	0.001964	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	1:19:06 PM	-0.03086	ug/L	-3.09E-05	mg/L	0.999893
CCV 0.2x10ppb **	868 HG-7		Hg 253.7	3/28/2018	3:39:27 PM	1.955477	ug/L	0.001955	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	3:41:43 PM	-0.02323	ug/L	-2.32E-05	mg/L	0.999893
180328-B-A1	868 HG-7		Hg 253.7	3/28/2018	3:43:58 PM	-0.02813	ug/L	-5.63E-05	mg/L	0.999893
180328-L-A1	868 HG-7		Hg 253.7	3/28/2018	3:46:14 PM	4.731277	ug/L	0.009463	mg/L	0.999893
18-03-1974-5	868 HG-7		Hg 253.7	3/28/2018	3:48:30 PM	-0.02283	ug/L	-4.57E-05	mg/L	0.999893
18-03-1974-5 MS	868 HG-7		Hg 253.7	3/28/2018	3:50:47 PM	4.3281	ug/L	0.008656	mg/L	0.999893
18-03-1974-5 MSD	868 HG-7		Hg 253.7	3/28/2018	3:53:04 PM	4.532539	ug/L	0.009065	mg/L	0.999893
18-03-1974-1	868 HG-7		Hg 253.7	3/28/2018	3:55:21 PM	-0.02264	ug/L	-4.53E-05	mg/L	0.999893
18-03-1974-2	868 HG-7		Hg 253.7	3/28/2018	3:57:38 PM	-0.033	ug/L	-6.60E-05	mg/L	0.999893
18-03-1974-3	868 HG-7		Hg 253.7	3/28/2018	3:59:54 PM	-0.01424	ug/L	-2.85E-05	mg/L	0.999893
18-03-1974-4	868 HG-7		Hg 253.7	3/28/2018	4:02:10 PM	-0.03487	ug/L	-6.97E-05	mg/L	0.999893
18-03-1974-6	868 HG-7		Hg 253.7	3/28/2018	4:04:26 PM	-0.03171	ug/L	-6.34E-05	mg/L	0.999893

* failed, reran - passed
** time gap

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Analysis Hg Chemist ID: 309
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Sample ID	Analyst Name	Initial Sample Wt	Analyte Name	Date	Time	Conc (Calib)	Units (Calib)	Conc (Samp)	Units (Samp)	Corr Coef
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:06:43 PM	1.947275	ug/L	0.001947	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	4:08:59 PM	-0.02994	ug/L	-2.99E-05	mg/L	0.999893
18-03-1974-7	868 HG-7		Hg 253.7	3/28/2018	4:11:14 PM	-0.04095	ug/L	-8.19E-05	mg/L	0.999893
18-03-1968-4	868 HG-7		Hg 253.7	3/28/2018	4:13:30 PM	-0.02165	ug/L	-4.33E-05	mg/L	0.999893
180328-B-A2	868 HG-7		Hg 253.7	3/28/2018	4:15:46 PM	-0.03684	ug/L	-7.37E-05	mg/L	0.999893
180328-L-A2	868 HG-7		Hg 253.7	3/28/2018	4:18:02 PM	4.751384	ug/L	0.009503	mg/L	0.999893
18-03-1723-F-1	868 HG-7		Hg 253.7	3/28/2018	4:20:18 PM	-0.03202	ug/L	-6.40E-05	mg/L	0.999893
18-03-1723-F-1 MS	868 HG-7		Hg 253.7	3/28/2018	4:22:35 PM	4.58476	ug/L	0.00917	mg/L	0.999893
18-03-1723-F-1 MSD	868 HG-7		Hg 253.7	3/28/2018	4:24:53 PM	4.55445	ug/L	0.009109	mg/L	0.999893
18-03-1723-F-2	868 HG-7		Hg 253.7	3/28/2018	4:27:10 PM	-0.03334	ug/L	-6.67E-05	mg/L	0.999893
18-03-1974-F-1	868 HG-7		Hg 253.7	3/28/2018	4:29:26 PM	-0.03496	ug/L	-6.99E-05	mg/L	0.999893
18-03-1974-F-2	868 HG-7		Hg 253.7	3/28/2018	4:31:43 PM	-0.03681	ug/L	-7.36E-05	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:34:00 PM	1.947802	ug/L	0.001948	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	4:36:16 PM	-0.03001	ug/L	-3.00E-05	mg/L	0.999893
18-03-1974-F-3	868 HG-7		Hg 253.7	3/28/2018	4:38:31 PM	-0.02392	ug/L	-4.78E-05	mg/L	0.999893
18-03-1974-F-4	868 HG-7		Hg 253.7	3/28/2018	4:40:48 PM	-0.03727	ug/L	-7.45E-05	mg/L	0.999893
18-03-1974-F-5	868 HG-7		Hg 253.7	3/28/2018	4:43:04 PM	-0.03579	ug/L	-7.16E-05	mg/L	0.999893
18-03-1974-F-6	868 HG-7		Hg 253.7	3/28/2018	4:45:20 PM	-0.0358	ug/L	-7.16E-05	mg/L	0.999893
180328-B-A3	868 HG-7		Hg 253.7	3/28/2018	4:47:37 PM	-0.03563	ug/L	-7.13E-05	mg/L	0.999893
180328-L-A3	868 HG-7		Hg 253.7	3/28/2018	4:49:54 PM	4.607026	ug/L	0.009214	mg/L	0.999893
180328-L-A3D	868 HG-7		Hg 253.7	3/28/2018	4:52:10 PM	4.638428	ug/L	0.009277	mg/L	0.999893
18-03-1957-F-6	868 HG-7		Hg 253.7	3/28/2018	4:54:27 PM	-0.02406	ug/L	-4.81E-05	mg/L	0.999893
18-03-1676-1	868 HG-7		Hg 253.7	3/28/2018	4:56:45 PM	-0.04256	ug/L	-8.51E-05	mg/L	0.999893
CCV 0.2x10ppb	868 HG-7		Hg 253.7	3/28/2018	4:59:02 PM	1.897963	ug/L	0.001898	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	5:01:18 PM	-0.02975	ug/L	-2.97E-05	mg/L	0.999893
CCV 0.2x10ppb *	868 HG-7		Hg 253.7	3/28/2018	7:02:56 PM	1.880503	ug/L	0.001881	mg/L	0.999893
CCB	868 HG-7		Hg 253.7	3/28/2018	7:05:12 PM	-0.02506	ug/L	-2.51E-05	mg/L	0.999893
18-03-1116-1	868 HG-7		Hg 253.7	3/28/2018	7:07:29 PM	-0.0214	ug/L	-4.28E-05	mg/L	0.999893
18-03-1894-2 PDS	868 HG-7		Hg 253.7	3/28/2018	7:09:47 PM	4.718692	ug/L	0.009437	mg/L	0.999893

* time gap

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Preparation Log

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Mercury Sample Preparation Logbook (Aqueous)

METHOD	MATRIX	EQUIPMENT ID #	REAGENT ID #	REAGENT / STANDARD ID #
☐ EPA 7470A ☒ EPA 245.1	Aqueous	Thermometer 171114994S (CF: 1.0 °C) Block Digester 5 Pipetter / Dispenser D-611	HNO_3 M006-45-08 1.25 mL H_2SO_4 M006-45-20 2.5 mL 5% $KMnO_4$ HR0112185	5% $K_2S_2O_8$ HR0908171A 4 mL NaCl-H_3NO-HCl HR0112185 5 mL Spike MS030518AA

BATCH NUMBER	SUPPLY LOT #	ACID PRESERVATION AND FILTRATION	STANDARD ID #
MS/MSD 180328-SA2 (Specify)	Digestion Tube 170164 Filter	☐ None ☒ Lab Filtered ☐ Lab Preserved Book # 22 Page # 616 17	IC MS030518AA ICV ✓ B

DIGESTION									SAMPLE			
	START			END							5%	SPIKE OR
DATE	TIME	TEMP W/O CF (°C)	PREP TECH ID #	TIME	TEMP W/O CF (°C)	PREP TECH ID #	INITIAL pH	ECI ID #	INITIAL (mL)	FINAL (mL)	$KMNO_4$ V (mL)	IC/ICV V (µL)
3/28/18	12:00	95	865	14:00	95	865	72	MS 18-03-1773-1M	50	100	1.5	500
							72	MSD 1				1
								LCS 180328-1A2				
								LCSD / MB 180328-BA2				
							72	18-03-1773-1M				
							72	1 2M				
							72	18-03-1974-1C				
							72	2				
							72	3				
							72	4				
							72	5				
							72	6				
	14:00			16:00			72	18-03-1798-1C				
							72	2				
							72	3				
							72	4				
							72	5				
							72	6				
							72	MS 1				500
							72	MSD 1				1
								IC				
								ICV				
								CB				

COMMENTS: D-648 / D-647 / D-658 / D-673 / D-683

Acid Preservation and Filtration Logbook

CEL ID #	SAMPLING DATE	INITIAL pH < 2	FILTER AND DIGEST *	FILTER AND PRESERVE **	PRESERVE ONLY	SAMPLE FILTRATION (IF ANY) DATE	LOT # a) FILTER b) DIGESTION TUBE	ACID PRESERVATION (1) 1:1 HNO_3; (2) 5-mL/L BrCl; (3) 12-N HCl D = DATE T = TIME	N = NAME L = LOT #	AMOUNT	DIGESTATE FILTRATION (IF ANY) DATE	FILTER LOT #	ANALYST	COMMENTS
18-03-1924-3A	03/20/18	Y (N)			X	~~03/22/18~~	a) b)	D) 03/22/18 T) 18:00	N) (1) 2 3 L) MH1101AA	1ML			1058	
| 4A	|	Y (N)			X	|	a) b)	D) | T)	N) 1 2 3 L)	|			|	
18-03-1943-1B	03/22/18	Y (N)		X		03/22/18	a) R7GA90840 b) 160613	D) | T)	N) 1 2 3 L)	|			|	
| 2B	|	Y (N)		X		|	a) b) |	D) | T)	N) 1 2 3 L)	|			|	
18-03-1971-1C	03/22/18	Y (N)		X		03/22/18	a) R7GA90840 b) 160613	D) 03/22/18 T) 18:00	N) (1) 2 3 L) MH1101AA	1ML			1058	
2C	|	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
3C	|	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
4C	|	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
5C	|	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
6C	|	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
~~18-03-1943-1E~~		Y N		"			a) b)	D) T)	N) 1 2 3 L)					
18-03-2106-1A	03/22/18	Y (N)		X		03/23/18	a) R7GA90840 b) 160613	D) 03/23/18 T) 16:00	N) (1) 2 3 L) MH1101AA	1ML			1058	
2A	|	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
3A	|	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
4A	|	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
5A	|	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
6A	|	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
18-03-2014-1-5D	03/22/18	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
18-03-2111-1-5F	03/26/18	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	
18-03-2107-19C	03/23/18	Y (N)		X		|	a) b) |	D) T) |	N) 1 2 3 L)	|			|	

* FILTER AND DIGEST: If the sample was filtered in the lab and digested immediately, mark **x** in the cell.

** FILTER AND PRESERVE: If the sample was filtered in the lab and preserved prior to digestion, mark **x** in the cell.

EPA 245.1 Mercury

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Standards Preparation Logs

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Standard Preparation Logbook

PREP DATE	NEW STANDARD ID #	TEST METHOD	SOURCE STANDARD(S) OR MIXTURE(S)	SOURCE STANDARD ID #	INITIAL AMOUNT	INITIAL CONC.	FINAL VOLUME	FINAL CONC.	SOLVENT NAME	SOLVENT ID #	EXPIR. DATE	PREP BY	COMMENTS
4/27/17	M042717A	6010/200.7	Na [10,000 PPM]	M006-023-23	1 ml	SEE SOP Apdx C	200 ml	SEE SOP Apdx C	12 ml HNO3 10 ml HCl	M006-041-22 ~~M006-042-23~~ M006-041-24 ~~JTJ~~ 4/28/17	~~04/27/18~~ 12/13/17	935	
			Sn [10,000 PPM]	-16	0.05 ml								
			Si [1,000 PPM]	~~M006-039-10~~ 040-03 935 4/27/17	1.77 ml								
4/27/17	M042717B	1640	100ppm Se	M006-42-11	0.2754 g	powder	1 L	100ppm	H2O	N/A	4/27/18	KO	
4/27/17	M042717C	6010/200.8	Internal std Conc.										
			Sc	M006-042-04	100 mL	1000ppm	500 mL	20ppm	5 mL HNO3	M006-41-22	3 yr	JJr	05/2021
			Li6	M006-042-03	50 mL			100ppm					11/2021
			Ga	M006-042-05	50 mL								11/2020
			In	M006-13-4	10 mL			20ppm					02/2018
			Ho	M006-042-07	20 mL								04/2022
			Tb	M006-042-06	10 mL								08/2021
			Bi	M006-042-08	10 mL								04/2022
	M042717D		Internal std	M042717C	5 mL	[illegible]	1 L X3	0.1-1ppm	10 mL HNO3				
~~4~~ 5/3/17	M050317A	Hg	100ppm Hg	M006-36-15	10 mL	1000ppm	100 mL	100ppm	5 mL HNO3	M006-41-22	12/20/17	868	
	M050317B		1ppm STD	M050317A	1 mL	100ppm	100 mL	1ppm	5 mL HNO3	M006-41-22	6/3/17	868	

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Standard Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MS	030918	C	org Pb	P-115 / P-015	MS121417A	0.04 mL	MR121417D	20 mL	2 ppm	3/10/18	1080
MS	"	D	"	"	"	0.02	"	"	1	"	"
MS	"	E	"	"	"	0.1 conc	"	"	0.2	"	"
MS	"	F	"	"	MS012418A	0.1	"	"	5	"	"
MS	030518A	A	Hg	MP-060	M006-18-04	1 mL	M006-43-05 5 mL	100 mL	1 ppm	4/5/18	865
MS	"	B	"	"	M006-43-01	"	M006-43-08 5 mL	"	"	"	"
MS											
MS											
MS											
MS											
MS											
MS											
MS											
MS											
MS											
MS											
MS											
MS											

Reagent Preparation Logbook

PREP DATE	NEW REAGENT ID #	TEST METHOD	REAGENT DESCRIPTION	SOURCE CHEMICAL(S) NAME	SOURCE CHEMICAL(S) ID #	SOURCE CHEMICAL(S) INITIAL AMOUNT	SOLVENT NAME	SOLVENT ID #	FINAL VOLUME	EXPIR. DATE	PREP BY	COMMENTS
04/25/17	R042517-2	org. Pb	10% 336/MIBK	Aliquat 336	M006-35-24	2mL	MIBK	M006-32-24	200 mL	4/25/18	SZ	
"	R042517-03	"	1% 336/MIBK	10% 336	R042517-02	2mL	MIBK	M006-32-24	200mL	"	SZ	
04/27/17	R042717-01	GFAA/200.8	3% HNO_3	HNO_3	M006-041-11	100mL	DI water	D042717-01	4L x 5	4/27/18	SZ	
04/28/17	R042817-01	Hg	Aqua Regia 1:1	HCl HNO_3	M006-041-24 M006-041-12	300mL 100mL	$DI H_2O$	N/A	800mL	4/28/18	SZ	Daily
04/28/17	R042817-02	Hg	5% $KMnO_4$	~~KMnO4 M006-37-01 SZ 4/28/17~~ $KMnO_4$	M006-37-01	50g	$DI H_2O$	NA	1L	4/28/18	SZ	
06/08/17	R060817-01	Hg	12% $NH_2OH \cdot Cl$	$NH_2OH \cdot HCl$ NaCl	M006-36-02 ~~M006-25-16~~ SZ 6/8/17 42-20	1.2kg 1	DIH_2O	NA	1L	6/08/18	SZ	
06/09/17	R060917-01	org. Pb	RGM-6	Xylene	M006-042-24	200mL	NA	NA	100mL XY	12/09/17	SZ	
"		"	"	MIBK	M006-032-24	250mL						
"		"	"	10% 336	R060917-03	50mL						
"		"	"	3% I_2	R060917-04	1mL						
"	R060917-05	"	10% 336/MIBK	Aliquat 336	M006-35-24	20mL	MIBK	M006-032-24	200mL	"	"	
"	R060917-06	"	1% 336/MIBK	10% 336/MIBK	R060917-05	10mL	MIBK	"	200mL	"	"	
"	R060917-04	"	I_2 3%	Iodine	G007-04-19	6g	Benzene	M006-050-24	200mL	"	"	2/23/25
6/14/17	R061417-01	Hg	Aqua Regia	HCl HNO_3	M006-041-24 M006-041-12	300mL 100mL	$DI H_2O$	NA	800mL	6/14/18	SZ	Daily
"	R061417-02	"	$SnCl_2 \cdot 2H_2O$ Reducing agent	$SnCl_2 \cdot 2H_2O$	M006-42-22 M006-41-12	60mL 22g	~~DI H_2O 60mL HCl~~	~~NA M006-41-12~~	2L x 2	6/14/18	SZ	Daily
"	R061417-03	"	3% HCl carrier solution	HCl	M006-41-12	66mL	$DI H_2O$ 06/14/17 SZ	NA	2L x 2	6/14/18	"	"
6/20/17	R062017-01	metals	1:1 HNO_3	HNO_3	M006-042-24	1.2L x 30	$DI H_2O$	NA	2.5 x 30	06/20/18	SZ	
06/27/17	R062717-01	Hg	$NH_2OH \cdot HCl$	$NH_2OH \cdot HCl$	M006-34-24	60g	DIH_2O	NA	200mL	10/3/17	SZ	
06/28/17	R062817-01	metals	1:1 HNO_3	HNO_3	M006-041-11	500mL	$DI H_2O$	NA	1000mL	6/28/18	SZ	
06/28/17	R062817-02	"	1:2 HCl	HCl	M006-042-24	800mL	DIH_2O	NA	2000 mL 30	6/28/18	SZ	

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Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	081717	A	metals		HNO3 M006-043-08	500mL	~~Nano Pure~~ Type 1 grade water 8/17/17	reagent 1000mL	1:1 HNO3	08/17/18	1080
MR	083117	A	200.7 metals		8/31/17 1080 ~~HNO3~~ HCl ~~M006-044-06~~	500mL	Type 1 grade water	2000mL	1:4 HCl	08/31/18	1080
MR					M006-042-22						
MR	090517	A	Hg	Balance 59	M006-41-09	500g	8L8 9/8/17 ~~Nano~~ DI H_2O	100mL	5% $K_2S_2O_8$	9/8/18	8L8
MR	091917	A	metals		M006-042-15	833mL	Type 1 grade water	2.5L	1:2 HCl	9/19/18	1080
MR	092717	A	metals		~~M006-44-06~~	1.25L	DI H_2O Type 1	2.5L	1:1 HNO3 ~~HCl~~ aqua regia	~~09/27/18~~	710
MR	10/10/17-01	A	TCLP		NAOH M006-34-15	160gram	DI-H2O	4L x8	1N	10/09/18	805
MR	10/10/17-04	A	STLC		NAOH M006-38-15	640gram	DI-H2O	4L x8	4N	10/09/18	805
MR	101117	A	1631	Balance 64	M006-043-12	60g	DI-H2O	200mL	$NH_2OH \cdot HCl$	10/11/18	776
MR	102817	A	metals		M006-44-07	833mL	Type 1 grade water	2.5L	1:2 HCl	10/28/18	1080
MR	110117	A	Metals	D-044	M006-44-17	250mL	DI-H2O	500mL	1:1 HNO3	11/01/18	1058
MR	110117	B	1	F-002	M006-41-23	250mL	DI-H2O	50mL	1:1 HCl	11/01/18	1058
MR	~~110417~~	~~A~~	~~1631~~		~~M006-43-12~~	~~60g~~	200mL DI-H2O	~~200mL~~	11/4/17 1080		
MR	110317	A	1631	Balance 64	M006-032-04 ~~G007-016-19~~	2.16g 3.04g	M006-036-24 HCl	200mL	BrCl	11/3/18	1080
MR	111617	A	metals	D-044	M006-045-02	100mL	DI-H2O	2L	5% HNO_3	11/16/18	5TK
MR	112717	A	TCLP		M006-44-07	8.33x4	DI-H2O	100 x4 = 400 mL	1N	11/26/18	805
MR	11/21/17	A	METALS	D-044 F-002	M006-045-01 M006-45-01	120mL 320mL	DI-H2O	2L	6% HNO_3 16% HCl	11/21/18	5T8
MR	12/1/17	A	Hg	Balance 59	M006-42-10 M006-45-05	1.2kg 1.2kg	DI-H_2O	10L	12% NaCl · NH_4OH	12/1/18	8L8

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Reagent Preparation Logbook

Group ID	Date: MMDDYY	Letter ID	Method of Preparation	Support Equipment	Source Chemical ID	Source Chemical Amount	Solvent ID or Source Water	Final Vol	Final Conc.	Exp. Date	Analyst ID
MR	120717	A	metals	—	M006-045-01	833mL	Di-H2O	2.5L	1:2 HCl	12/7/18	1080
MR	121117	A	6010/200.7	D044 / F002	M006-045-02 M006-045-01	60mL 50 mL	Di-H2O	1LX2	6% HNO3 5% HCl	12/11/18	935
MR	↓	B	↓	↓	↓	↓	↓	↓	↓	↓	↓
MR	↓	C	↓	↓	↓	100mL 100mL	↓	1L x4	10% HNO3 10% HCl	↓	↓
MR	↓	D	↓	↓	↓	↓	↓	1L X2	↓	↓	↓
MR	121217	A	SPLP	—	M006-44-21 H2SO4 M006-45-02 HNO3	60ml 40ml >100ml	DI-H2O	100 ml	60% H2SO4 40% HNO3	12/11/18	805
MR	121417	A	Org. Pb	pipette 04012016 MIBK D-054	Aliquot 336 M006-35-24	20mL	M006-039-02 MIBK 180mL	200mL	10% .336/MIBK	6/14/18	1080
MR	121417	B	Org. Pb	pipette 04012016 MIBK D-054	10% .336/MIBK MR121417A	20mL	M006-039-02 MIBK 180mL	200mL	1% .336/MIBK	6/14/18	1080
MR	121417	C	Org. Pb	Balance 61 pipette 04012016	Iodine G007-04-19	6g	M006-09-09 Benzene	200mL	I_2 3%	6/14/18	1080
MR	121417	D	Org. Pb	D-054/D-055/pipette 04012016	Xylene M006-044-14	200mL	—	—	BLANKS	6/14/18	1080
MR	|	|	|	|	MIBK M006-039-02	250mL	|	|	|	|	|
MR	|	|	|	|	1% .336 MR121417B	50mL	|	|	|	|	|
MR	|	|	|	|	3% I_2	1mL	|	|	|	|	|
MR	121617	A	metals	—	M006-045-02	1.25L	Di-H2O	2.50L	1:1 HNO3	12/16/18	1080
MR	011218	A	Hg	Bal #59	M004-43-01	~~50~~ 1000g	DI-H2O	20L	5% KMnO4	1/12/19	868
MR	011218	B	Hg	Bal #59	M004-43-025 M004-42-20	1.2 kg 1.2 kg	DI-H2O	10L	12% NaCl·NH2OH	1/12/19	868
MR	013018	A	METALS	—	M006-045-09	4X ~~1.25L~~ 500 ml	DI-H2O	4X 1200 mL	1:1 HNO3	01/30/19	710
MR	013118 ~~013018~~	A	metals	—	M006-042-22	833mL	Di-H2O	2.5L	1:2 HCl	1/31/~~18~~ 19	1080

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Nitric Acid	EMD	NX0407/4	52088	8/31/15	2.5L x2	G	8/31/12	469	8/31/12	469	
2	Hydrochloric Acid	EMD	HX0607/4	51122	8/31/15	2.5L x2	G	8/31/12	469	8/31/12	469	
3	↓	EMD	HX0607/4	51258	↓	2.5L x2	G	8/31/12	↓	↓	↓	
4	Instrument Calibration STD #3	SPEX	CL-6AC-3	CL43-8443	08/30/13	125mL x2	P	09/06/12	SP	09/06/12	SP	
5	Instrument Calibration STD #2	SPEX	CL-CAL-2	CL5-1184P	08/30/13	1LT mL	P	09/06/12	SP	09/06/12	SP	
6	H C L Acid	EMD	HX0607/4	51258	09/09/15	2.5L x7	G	09/09/12	JDS	09/09/12	JDS	
7	↓	↓	HX0607/4	51122	↓	2.5L x3	G	↓	↓	↓	↓	
8	↓	↓	HX0607/4	51181	↓	2.5L x1	G	↓	↓	↓	↓	
9	Nitric Acid	EMD	NX0407/4	52012	09/06/15	2.5L x10	G	09/07/12	JDS	09/07/12	JDS	
10	↓	↓	↓	52028	↓	2.5L x1	G	↓	↓	↓	↓	
11	H C L Acid	EMD	HX0607/4	51258	09/13/15	2.5L x8	G	09/14/12	JDS	09/14/12	JDS	
12	Nitric Acid	EMD	NX0407/4	52012	09/13/15	2.5L x8	G	09/14/12	JDS	09/14/12	↓	
13	Stannous Chloride	VWR	BDH0304-500g	131863	NA	500g x5	P	9/17/12	769	9/17/12	769	
14	Potassium Permanganate	Fisher	P279-212	116168	9/18/17	2.5kg x4	G	9/18/12	769	9/18/12	769	
15	Acetic Acid, Glacial	Amresco	0714-2.5L	2372C462	02/30/13	2.5L x4	G	09/18/12	JDS	09/18/12	JDS	CTF 3 p3-28
16	Hydrogen Peroxide	EMD	HX0635-2	51283217	10/31/13	1L x6	P	9/26/12	769	9/26/12	769	
17	Nitric Acid	EMD	NX0407/1	52012	9/27/15	500mL	G	9/27/12	SP	9/27/12	SP	
18	↓	↓	↓	51331	↓	500mL x8	↓	↓	↓	↓	↓	
19	Nitric Acid	Fisher	A467-2	121020	2/23/15	2L x2	T	10/3/12	776	10/3/12	776	
20	Acetic Acid	Fisher	A507-P212	611007	6/2014	2.5L x2	P	10/3/12	776	10/3/12	776	
21	Potassium Persulfate	Fisher	P281-500	120909	10/5/17	500g x12	P	10/5/12	769	10/5/12	769	
22	Hydroxylamine Hydrochloride	ACROS	41205000	A0315671	10/5/17	500g x6	↓	↓	↓	↓	↓	
23	Nitric Acid	EMD	NX0407/4	52012	10/08/15	2.5L x5	G	10/08/12	JDS	10/08/12	JDS	
24	Hydroxylamine Hydro	ALDRICH	431362-50G	MKBL3154V	10/8/17	50g	P	10/8/12	776	10/8/12	776	
25	Stannous Chloride Dihydrate	Fisher	T163-500	122943	10/9/17	500g x6	P	10/9/12	776	10/9/12	776	

COMMENTS:

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LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Zinc Standard	AccuTrace	ICP-MS-70N-0.1X-1	214045001	4/2019	100ml	P	4/8/14	769	4/8/14	769	
2	Iron Standard	|	ICP-MS-27N-0.1X-1	213015221	1/2018	100ml	|	|	|	|	|	
3	Chromium Standard	|	ICP-MS-13N-0.1X-1	213025146	3/2018	100ml	|	|	|	|	|	
4	Mercury Standard	|	ICP-MS-34N-0.1X-1	213115080	11/2018	100ml	|	|	|	|	|	
5	Nitric Acid	EMD	NX0407-2	53358	4-10-17	2.5Lx5	G	4-11-14	879	4-11-14	879	
6	Hydrochloric Acid	EMD	HX0607-2	54028	4-10-17	2.5Lx5	G	4-11-14	879	4-11-14	879	
7	Hydrochloric Acid	EMD	HX0607-2	53010	4-14-17	2.5Lx8	G	4-15-14	879			Lot # verified
8	Nitric Acid	EMD	NX0407-2	53358	4-20-17	2.5Lx5	G	4-21-14	879	4-21-14	879	Lot # verified
9	Hydrochloric Acid	EMD	HX0607-2	54028	4-20-17	2.5Lx5	G	4-21-14	879	4-21-14	879	Lot # verified
10	Hydrogen peroxide	Fisher	H325-500	140441	4/17	500ml	P	4/21/14	110	4/21/14	110	
11	Hydrogen Peroxide	EMD	HX-0635-2	54044409	2/28/16	1Lx10	P	4/24/14	879	~~4-24-14~~	~~879~~	Lot # verified
12	Hydroxylamine Hydrochloride	Reagent world	5470-11-1	FZ0661	4/25/17	500gx15	P	4/25/14	769	4/25/14	769	
13	Hydrochloric Acid	EMD	HX067-2	54028	4/29/17	2.5Lx5	G	4/29/14	914	4/29/14	914	
14	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	4/29/14	914	4/29/14	914	
15	Ammonium Hydroxide	BDH	87003-214	724010	7/04/17	2x500ml	P	4/30/14	110	4/30/14	110	
16	Hydrochloric Acid	EMD	HX0607-4	52310	4/30/17	2.5x5	G	4/30/14	914	4/30/14	914	
17	Hydrochloric Acid	EMD	HX0607-4	54028	4/30/17	2.5Lx5	G	5/5/14	879	6/9/14	915	Lot # verified
18	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/5/14	879	5/6/14	879	Lot # verified
19	Nitric Acid	EMD	NX0407-2	53157	05/21/17	2.5Lx2	G	05/22/14	805	05/22/14	805	
20	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/22/14	879	5/22/14	879	Lot # verified
21	Nitric Acid	EMD	NX0407-2	53358	4/29/17	2.5Lx5	G	5/23/14	879	5/27/14	879	Lot # verified
22	Hydrochloric Acid	EMD	~~HX0607-4~~	54028	4/30/17	2.5Lx5	G	5/23/14	879	6/2/14	915	HX0607-2
23	Sulfuric Acid 93-98%	EMD 915 5/30/14 ~~[illegible]~~	SX-1247-2	53128	3/24/17	2.5L	G	5/30/14	915	5/30/14	915	
24	KMnO4	Fisher	0279 212	136746	5/30/19	2.5Kgx2	G	5/30/14	915	6/4/14	915	
25	Nitric Acid	Fisher	A467-2	121310	11/24/16	2LX2	T	6/4/14	[illegible]	6/[illegible]	[illegible]	

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1	Potassium Permanganate	EMD	PX1550-5	16B11000 2	7/27/18	2.5x5	P	7/22/16	806	7/27/16	968	
2	ICV 10X - Solution - A	High Purity	SM-2011-003 S.A	1619 011	7/18/17	250 ml	P	7/27/16	975	7/27/16	975	
3	- B		-B	1619738								
4	- C		-C	1619 013								
5	- D		-D	1619 014								
6	Spike #1		SM-2011-004	1619 015		1L						
7	Spike #2		SM-2011-001	1619 010								
8	HNO_3	EMD	NX0407-2	56020	08/03/19	18x 2.5L	G	08/01/16	1030	08/03/16	1030	
9	Hydrogen Peroxide	Fisher	H325-500	162633	08/04/19	500 mL	P	08/04/16	776	08/04/16	776	
10	HCL	EMD	HX0607-2	55320	08/04/19	2.5L	G	08/04/16	1030	08/04/16	1030	
11	TETRAETHYL LEAD	SPEX	SVO-CSEL-8-500	EN1608 18001	8/18/17	500mL	G	8/19/16	53r	8/15/16	53r	
12	Hydrogen peroxid	EMD	~~500~~ HX0635-2	56039624	8/22/19	1L	P	8/22/16	710	9/2/16	710	[illegible]
13	HNO_3	EMD	NX0407-2	553-3	9/1/19	2.5Lx20	G	9/1/16	53r	9/1/16	53r	
14	Citric Acid Anhydrous	Fisher	A940-1	160994	09/01/21	1 Kg X8	P	09/01/16	1030	09/01/16	1030	
15	HCL	EMD	HX0607-2	56027	09/26/19	2.5LX10	G	09/26/16	1030	09/26/16	1030	
16	HNO_3	EMD	HX-0407-2	56020	09/26/19	2.5LX~~24~~ 18	G	09/26/16	1030	09/26/16	1030	
17	TUNE	SPEX	CL-TUNE-1	CL1-16MKBY	03/30/17	09/26/16 [illegible] 125mL	P	09/30/16	53r	09/30/16	53r	
18	Cal Std #3		CL-CAL-3	CL1-36MKBY		125mL						
19	Interferents A		CL-INT-A1	CL1-123MKBY		125mLx2						
20	Analytes B		CL-INT-B1	CL1-90MKBY		125mL						
21	Nitric Acid	Fisher	A467-2	1216350	05/31/19	2L x 2	P	10/05/16	776	10/05/16	776	
22	Hydrochloric Acid	Fisher	A508-P212	4116040	05/13/19	2.5L x4	P					
23	Zr	Accustandard	ICP-MS-71N-0.1X-1	214045089-02	06/2021	100mL	P	10/13/16	53r	10/13/16	53r	
24	Li 6		ICP-MS-IS-LI6-10X-1	216025072	02/15/2024	100mL	P	10/14/16	53r	10/14/16	53r	
25	Hydrogen peroxide	EMD	HX0635-2	56039624	10/9/19	1L	P	10/19/16	710	10/19/16	710	

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1	HCl	EMD	HX0607-2	55320	05/26/17	2.5L x 26	G	05/26/16	1030	05/26/16	1030	710 5/26/15
2	Hydroxylamine Hydrochloride	Fisher	H330-500	149336A	06/30/21	500g x 12	P	5/26/16	868	5/31/16	868	
3	Nitric Acid	Fisher	UN2031	216010	06/26/19	2L x 2	P	06/08/16	110			
4	$SnCl_2 \cdot 2H_2O$	Fisher	UN3260	158453	06/08/21	500g x 6	P	06/08/16	110			
5	Soda lime	Teledyne Tekmar LABS	[illegible]	[illegible]-28-8	06/09/2021	2kg x 1	P	06/09/16	110	06/09/16	110	
6	$H_3NO \cdot HCl$	Fisher	H330-500	156156	06/20/21	500g x 6	P	06/20/16	868	6/20/16	710	
7	Instrument Cal Std #2	SPEX	CL-CAL-2	CL2-119[illegible]BF	6/30/17	125 mL	P	6/20/16	53	6/20/16	53	
8	#3		CL-CAL-3	CL1-36[illegible]BF	6/30/17							
9	Mercury		PLHG2-1Y	21-44HG[illegible]	6/30/17							
10	Lithium		PLLI2-2F	21-57LIF	6/30/17							
11	$SnCl_2$	Fisher	T142-500	138452	6/21/19	500g x 12	P	6/21/16	776	6/21/16	776	
12	Hydrogen Peroxide	EMD	HX0635-2	55314605	11/30/17	1L x 18	P	06/23/16	1030	06/23/16	1030	
13	HNO_3	~~Fisher~~ EMD	NX0407-2	55323	04/13/17	2.5L x 10	G	06/23/16	1030	06/23/16	1030	
14	HCl	EMD	HX0607-2	56027	06/23/19	2.5L x 15	G	06/23/16	1030	06/23/16	1030	
15	Mercury	High-Purity	100033-2	1604607	12/20/17	120 mL	P	06/29/16	776	06/29/16	776	
16	Terbium		10M57-1	1608530	12/20/17							
17	Spike 1		SM-2011-0024	1611806	06/20/17	250 mL						
18	Spike 2		SM-2011-001	1611805								
19	Buffer pH 4.0 Solution (STD)	Fisher	SB101-500	1601779	01/31/18	500mL x 2	P	06/29/16	805	06/29/16	805	ETF REF: #3, p.28-3
20	Buffer pH 7.0 Solution (STD)	Fisher	SB107-500	162805	04/30/18	500mL x 2	P	06/29/16	805	06/29/16	805	REF: #3, p.28-4
21	Buffer pH 10.0 Solution (STD)	Fisher	SB115-500	162803	04/30/18	500mL x 2	P	06/29/16	805	06/29/16	805	ETF: #3 p.28-5
22	Buffer pH 7.00 Solution (ICV)	Fisher	SB108-500	158639	12/31/17	500mL x 2	P	06/29/16	805	06/29/16	805	ETF: #3 p.28-6
23	Isopropyl Alcohol	Fisher	A451-4	157398	07/05/19	4L x 2	G	07/06/16	805	07/06/16	805	ETF:
24	Hydrochloric Acid	Fisher	A508-P212	4116020	03/17/19	2.5L x 2	P	07/21/16	776	07/21/16	776	
25	Acetic Acid	EMD	AX0078-6	55223	07/21/19	1L x 3	P	07/21/16	776	07/21/16	776	

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1	Calcium	Ultra	ICP-120	CP-4462	9/30/23	125mL	P	12/20/16	53	12/21/16	53	
2	Barium	|	ICP-156	CM-6544	11/31/23	|	|	|	|	|	|	
3	Silicon	|	ICP-114	CP-1238	4/30/23	|	|	|	|	|	|	
4	Nitric Acid	EMD	NX0407-2	56048	12/30/19	2.5 x 20	G	12/30/16	710	12/30/16	710	
5	hydrochloric Acid	EMD	HX0607-2	58208	12/30/19	2.5 x 20	G	12/30/16	710	12/30/16	710	
6	H_2SO_4	EMD	SX1247-2	55329	01/09/20	2.5L	G	01/09/17	776	01/09/17	776	
7	HNO_3	EMD	NX0407-2	56020	01/11/20	2.5L x 24	G	01/11/17	1058	01/11/17	1058	
8	HNO_3	EMD	NX0407-2	56018	01/11/20	2.5 x 2	G	01/11/17	1058	01/11/17	1058	
9	Phosphorus 10,000 mg/mL	High Purity	10M39-1	1630829	7/10/18	125ml	P	1/11/17	935	1/11/17	935	
10	PH Tape	Micro Essential	#140	216814	06/15/17	9 Rolls	P	01/16/17	1058	01/16/17	1058	
11	HNO_3	Fisher	~~UN2031~~ A509-P212	1116080	08/26/2018	2.5L x 18	P	01/23/17	710	01/23/17	710	
12	HCL	|	~~UN1789~~ A508-P212	4116060	07/26/19	2.5L x 4	P	01/23/17	710	01/23/17	710	
13	H_2O_2	EMD	HX0635-2	56258639	9/30/18	1 / 4L	P	02/06/17	710	2/06/17	710	710 2/6/17
14	AL Standard	Ultra	ICP-113	CP-3976	9/30/2023	125mL	P	02/06/17	1030	02/06/17	1030	
15	Boron	Ultra	ICP-105	K00924A	11/31/21	125mL	P	02/06/17	1030	02/06/17	1030	
16	Hydrogen peroxide	Fisher	H325-500	165728	2/10/2020	500ml x 2	P	2/10/17	110			
17	Nitric Acid	Fisher	A467-2	1216080	08/07/2019	2L x 2	P	2/10/17	110			Clean room or
18	Nitric Acid	Fisher	A509-P212	1116100	11/10/2018	2.5 x 20	P	2/13/17	710	02/13/17	710	metals DPD
19	Silver	Ultra	ICP-047	CP-4409	09/20/23	125mL	P	2/20/17	1030	02/20/17	1030	
20	Silver	Ultra	ICP-147	CP-4495	09/30/23	125mL	P	|	|	|	|	
21	Chromium	|	ICP-124	CP-1768	05/31/23	|	|	|	|	|	|	
22	Cobalt	|	ICP-127	CP-2011	|	|	|	|	|	|	|	
23	Nickel	|	ICP-128	CP-0006	02/28/23	|	|	|	|	|	|	
24	Sulfur	|	ICP-116	CM-5373	11/30/22	|	|	|	|	|	|	
25	Vanadium	|	ICP-123	CP-3591	08/31/23	|	|	|	|	|	|	

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1	Sodium	Ultra	ICP-111	CP 3478	9/30/23	125 mL	P	2/20/17	1070	2/20/17	1030	
2	Phosphorus		ICP-115	CP-4381								
3	Potassium		ICP-119	CP-0352	2/28/23							
4	Lithium		ICP-103	T30356	5/31/21							
5	Cadmium		ICP-148	CP-0186	2/28/23							
6	Molybdenum		ICP-142	CL-7860	08/31/21							
7	Bismuth		ICP-183	CP-2124	6/30/23							
8	Sulfuric Acid.	EMD	SX1244-2	~~SA1244-2~~ 65329	2/20/20	2.5L	G	2/20/17	848	2/20/17		
9	Potassium Persulfate	Acros Organics	424185000	A0371062	2/17/19	500g x12	P	2/27/17	848	2/27/17		
10	Sodium Chloride	AEPR	6862	25152	2/17/20	25x2lb	P	2/17/17	110	2/27/17	110	
11	HNO3	Fisher	A509-P212	1116100	11/10/18	2.5L x10	P	2/28/17	1058	2/28/17	1058	
12	HCl	Fisher	A508-P212	4116090	10/19/19	2.5L x20	P	2/28/17	1058	2/28/17	1058	
13	Instrument calibration standard 2	SPEX	CL-CAL2	CL1-179MKBY	2/28/18	125mL x2	P	3/20/17	SY	3/20/17	SY	
14	1 S	SPEX	CL-CAL3	CL2-117MKBX	2/28/18	125mL x4	P	1	1	1	1	
15	ICP Multielement Calibration Std-10	High Purity	ICP-MCS-10	1515415	2/21/18	250mL	P	3/22/17	935	3/22/17	935	
16	-8		ICP-MCS-8	1635121		500mL x2						
17	-1		ICP-MCS-1	1515602		500mL						
18	-7		ICP-MCS-7	1705326	2/24/18	500mL						
19	-11		ICP-~~MCS~~-AH11 (2.5L 3/22/17)	1705327		125mL						
20	Acetic Acid, Glacial	Fisher	A38C-212 (2.5L)	LOT# 166899	04/03/20	2.5L x4	G	04/04/17	805	04/04/17	805	
21	Nitric Acid	Fisher	A509-P212	1116080	08/26/2018	2.5L x1	P	4/06/17	710	4/06/17	710	
22	↓	↓	↓	1116100	11/10/2018	2.5L x18	P	↓	↓	↓	↓	
23	↓	↓	↓	1116080	11/30/2018	2.5L x8	P	↓	↓	↓	↓	
24	HCl	Fisher	A508-P212	4116090	11/19/2019	2.5L x20	P	↓	↓	↓	↓	
25	Sodium Borohydride	Fisher	S678-25	161188	4/10/2022	2 x 25g	P	4/10/17	110	4/10/17	110	

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								DATE	WHO	DATE	WHO	
1	Sodium Selenate decahydrate	Aldrich	450294-5G	MKCB4727V	4/UL	5g	G	4/10/17	110	4/13/17	110	
2	Ammonium Hydroxide	Fisher	A512-P500	#711090	10/16/2018	500mL X 6	P	04/17/17	805	04/17/17	805	
3	Ci-6	AccuStd.	ICP-MS-IS-CL6-10X-1	216115021	11/2021	100mL	P	04/20/17	53r	04/20/17	53r	
4	Sc		ICP-MS-50N-0.1X-1	216055006	05/2021	100mL	P					
5	Ga		ICP-MS-31N-0.1X-1	21511006 7	11/2020	100mL	P					
6	Tb		ICP-MS-13N-0.1X-1	213125126-01	02/2021	100mL	P					
7	Ho		ICP-MS-24N-0.1X-1	217045020	04/2022	100mL	P					
8	Bi		ICP-MS-08N-0.1X-1	217045044	04/2022	100mL	P					
9	Stannous Chloride Dihydrate	Fisher	T163-500	163999	04/2022	500g X6	P	04/25/17	1030	04/25/17	1030	
10	Hydro chloric Acid	Aristar Ultra	87003-216	4216110	01/2020	500mL	P					
11	Na_2SeO_4	Alfa Aesar	11613	71408-04	04/2022	50g	G	04/25/17				
12	$SnCl_2$	Fisher.	T1-141-500	145293A	4/2020	500g X 12	P	4/25/17	868	4/26/17	868	
13	BOILING STONES	Saint-Gobain	D1069103	Lot# T714-7C002	04/30/22	450g X 8	P	04/27/17	805	04/27/17	805	CTF: #3 P30-24 P30-25
14	XYLENE	Fisher	XS-4	168622	4/28/20	4L X 4	G	4/28/17	53r	4/28/17	53r	
15	HCl.	Fisher	A508-P212	4116090	~~4/28~~ 10/9/19	2.5 X 20.	P	4/28/17	710	4/28/17	710	710 4/28/19
16	HNO3	Fisher	A509-P212	1116110	11/30/18	2.5 X 20	P	4/28/17	710	4/28/17	710	
17	Sodium [10,000 µg/mL]	Ultra	ICP-111	CP-3978	9/30/23	1L	P	5/2/17	935	5/2/17	935	
18	Potassium [10,000 µg/mL]		ICP-119	CR-0917	4/30/24	1L	P	5/2/17	935	5/2/17	935	
19	Hydrogen Peroxide	EMD	HX0635-2	56258639	09/30/18	1L	P	05/05/17	710	5/5/17	710	
20	Sodium Chloride	Fisher.	S271-10	161535	05/15/22	10Kg	P	5/15/17	868	5/15/17	868	
21	Nitric Acid	Fisher	A509-P212	1117010	~~5/23/19~~ 10/31/19	2.5 X 20	P	5/23/17	710	5/23/17	710	710 5/23/17
22	HCl	Fisher	A508-P212	4116090	10/9/19	2.5 X 20	P	5/23/17	710	5/23/17	710	
23	Hydrogen peroxide	EMD	HX0635-2	56273642	10/31/18	1L X 5	P	5/26/17	710	5/26/17	710	
24	Lead II Chloride	Alfa Aesar	12345	M22B018	5/31/23	50g	P	6/3/17	53r	6/3/17	53r	
25	Buffer pH7.00 Solution (STD)	Fisher	SB56-500	171346.	03/31/2019 ~~06/06/19~~ 805 06/06/17	500mL X 1	P	06/06/17	805	06/06/17	805	CTF: #3. P31-03

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1	Potassium Permanganate	VWR	~~2-31-1607~~ 97065-626	3166C309	7/15/16		P	7/18/16	868	6/13/17	86	Purge! to legible
2	PH TAPE	Micro Essential Lab	~~216315~~ # 140	216315	06/15/18	10 rolls	P	06/07/17	1058	06/07/17	1058	
3	ADPC	Sigma	2e765-ying	1cBGC4HV	6/19/22	100g	G	6/13/17	53r	6/13/17	53r	
4	H_2SO_4	Fisher	~~34-5080~~ UN1830	3115080	11/25/18	2.5L	P	06/27/17	1070	06/27/17	1070	
5	Nitric Acid	Fisher	A467-2	1216120	01/04/20	2.5L×?	T	6/28/17	53r	6/28/17	53r	
6	Acetic Acid	|	AX0074-6	56160	6/28/20	1LX2	T	|	53r	|	53r	
7	100 ug/mL Hg	SPEX	PLHG2-1Y	22-93HGY	6/30/18	125mL	P	6/29/17	868	6/29/17	868	
8	HNO3	Fisher	A509-P212	1116120	~~7/14/17~~ 12/16/2018 *	2.1X2.5L	P	7/14/17	710	7/14/17	710	* 710 7/14/17
9	Nitric Acid	Fisher	A467-2	1217010	01/31/20	2LX2	T	7/27/17	53r	7/27/17	53r	
10	Sodium Chloride	Alfa Aesar	10862	25313	7/31/22	500g	P	7/31/17	53r	7/31/17	53r	
11	Sodium Chloride	|	|	25152	|	25g	|	|	|	|	|	
12	Hydroxylamine Hydrochloride	Fisher	H330-500	163471	~~??~~ 8/2/22	500g X6	P	7/24/17	868	8/2/17	868	
13	|	|	|	164843	868 8/1/17 8/2/22	500g X6	P	|	|	|		
14	Sulfuric Acid	Fisher		3116090	11/2/19	2.5L	~~G~~ P	8/7/17	868	8/7/17	868	
15	Tetraethyl Lead	SPEX	SVC-CSEL-8-500	TS170731012	8/2/18	500mL	G	8/8/17	1080	8/8/17	1080	
16	Gold III Chloride	Acros	43708	A0366219	8/11/22	5g	G	8/11/17	110	8/11/17	110	
17	ICP-MS-QC2-1	AccuStandard	ICP-MS-QC2-1	21507509702	06/30/19	100mL	P	08/11/17	53r	08/11/17	53r	
18	Beryllium ICP-MS-05N-0.01X-1	|	ICP-MS-05N-0.01X-1	217015012	01/09/22	100mL	P	|	|	|	|	
19	Manganese ICP-MS-33N-0.01X-1	|	ICP-MS-33N-0.01X-1	217035131	03/28/22	100mL	P	|	|	|	|	
20	Aluminum ICP-MS-01N-0.1X-1	|	ICP-MS-01N-0.1X-1	217045036	04/14/22	100mL	P	|	|	|	|	
21	Zinc ICP-MS-70N-0.1X-1	|	ICP-MS-70N-0.1X-1	216035086	03/23/21	100mL	P	|	|	|	|	
22	Iron ICP-MS-27N-0.1X-1	|	ICP-MS-27N-0.1X-1	216015101	02/17/21	100mL	P	|	|	|	|	
23	Chromium ICP-MS-13N-0.1X-1	|	ICP-MS-13N-0.1X-1	216055077	05/25/21	100mL	P	|	|	|	|	
24	Interferents A	SPEX	CL-INT-A1	CL3-158MKBY	08/30/18	125mL	P	08/11/17	996	08/11/17	996	
25	Analytes B	SPEX	CL-INT-B1	CL3-14MKBY	08/30/18	125mL	P	08/11/17	996	08/11/17	996	

COMMENTS:

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED DATE	RECEIVED WHO	OPENED DATE	OPENED WHO	COMMENTS
1	Tuning Solution 1	SPEX	CL-TUNE-1	CL3-79MKBY	08/30/18	125 mL	P	08/11/17	776	08/11/17	776	
2	Sodium	SPEX	PLNA2-3Y	A017-4NAY	08/30/18	125 mL	P	08/11/17	776	08/11/17	776	
3	Ultrapure Sodium Chloride	ESI	seaBlank-0500	170341	08/14/20	500mL x3	P	08/14/17	SJr	08/14/17	SJr	
4	Nitric Acid	Fisher	A467-2	1217010	08/16/20	2L x2	T	8/16/17	SJr	8/16/17	SJr	
5	Nitric Acid	Fisher	A467-2	1116120	12/16/2018	2.5L x5	P	08/23/17	1030	08/23/17	1030	
6	Nitric Acid	Fisher	A509-P212	1116111	03/15/19	2.5L x19	P	08/23/17	1030	08/23/17	1030	
7	HCL	Fisher	A508-P212	4116090	10/19/19	2.5L x20	P	08/23/17	1030	08/23/17	1030	
8	Sodium Selenate decahydrate	Aldrich	450294-50G	MKBN4778V	09/15/20	1	G	09/15/17	1030	09/15/17	1030	
9	Hydrogen Peroxide	EMD	HX0635-2	56273642	10/31/18	1L x6	P	9/15/17	1080	09/15/17	1080	
10	Nitric Acid	Fisher	A467-2	1217020	02/22/20	2L x4	T	09/18/17	SJr	09/18/17	SJr	
11	Ultrapure Sodium Chloride	ESI	seaBlank-0500	170610	09/20/20	500mL x2	P	9/20/17	SJr	9/20/17	SJr	
12	Hydrogen Peroxide	EMD	HX0635-2	56321712	11/30/18	1L x14	P	9/27/17	1080	9/27/17	1080	
13	Puradisc 25 mm 1.0 µM	Whatman	6780-2510	9816517	02/2022	2 Box x50	D	09/22/17	1058	09/27/17	1058	
14	Xylenes	Fisher	XS-4	173323	9/29/20	4L x4	G	9/29/17	1080	9/29/17	1080	
15	Ultra Pure Sodium Chloride	ESI	seaBlank-0500	170603	10/02/20	500mL x3	P	10/2/17	SJr	10/2/17	SJr	
16	PTFE BOILING STONES-450GRAM	Chemware	D1069103	22569094	~~10/06/17~~ N/A	(450gm) 16OZ x6	P	10/06/17	710	10/06/17	710	710 10/06/17
17	Nitric Acid	Fisher	A509-P212	1117040	04/05/2019	2.5L x18	P	10/06/17	710	10/06/17	710	
18	Sodium borohydride	ACROS ORGANICS	200050250	AC363486	10/06/22	25g x4	G	10/09/17	SJr	10/09/17	SJr	
19	Iron Standard	ULTRA	ICP-126-L	CR-3137	08/31/24	1L	P	10/10/17	776	10/10/17	776	
20	Soda Lime	Teledyne Leeman Labs	606-00015	E006-28-B	N/A	200g x2	P	10/18/17	1080	10/18/17	1080	
21	Sulfuric Acid	Omni Trace	SX1247-2	56175	10/25/18	2.5 L	G	10/25/17	868	10/25/17	868	
22	ICP Analytical Mixture 11	High Purity	ICP-AM-11	1705327	10/18	125 mL	P	10/30/17	935	10/30/17	935	
23	ICP Multi-element Cal. Standard 8	↓	ICP-MCS-8	1635121	↓	500mL x2	↓	↓	↓	↓	↓	
24	Potassium (10,000 mg/mL)	↓	10M41-1	1723447	4/19	125 mL	↓	↓	↓	↓	↓	
25	APDC	SIGMA	P8765-100G	BCBR189V	10/31/22	100g	G	10/31/17	776	10/31/17	776	

COMMENTS:

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Chemical and Supply Receiving Logbook

LINE #	CHEMICAL / SUPPLY NAME (OR DESCRIPTION)	MANUFACTURER	CATALOG #	LOT #	EXPIRATION DATE	AMOUNT RECEIVED	CONTAINER TYPE	RECEIVED		OPENED		COMMENTS
								DATE	WHO	DATE	WHO	
1	HCl	Fisher	A508-P212	4117010	03/02/20	2.5x20	P	11-09-17	710	11-09-17	710	
2	(HNO3) Nitric Acid	↓	A509-P212	1117042	05/05/19	2.5x12	P	↓	↓	↓	↓	
3	Buffer pH 4.0 Solution (I.C.V.)	VWR	E452-500mL	1257C312	11/15/18	500ml x 1	P	11/16/17	805	11/16/17	805	For: pH #5 REF: pH #C Logbook p.97
4	M.I.B.K	Fisher	M213-4	171549	11/21/20	4L x 4	G	11/21/17	935	11/21/17	935	
5	P Hydroxylamine Hydrochloride	Fisher	H330-500	172066	12/1/22	500g x 12	P		868	12/1/17	868	
6	Zirconium	BICCA	MSZR1KN...	4711426	4/2019	100mL	P	12/06/17	Rr	12/06/17	Rr	
7	Buffer pH 4.0 Solution (Standard)	Fisher	SB101-500	173425	04/30/19	500ml x 2	P	12/12/17	805	12/12/17	805	REF: pH Logbook # ICP p.60
8	Buffer pH 7.0 Solution (I.C.V.)	Fisher	SB108-500	170679	01/31/19	500ml x 2	P	12/12/17	805	12/12/17	805	REF: pH Logbook p.60
9	Nitric Acid	Fisher	A509-P212	1117060	06/15/19	2.5x20	P	11/17/17	710	11/17/17	710	
10	Interferents #	SPEX	CL-INT. A1	CL3-157 MEBY	12/30/18	125mL	P	12/13/17	Rr	12/13/17	Rr	
11	Terbium 10,000 µg/mL	High Purity	10M57-1	1716539	6/2019	125ml	P	12/19/17	935	12/19/17	935	
12	0.45 PVDF Filters (For STLC)	MILLEX	SLHV033NK	R7CA90840	01/08/21	NA	P	01/09/18	805	01/09/18	805	REF: CIF #3 p.31–p.37
13	EPA Method 200.7 Int. Check STD#1	Ultra	ICM-221	R01207A	3/31/21	50ml	P	1/10/17	935	1/10/18	935	
14	EPA Method 6010A Mixed STD. Sol. V	↓	ICM-605	CR-3299	8/31/20	125ml	↓	1/10/17	935	1/10/17	935	
15	Hg Mercury 1000 µg/mL 2% HCl	High purity standards	100033-2	1723645	7/1/19	250mL	P	1/11/17	1080	1/11/17	1080	
16	Calcium	Ultra	ICP-120-L	CR-3808	9/30/24	1L	P	1/11/18	Rr	1/15/18	Rr	
17	Magnesium	|	ICP-112-L	CP-0678	9/30/23	1L	P	|	|	|	|	
18	Lead(II) Chloride	ALDRICH	203572-10G	MKCC3373	1/22/2023	10g	P	1/22/18	710	—		
19	Sodium hydroxide monohydrate	Alfa Aesar	41200	61701011	1/22/23	25g	P	1/22/18	Rr	1/22/18	Rr	
20	Sulfuric Acid	Fisher	A300-P212	311049	5/4/20	2.5L	P	1/31/18	868	1/31/18	868	
21	Instrument Calibration Standard 2	SPEX	CL-CAL-2	CL4-41MEBY	01/30/19	125mL	P	1/31/18	Rr	1/31/18	Rr	
22	Instrument Calibration Standard 3	|	CL-CAL-3	CL4-01MEBY	01/30/19	125mL x 4	|	|	|	|	|	
23	Glass Microfiber TCLP filter	Whatman	1810-090	9691301	NA	4	NA	04/25/17	805	04/25/17	805	REF: TCLP #3 p.30–31
24	Hydrogen Peroxide (H2O2)	EMD	~~HX~~ HX0635-2 (2-2-18 710)	56273642	10/31/18	1L x 10	P	02/02/18	710	02/02/18	710	
25	HNO3	Fisher	A509-P212	1117062	07/12/19	2.5x15	P	02/02/18	710	02/02/18	710	

COMMENTS:

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ASTM D-4464 (M)

Particle Size Laser

RAW DATA

Return to Contents

RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER: **18-03-1974**
INSTRUMENT: LPSA 1
EXTRACTION : N/A
D/T EXTRACTED:

ANALYZED BY: 1,106
D/T ANALYZED: 2018-03-26 19:07
REVIEWED BY: VI
D/T REVIEWED:

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1974\18-03-1974-1-F_26 Mar 20

 # 1 **CLIENT SAMPLE NUMBER: A2BMP0006S005**

LCS/MB BATCH:
MS/MSD BATCH:
UNITS: %

SAMPLE VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
FINAL VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
ADJUSTMENT RATIO TO PF: 1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	22.4	1.00	22.4	0.01000	
Silt (0.00391 to 0.0625mm)	76.3	1.00	76.3	0.01000	
Total Silt and Clay (0 to 0.0625mm)	98.7	1.00	98.7	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	1.29	1.00	1.29	0.0100	
Fine Sand (0.125 to 0.25mm)	0.000	1.00	ND	0.010	
Medium Sand (0.25 to 0.5mm)	0.000	1.00	ND	0.010	
Coarse Sand (0.5 to 1mm)	0.000	1.00	ND	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,106
INSTRUMENT:	LPSA 1	D/T ANALYZED:	2018-03-26 19:16
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:		D/T REVIEWED:	VM

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1974\18-03-1974-2-F_26 Mar 20

 # 2 **CLIENT SAMPLE NUMBER: A2BMP0007S011**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
UNITS:	%	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	7.26	1.00	7.26	0.0100	
Silt (0.00391 to 0.0625mm)	21.8	1.00	21.8	0.01000	
Total Silt and Clay (0 to 0.0625mm)	29.1	1.00	29.1	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	40.6	1.00	40.6	0.01000	
Fine Sand (0.125 to 0.25mm)	30.3	1.00	30.3	0.01000	
Medium Sand (0.25 to 0.5mm)	0.0184	1.00	0.0184	0.010	
Coarse Sand (0.5 to 1mm)	0.000	1.00	ND	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER:	**18-03-1974**	ANALYZED BY:	1,106
INSTRUMENT:	LPSA 1	D/T ANALYZED:	2018-03-26 19:22
EXTRACTION :	N/A	REVIEWED BY:	
D/T EXTRACTED:		D/T REVIEWED:	√1

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1974\18-03-1974-3-F_26 Mar 20

 # 3 **CLIENT SAMPLE NUMBER: EVBMP0002S022**

LCS/MB BATCH:		SAMPLE VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
MS/MSD BATCH:		FINAL VOLUME / WEIGHT:	DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
UNITS:	%	ADJUSTMENT RATIO TO PF:	1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	5.32	1.00	5.32	0.0100	
Silt (0.00391 to 0.0625mm)	22.6	1.00	22.6	0.01000	
Total Silt and Clay (0 to 0.0625mm)	27.9	1.00	27.9	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	52.7	1.00	52.7	0.01000	
Fine Sand (0.125 to 0.25mm)	19.4	1.00	19.4	0.01000	
Medium Sand (0.25 to 0.5mm)	0.00239	1.00	ND	0.010	
Coarse Sand (0.5 to 1mm)	0.000	1.00	ND	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER: **18-03-1974**
INSTRUMENT: LPSA 1
EXTRACTION : N/A
D/T EXTRACTED:

ANALYZED BY: 1,106
D/T ANALYZED: 2018-03-26 19:41
REVIEWED BY:
D/T REVIEWED: VI

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1974\18-03-1974-4-F_26 Mar 20

 # 4 **CLIENT SAMPLE NUMBER: EVBMP0007S010**

LCS/MB BATCH:
MS/MSD BATCH:
UNITS: %

SAMPLE VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
FINAL VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
ADJUSTMENT RATIO TO PF: 1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	3.99	1.00	3.99	0.0100	
Silt (0.00391 to 0.0625mm)	21.8	1.00	21.8	0.01000	
Total Silt and Clay (0 to 0.0625mm)	25.8	1.00	25.8	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	33.0	1.00	33.0	0.01000	
Fine Sand (0.125 to 0.25mm)	24.4	1.00	24.4	0.01000	
Medium Sand (0.25 to 0.5mm)	16.9	1.00	16.9	0.01000	
Coarse Sand (0.5 to 1mm)	0.000763	1.00	ND	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER: **18-03-1974**
INSTRUMENT: LPSA 1
EXTRACTION : N/A
D/T EXTRACTED:

ANALYZED BY: 1,106
D/T ANALYZED: 2018-03-26 20:00
REVIEWED BY:
D/T REVIEWED:

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1974\18-03-1974-5-F_26 Mar 20

 # 5 **CLIENT SAMPLE NUMBER: EVBMP0008S013**

LCS/MB BATCH:
MS/MSD BATCH:
UNITS: %

SAMPLE VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
FINAL VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
ADJUSTMENT RATIO TO PF: 1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	22.0	1.00	22.0	0.01000	
Silt (0.00391 to 0.0625mm)	57.6	1.00	57.6	0.01000	
Total Silt and Clay (0 to 0.0625mm)	79.6	1.00	79.6	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	15.4	1.00	15.4	0.01000	
Fine Sand (0.125 to 0.25mm)	5.01	1.00	5.01	0.0100	
Medium Sand (0.25 to 0.5mm)	0.000	1.00	ND	0.010	
Coarse Sand (0.5 to 1mm)	0.000	1.00	ND	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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RAW DATA SHEET
FOR METHOD: ASTM D4464 (M)

WORK ORDER: **18-03-1974**
INSTRUMENT: LPSA 1
EXTRACTION : N/A
D/T EXTRACTED:

ANALYZED BY: 1,106
D/T ANALYZED: 2018-03-26 20:09
REVIEWED BY: JT
D/T REVIEWED:

DATA FILE: \\Us26san12\marine\LPSA_1\ASTM D4464(M)\Data Files\18-03-1974\18-03-1974-6-F_26 Mar 20

 # 6 **CLIENT SAMPLE NUMBER: EVBMP0009S011**

LCS/MB BATCH:
MS/MSD BATCH:
UNITS: %

SAMPLE VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
FINAL VOLUME / WEIGHT: DEFAULT: 1.00 ml / ACTUAL: 1.00 ml
ADJUSTMENT RATIO TO PF: 1.00

COMMENT:

COMPOUND	ON COL CONC	DF	CONC	RL	QUAL
Clay (less than 0.00391mm)	7.52	1.00	7.52	0.0100	
Silt (0.00391 to 0.0625mm)	34.8	1.00	34.8	0.01000	
Total Silt and Clay (0 to 0.0625mm)	42.3	1.00	42.3	0.01000	
Very Fine Sand (0.0625 to 0.125mm)	36.6	1.00	36.6	0.01000	
Fine Sand (0.125 to 0.25mm)	19.9	1.00	19.9	0.01000	
Medium Sand (0.25 to 0.5mm)	1.23	1.00	1.23	0.0100	
Coarse Sand (0.5 to 1mm)	0.000	1.00	ND	0.010	
Very Coarse Sand (1 to 2mm)	0.000	1.00	ND	0.010	
Gravel (greater than 2mm)	0.000	1.00	ND	0.010	

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PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

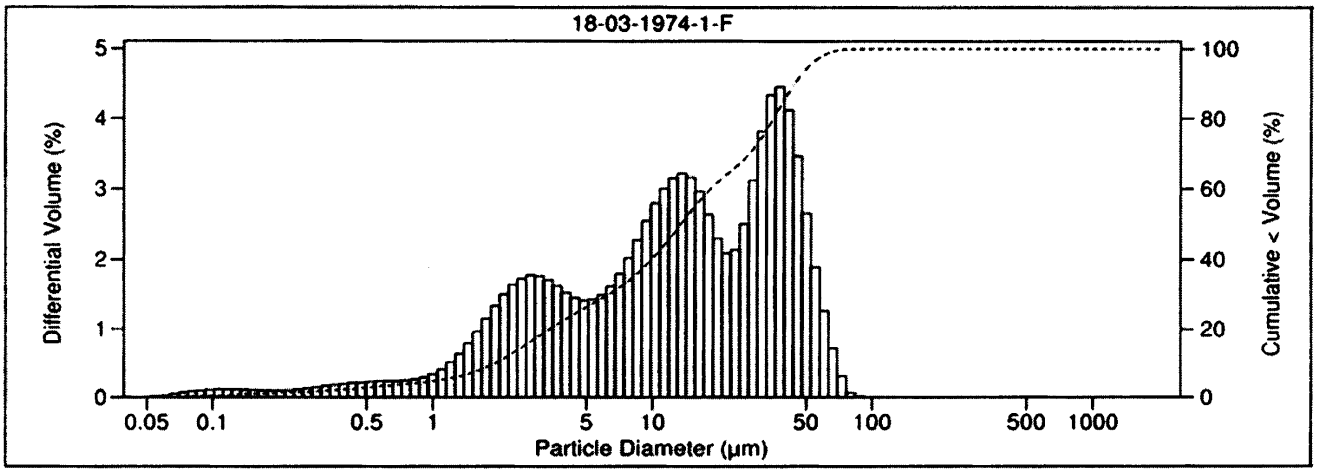
CH2M HILL - Gainesville BOEING

Date Sampled:	03/22/18
Date Received:	03/22/18
Work Order No:	18-03-1974
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

Sample ID	Depth ft	Description	Mean Grain Size mm
A2BMP0006S005		Silt	0.019

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.00	0.00	0.00	0.00	1.29	76.28	22.43	98.71



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

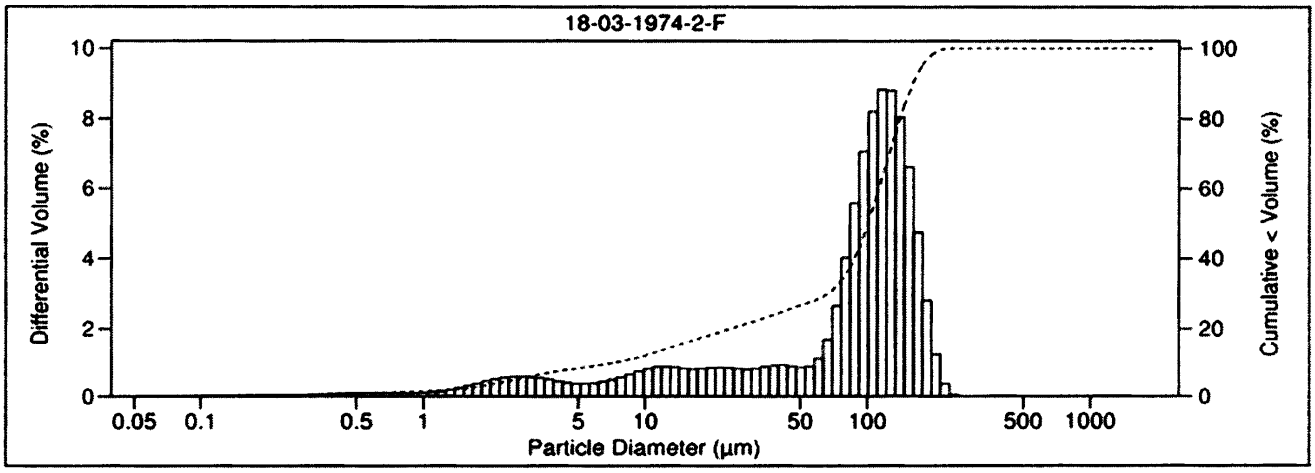
CH2M HILL - Gainesville BOEING

Date Sampled:	03/22/18
Date Received:	03/22/18
Work Order No:	18-03-1974
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

Sample ID	Depth ft	Description	Mean Grain Size mm
A2BMP0007S011		Very Fine Sand	0.092

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.00	0.00	0.02	30.32	40.57	21.83	7.26	29.09



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

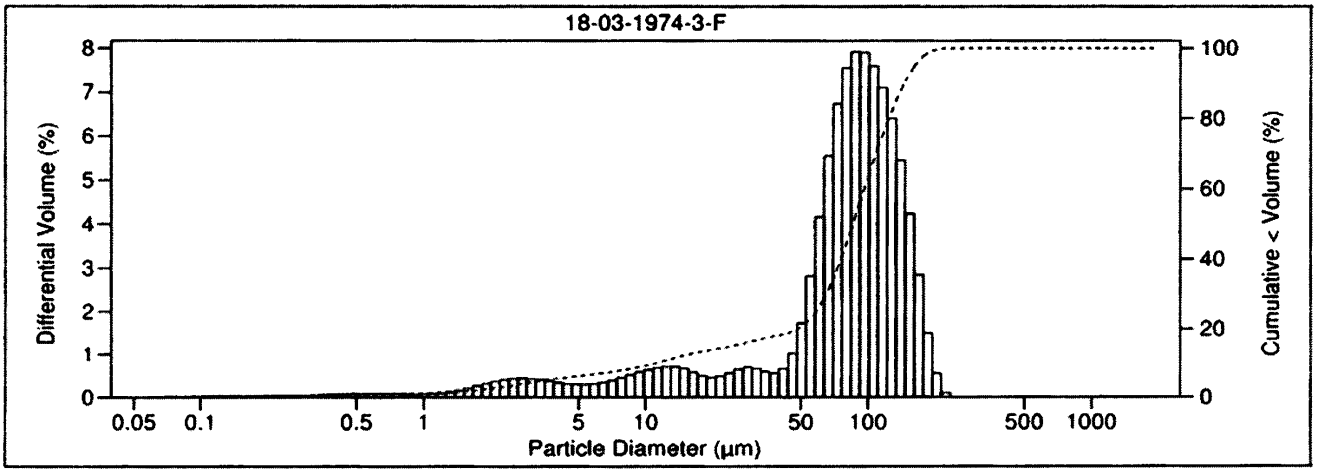
CH2M HILL - Gainesville BOEING

Date Sampled:	03/22/18
Date Received:	03/22/18
Work Order No:	18-03-1974
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

Sample ID	Depth ft	Description	Mean Grain Size mm
EVBMP0002S022		Very Fine Sand	0.085

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.00	0.00	0.00	19.38	52.71	22.59	5.32	27.91



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

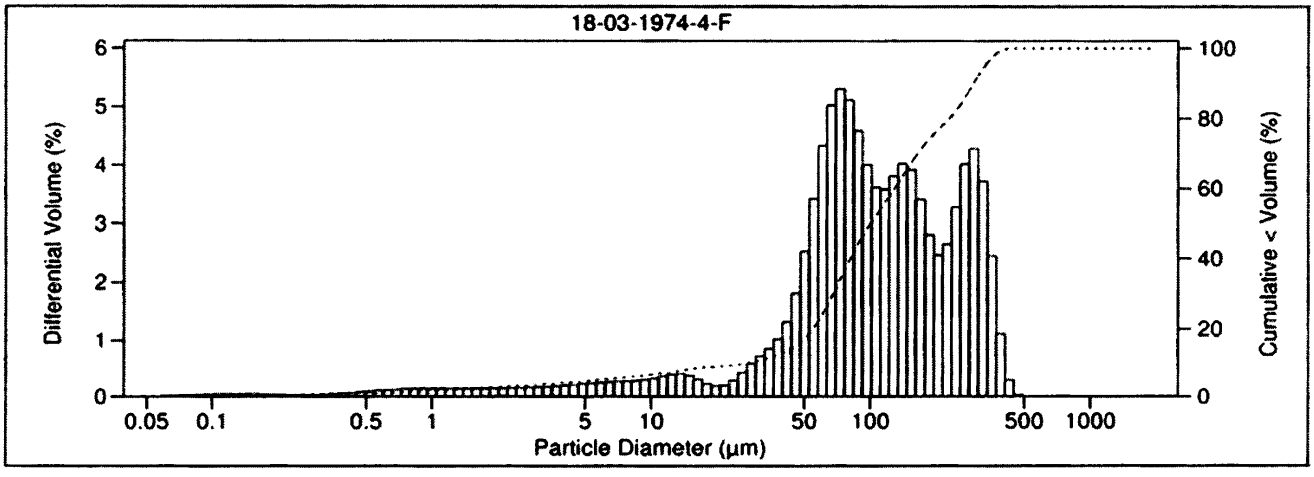
CH2M HILL - Gainesville BOEING

Date Sampled:	03/22/18
Date Received:	03/22/18
Work Order No:	18-03-1974
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

Sample ID	Depth ft	Description	Mean Grain Size mm
EVBMP0007S010		Fine Sand	0.133

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	16.91	24.36	32.97	21.77	3.99	25.77



V 3.0

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PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

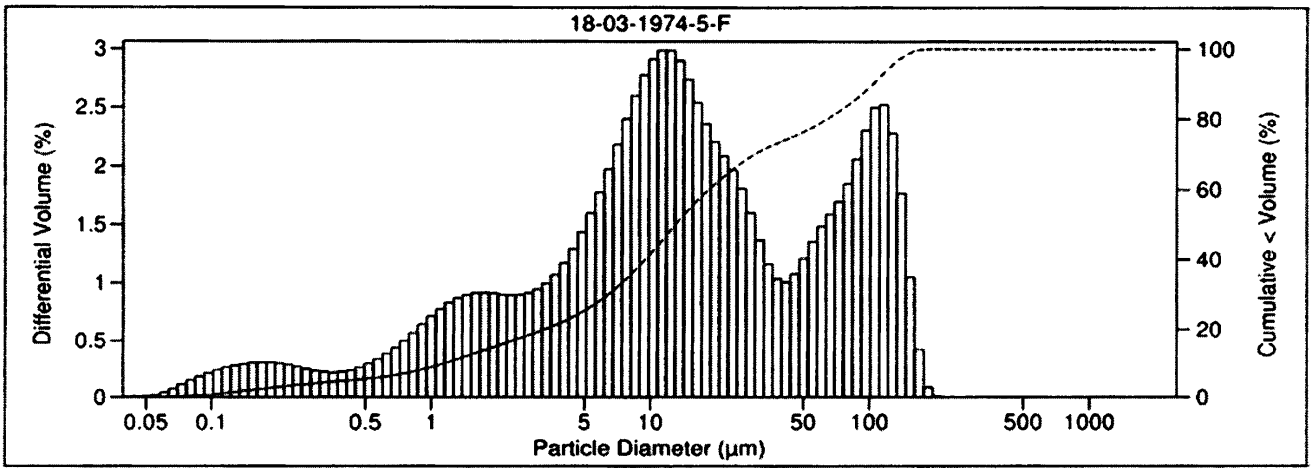
CH2M HILL - Gainesville BOEING

Date Sampled:	03/22/18
Date Received:	03/22/18
Work Order No:	18-03-1974
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

Sample ID	Depth ft	Description	Mean Grain Size mm
EVBMP0008S013		Silt	0.032

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	0.00	5.01	15.37	57.60	22.02	79.62



PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

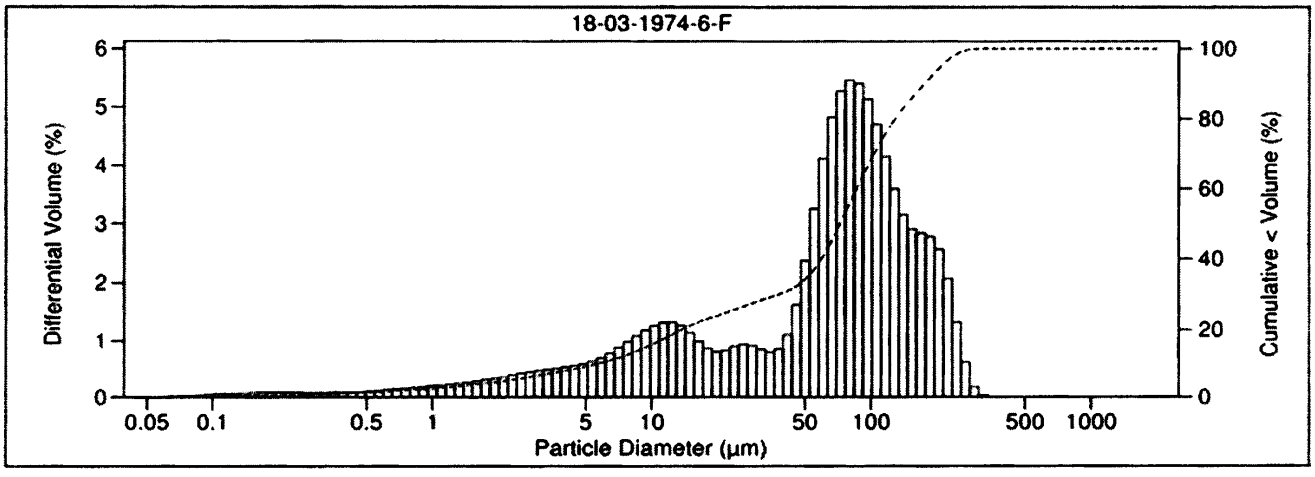
CH2M HILL - Gainesville BOEING

Date Sampled:	03/22/18
Date Received:	03/22/18
Work Order No:	18-03-1974
Date Analyzed:	03/26/18
Method:	ASTM D4464M

Project: SSFL CH661 / 692670.61.SW

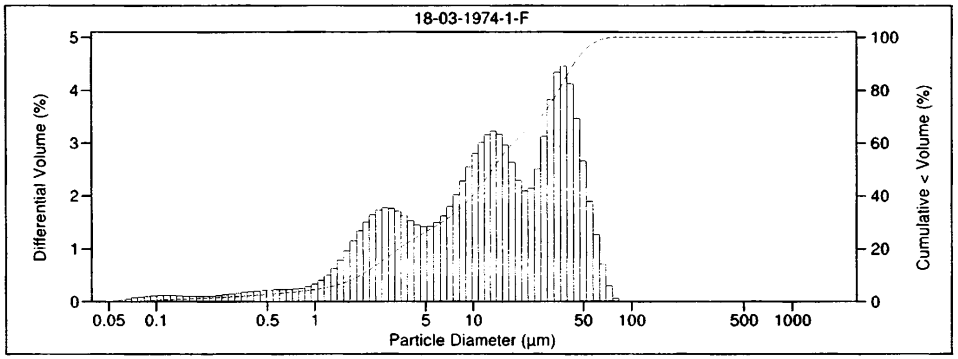
Sample ID	Depth ft	Description	Mean Grain Size mm
EVBMP0009S011		Very Fine Sand	0.080

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.00	0.00	1.23	19.86	36.59	34.79	7.52	42.31



V 3.0

File name:	C:\LS13320\18-03-1974-1-F_26 Mar 2018_19.08.18.$ls 18-03-1974-1-F_26 Mar 2018_19.08.18.$ls		
File ID:	18-03-1974-1-F		
Sample ID:	18-03-1974-1-F		
Operator:	1106		
Run number:	8		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	3.29%		
LS 13 320	Aqueous Liquid Module		
Start time:	19:07 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	4%	PIDS Obscur:	11%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1974-1-F_26 Mar 2018_19.08.18.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	19.08 µm	S.D.:	16.79 µm
Median:	13.48 µm	Variance:	281.9 µm^2
Mean/Median ratio:	1.416	Skewness:	0.882 Right skewed
Mode:	37.97 µm	Kurtosis:	-0.131 Platykurtic

d_{10}: 1.942 µm d_{50}: 13.48 µm d_{90}: 44.12 µm

Folk and Ward Statistics (Phi)

Mean:	6.47	Median:	6.21	Deviation:	1.79		
Skewness:	0.25	Kurtosis:	0.81				
<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
1.113 µm	2.751 µm	4.592 µm	9.886 µm	13.48 µm	31.69 µm	38.58 µm	51.29 µm

Particle Diameter µm	18-03-1974-1-F_26 Mar 2018_19.08.18.$ls Volume
0.04	2.25
0.4	7.81
1.95	12.4
3.91	76.3
62.5	1.29
125	0
250	0
500	0
1000	0
2000	

18-03-1974-1-F_26 Mar 2018_19.08.18.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.0028	2.660	1.77	176.9	0
0.044	0.0038	2.920	1.76	194.2	0
0.048	0.0064	3.206	1.71	213.2	0
0.053	0.013	3.519	1.62	234.1	0
0.058	0.028	3.863	1.53	256.9	0
0.064	0.049	4.241	1.45	282.1	0
0.070	0.069	4.656	1.41	309.6	0
0.077	0.085	5.111	1.42	339.9	0
0.084	0.096	5.611	1.49	373.1	0
0.093	0.11	6.159	1.62	409.6	0
0.102	0.11	6.761	1.79	449.7	0
0.112	0.11	7.422	2.02	493.6	0
0.123	0.11	8.148	2.28	541.9	0
0.134	0.11	8.944	2.55	594.9	0
0.148	0.10	9.819	2.80	653.0	0
0.162	0.100	10.78	3.01	716.9	0
0.178	0.097	11.83	3.16	786.9	0
0.195	0.097	12.99	3.22	863.9	0
0.214	0.10	14.26	3.16	948.3	0
0.235	0.11	15.65	2.96	1041	0
0.258	0.13	17.18	2.64	1143	0
0.284	0.14	18.86	2.30	1255	0
0.311	0.16	20.71	2.09	1377	0
0.342	0.18	22.73	2.14	1512	0
0.375	0.19	24.95	2.50	1660	0
0.412	0.20	27.39	3.12	1822	0
0.452	0.21	30.07	3.82	2000	
0.496	0.22	33.01	4.34		
0.545	0.23	36.24	4.45		
0.598	0.23	39.78	4.12		
0.657	0.23	43.67	3.46		
0.721	0.24	47.94	2.66		
0.791	0.25	52.63	1.90		
0.869	0.28	57.77	1.27		
0.954	0.33	63.42	0.71		
1.047	0.40	69.62	0.30		
1.149	0.50	76.43	0.064		
1.261	0.63	83.90	0.0062		
1.385	0.79	92.10	0		
1.520	0.96	101.1	0		
1.669	1.15	111.0	0		
1.832	1.34	121.8	0		
2.011	1.50	133.7	0		
2.208	1.64	146.8	0		
2.423	1.73	161.2	0		

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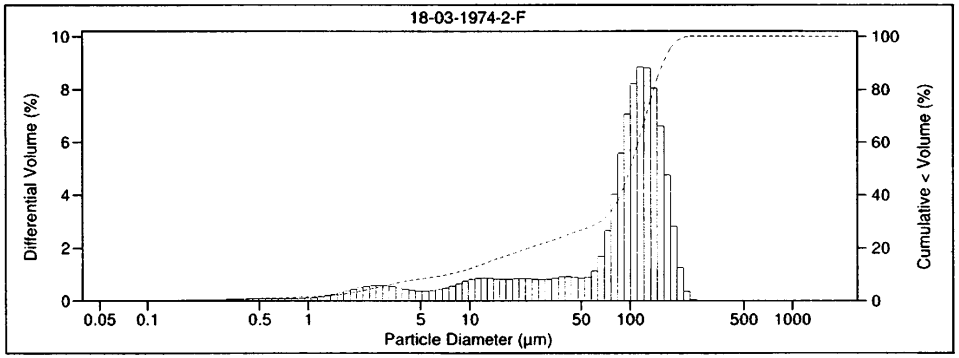
File name:	C:\LS13320\18-03-1974-2-F_26 Mar 2018_19.17.26.$ls 18-03-1974-2-F_26 Mar 2018_19.17.26.$ls		
File ID:	18-03-1974-2-F		
Sample ID:	18-03-1974-2-F		
Operator:	1106		
Run number:	9		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	2.38%		
LS 13 320	Aqueous Liquid Module		
Start time:	19:16 26 Mar 2018	Run length:	51 seconds
Pump speed:	49		
Obscuration:	5%	PIDS Obscur:	11%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1974-2-F_26 Mar 2018_19.17.26.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	91.91 µm	S.D.:	55.24 µm
Median:	100.7 µm	Variance:	3052 µm^2
Mean/Median ratio:	0.912	Skewness:	-0.176 Left skewed
Mode:	116.3 µm	Kurtosis:	-0.908 Platykurtic

d_{10}: 7.314 µm d_{50}: 100.7 µm d_{90}: 159.5 µm

Folk and Ward Statistics (Phi)

Mean:	4.04	Median:	3.31	Deviation:	1.73
Skewness:	0.70	Kurtosis:	1.48		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
2.645 µm	15.24 µm	41.52 µm	87.37 µm	100.7 µm	132.2 µm	146.5 µm	175.2 µm

Particle Diameter µm	18-03-1974 -2-F_26 Mar 2018 _19.17.26 .$ls Volume
0.04	0.65
0.4	2.61
1.95	4.00
3.91	21.8
62.5	40.6
125	30.3
250	0.018
500	0
1000	0
2000	

18-03-1974-2-F_26 Mar 2018_19.17.26.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00033	2.660	0.58	176.9	2.81
0.044	0.00047	2.920	0.57	194.2	1.25
0.048	0.00080	3.206	0.53	213.2	0.36
0.053	0.0017	3.519	0.49	234.1	0.052
0.058	0.0035	3.863	0.44	256.9	0.0025
0.064	0.0062	4.241	0.40	282.1	0
0.070	0.0090	4.656	0.37	309.6	0
0.077	0.012	5.111	0.37	339.9	0
0.084	0.014	5.611	0.38	373.1	0
0.093	0.017	6.159	0.43	409.6	0
0.102	0.020	6.761	0.49	449.7	0
0.112	0.022	7.422	0.56	493.6	0
0.123	0.025	8.148	0.65	541.9	0
0.134	0.027	8.944	0.74	594.9	0
0.148	0.029	9.819	0.81	653.0	0
0.162	0.032	10.78	0.86	716.9	0
0.178	0.035	11.83	0.87	786.9	0
0.195	0.037	12.99	0.85	863.9	0
0.214	0.041	14.26	0.82	948.3	0
0.235	0.044	15.65	0.81	1041	0
0.258	0.049	17.18	0.82	1143	0
0.284	0.054	18.86	0.84	1255	0
0.311	0.059	20.71	0.85	1377	0
0.342	0.065	22.73	0.84	1512	0
0.375	0.072	24.95	0.82	1660	0
0.412	0.078	27.39	0.80	1822	0
0.452	0.083	30.07	0.82	2000	
0.496	0.087	33.01	0.86		
0.545	0.088	36.24	0.90		
0.598	0.089	39.78	0.92		
0.657	0.088	43.67	0.89		
0.721	0.087	47.94	0.85		
0.791	0.088	52.63	0.89		
0.869	0.092	57.77	1.13		
0.954	0.10	63.42	1.68		
1.047	0.12	69.62	2.66		
1.149	0.15	76.43	4.02		
1.261	0.20	83.90	5.58		
1.385	0.25	92.10	7.06		
1.520	0.31	101.1	8.21		
1.669	0.38	111.0	8.83		
1.832	0.44	121.8	8.80		
2.011	0.50	133.7	8.04		
2.208	0.55	146.8	6.62		
2.423	0.57	161.2	4.74		

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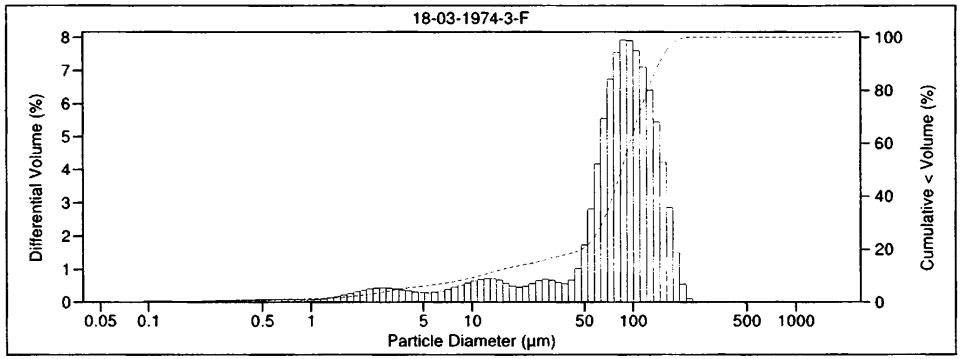
File name:	C:\LS13320\18-03-1974-3-F_26 Mar 2018_19.23.30.$ls 18-03-1974-3-F_26 Mar 2018_19.23.30.$ls		
File ID:	18-03-1974-3-F		
Sample ID:	18-03-1974-3-F		
Operator:	1106		
Run number:	10		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	1.48%		
LS 13 320	Aqueous Liquid Module		
Start time:	19:22 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	8%	PIDS Obscur:	14%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1974-3-F_26 Mar 2018_19.23.30.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	84.75 µm	S.D.:	46.38 µm
Median:	85.54 µm	Variance:	2151 µm^2
Mean/Median ratio:	0.991	Skewness:	-0.0055 Left skewed
Mode:	87.90 µm	Kurtosis:	-0.425 Platykurtic

d_{10}: 11.21 µm d_{50}: 85.54 µm d_{90}: 145.0 µm

Folk and Ward Statistics (Phi)

Mean:	3.87	Median:	3.55	Deviation:	1.38
Skewness:	0.55	Kurtosis:	2.28		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
3.606 µm	28.54 µm	58.55 µm	75.55 µm	85.54 µm	115.8 µm	131.3 µm	161.2 µm

Particle Diameter µm	18-03-1974 -3-F_26 Mar 2018 _19.23.30 .$ls Volume
0.04	0.52
0.4	1.85
1.95	2.95
3.91	22.6
62.5	52.7
125	19.4
250	0.0024
500	0
1000	0
2000	

18-03-1974-3-F_26 Mar 2018_19.23.30.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00036	2.660	0.43	176.9	1.50
0.044	0.00049	2.920	0.42	194.2	0.55
0.048	0.00083	3.206	0.40	213.2	0.10
0.053	0.0017	3.519	0.37	234.1	0.0079
0.058	0.0036	3.863	0.34	256.9	0
0.064	0.0063	4.241	0.31	282.1	0
0.070	0.0090	4.656	0.29	309.6	0
0.077	0.011	5.111	0.29	339.9	0
0.084	0.013	5.611	0.31	373.1	0
0.093	0.015	6.159	0.34	409.6	0
0.102	0.017	6.761	0.39	449.7	0
0.112	0.018	7.422	0.45	493.6	0
0.123	0.018	8.148	0.51	541.9	0
0.134	0.019	8.944	0.58	594.9	0
0.148	0.020	9.819	0.63	653.0	0
0.162	0.021	10.78	0.68	716.9	0
0.178	0.022	11.83	0.72	786.9	0
0.195	0.025	12.99	0.71	863.9	0
0.214	0.028	14.26	0.66	948.3	0
0.235	0.032	15.65	0.58	1041	0
0.258	0.037	17.18	0.50	1143	0
0.284	0.044	18.86	0.46	1255	0
0.311	0.051	20.71	0.48	1377	0
0.342	0.059	22.73	0.55	1512	0
0.375	0.066	24.95	0.65	1660	0
0.412	0.072	27.39	0.69	1822	0
0.452	0.076	30.07	0.66	2000	
0.496	0.079	33.01	0.59		
0.545	0.079	36.24	0.56		
0.598	0.077	39.78	0.66		
0.657	0.074	43.67	1.02		
0.721	0.069	47.94	1.73		
0.791	0.064	52.63	2.81		
0.869	0.062	57.77	4.16		
0.954	0.064	63.42	5.55		
1.047	0.074	69.62	6.73		
1.149	0.093	76.43	7.55		
1.261	0.12	83.90	7.92		
1.385	0.16	92.10	7.90		
1.520	0.21	101.1	7.59		
1.669	0.26	111.0	7.10		
1.832	0.31	121.8	6.40		
2.011	0.36	133.7	5.45		
2.208	0.40	146.8	4.23		
2.423	0.42	161.2	2.85		

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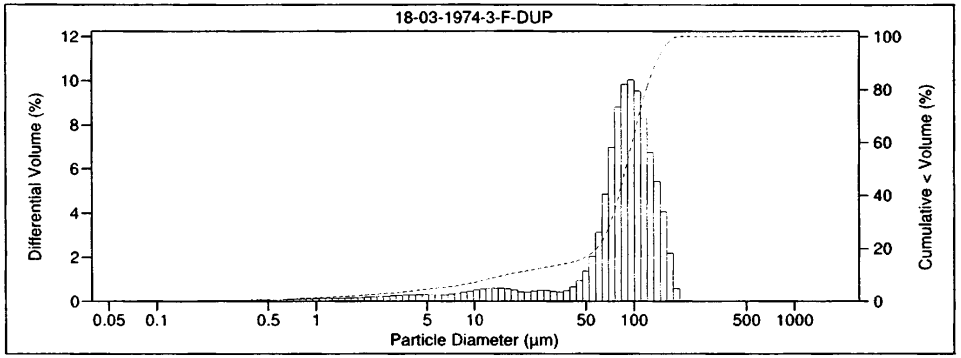
File name:	C:\LS13320\18-03-1974-3-F-DUP_26 Mar 2018_20.53.26.$ls 18-03-1974-3-F-DUP_26 Mar 2018_20.53.26.$ls		
File ID:	18-03-1974-3-F-DUP		
Sample ID:	18-03-1974-3-F-DUP		
Operator:	1106		
Run number:	16		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	1.21%		
LS 13 320	Aqueous Liquid Module		
Start time:	20:52 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	4%	PIDS Obscur:	17%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1974-3-F-DUP_26 Mar 2018_20.53.26.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	86.95 µm	S.D.:	41.41 µm
Median:	89.48 µm	Variance:	1715 µm^2
Mean/Median ratio:	0.972	Skewness:	-0.297 Left skewed
Mode:	96.50 µm	Kurtosis:	-0.231 Platykurtic

d_{10}: 16.07 µm d_{50}: 89.48 µm d_{90}: 139.2 µm

Folk and Ward Statistics (Phi)

Mean:	3.62	Median:	3.48	Deviation:	1.07
Skewness:	0.48	Kurtosis:	2.48		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
5.795 µm	47.43 µm	66.41 µm	81.10 µm	89.48 µm	114.0 µm	127.2 µm	153.4 µm

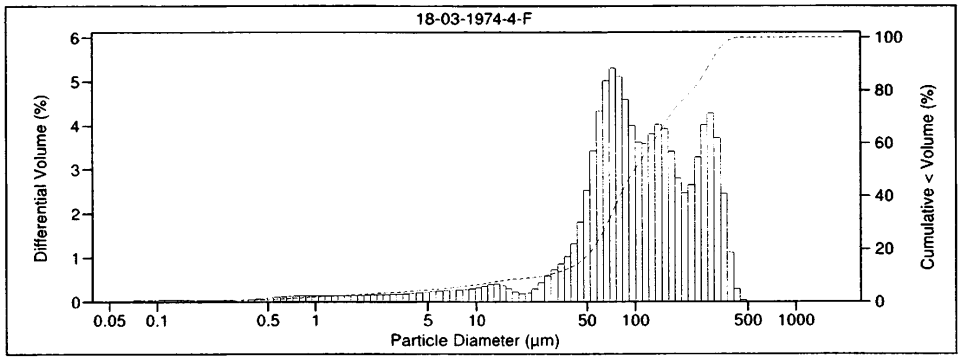
Particle Diameter µm	18-03-1974 -3-F-DUP _26 Mar 2018_20.53 ... Volume
0.04	0.43
0.4	1.77
1.95	1.62
3.91	18.3
62.5	60.6
125	17.2
250	0
500	0
1000	0
2000	

18-03-1974-3-F-DUP_26 Mar 2018_20.53...

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00020	2.660	0.22	176.9	0.58
0.044	0.00034	2.920	0.24	194.2	0.036
0.048	0.0010	3.206	0.25	213.2	0
0.053	0.0026	3.519	0.27	234.1	0
0.058	0.0043	3.863	0.28	256.9	0
0.064	0.0060	4.241	0.28	282.1	0
0.070	0.0076	4.656	0.28	309.6	0
0.077	0.0094	5.111	0.28	339.9	0
0.084	0.011	5.611	0.28	373.1	0
0.093	0.013	6.159	0.29	409.6	0
0.102	0.015	6.761	0.32	449.7	0
0.112	0.017	7.422	0.36	493.6	0
0.123	0.018	8.148	0.41	541.9	0
0.134	0.019	8.944	0.46	594.9	0
0.148	0.020	9.819	0.51	653.0	0
0.162	0.021	10.78	0.55	716.9	0
0.178	0.022	11.83	0.58	786.9	0
0.195	0.023	12.99	0.60	863.9	0
0.214	0.025	14.26	0.60	948.3	0
0.235	0.026	15.65	0.56	1041	0
0.258	0.028	17.18	0.50	1143	0
0.284	0.031	18.86	0.43	1255	0
0.311	0.035	20.71	0.41	1377	0
0.342	0.039	22.73	0.45	1512	0
0.375	0.045	24.95	0.49	1660	0
0.412	0.051	27.39	0.49	1822	0
0.452	0.058	30.07	0.44	2000	
0.496	0.066	33.01	0.43		
0.545	0.075	36.24	0.49		
0.598	0.083	39.78	0.64		
0.657	0.091	43.67	0.92		
0.721	0.098	47.94	1.37		
0.791	0.10	52.63	2.04		
0.869	0.11	57.77	3.14		
0.954	0.12	63.42	4.86		
1.047	0.12	69.62	6.97		
1.149	0.12	76.43	8.81		
1.261	0.13	83.90	9.84		
1.385	0.14	92.10	10.0		
1.520	0.14	101.1	9.52		
1.669	0.15	111.0	8.28		
1.832	0.16	121.8	6.73		
2.011	0.17	133.7	5.44		
2.208	0.18	146.8	4.05		
2.423	0.20	161.2	2.18		

Return to Contents

File name:	C:\LS13320\18-03-1974-4-F_26 Mar 2018_19.42.40.$ls 18-03-1974-4-F_26 Mar 2018_19.42.40.$ls		
File ID:	18-03-1974-4-F		
Sample ID:	18-03-1974-4-F		
Operator:	1106		
Run number:	11		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	3.55%		
LS 13 320	Aqueous Liquid Module		
Start time:	19:41 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	-9%	PIDS Obscur:	12%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1974-4-F_26 Mar 2018_19.42.40.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	132.8 µm	S.D.:	99.24 µm
Median:	99.97 µm	Variance:	9849 µm^2
Mean/Median ratio:	1.328	Skewness:	0.872 Right skewed
Mode:	72.94 µm	Kurtosis:	-0.161 Platykurtic

d_{10}: 28.04 µm d_{50}: 99.97 µm d_{90}: 294.3 µm

Folk and Ward Statistics (Phi)

Mean:	3.23	Median:	3.32	Deviation:	1.48
Skewness:	0.14	Kurtosis:	1.46		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
6.017 µm	47.51 µm	61.50 µm	81.10 µm	99.97 µm	189.9 µm	256.3 µm	330.9 µm

Particle Diameter µm	18-03-1974-4-F_26 Mar 2018_19.42.40.$ls Volume
0.04	0.74
0.4	2.04
1.95	1.21
3.91	21.8
62.5	33.0
125	24.4
250	16.9
500	0.00076
1000	0
2000	

18-03-1974-4-F_26 Mar 2018_19.42.40.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.0010	2.660	0.16	176.9	2.80
0.044	0.0014	2.920	0.17	194.2	2.46
0.048	0.0023	3.206	0.17	213.2	2.65
0.053	0.0049	3.519	0.18	234.1	3.28
0.058	0.010	3.863	0.19	256.9	4.02
0.064	0.018	4.241	0.21	282.1	4.28
0.070	0.025	4.656	0.22	309.6	3.72
0.077	0.032	5.111	0.23	339.9	2.45
0.084	0.036	5.611	0.24	373.1	1.12
0.093	0.041	6.159	0.25	409.6	0.29
0.102	0.044	6.761	0.26	449.7	0.037
0.112	0.045	7.422	0.27	493.6	0.00088
0.123	0.045	8.148	0.28	541.9	0
0.134	0.044	8.944	0.29	594.9	0
0.148	0.042	9.819	0.32	653.0	0
0.162	0.039	10.78	0.35	716.9	0
0.178	0.036	11.83	0.39	786.9	0
0.195	0.033	12.99	0.40	863.9	0
0.214	0.030	14.26	0.37	948.3	0
0.235	0.029	15.65	0.30	1041	0
0.258	0.030	17.18	0.22	1143	0
0.284	0.032	18.86	0.18	1255	0
0.311	0.037	20.71	0.20	1377	0
0.342	0.044	22.73	0.29	1512	0
0.375	0.054	24.95	0.43	1660	0
0.412	0.066	27.39	0.58	1822	0
0.452	0.078	30.07	0.72	2000	
0.496	0.092	33.01	0.86		
0.545	0.10	36.24	1.03		
0.598	0.12	39.78	1.32		
0.657	0.13	43.67	1.81		
0.721	0.13	47.94	2.53		
0.791	0.13	52.63	3.43		
0.869	0.14	57.77	4.33		
0.954	0.14	63.42	5.02		
1.047	0.13	69.62	5.30		
1.149	0.13	76.43	5.11		
1.261	0.13	83.90	4.59		
1.385	0.13	92.10	4.00		
1.520	0.14	101.1	3.63		
1.669	0.14	111.0	3.59		
1.832	0.14	121.8	3.81		
2.011	0.15	133.7	4.03		
2.208	0.15	146.8	3.93		
2.423	0.16	161.2	3.41		

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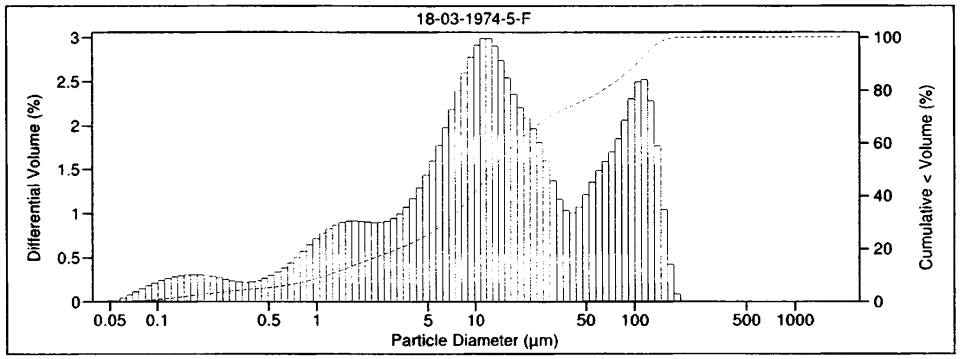
File name:	C:\LS13320\18-03-1974-5-F_26 Mar 2018_20.01.41.$ls 18-03-1974-5-F_26 Mar 2018_20.01.41.$ls		
File ID:	18-03-1974-5-F		
Sample ID:	18-03-1974-5-F		
Operator:	1106		
Run number:	13		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	0.60%		
LS 13 320	Aqueous Liquid Module		
Start time:	20:00 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	6%	PIDS Obscur:	38%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1974-5-F_26 Mar 2018_20.01.41.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	32.24 µm	S.D.:	40.81 µm
Median:	13.00 µm	Variance:	1665 µm^2
Mean/Median ratio:	2.480	Skewness:	1.517 Right skewed
Mode:	11.29 µm	Kurtosis:	1.200 Leptokurtic

d_{10}: 1.158 µm d_{50}: 13.00 µm d_{90}: 103.6 µm

Folk and Ward Statistics (Phi)

Mean:	6.25	Median:	6.26	Deviation:	2.53		
Skewness:	0.09	Kurtosis:	1.04				

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
0.450 µm	2.172 µm	4.865 µm	9.477 µm	13.00 µm	44.70 µm	79.84 µm	125.0 µm

Particle Diameter µm	18-03-1974-5-F_26 Mar 2018_20.01.41.$ls Volume
0.04	4.71
0.4	10.2
1.95	7.07
3.91	57.6
62.5	15.4
125	5.01
250	0
500	0
1000	0
2000	

18-03-1974-5-F_26 Mar 2018_20.01.41.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.0044	2.660	0.91	176.9	0.085
0.044	0.0060	2.920	0.94	194.2	0.0070
0.048	0.0098	3.206	1.00	213.2	0
0.053	0.020	3.519	1.07	234.1	0
0.058	0.041	3.863	1.17	256.9	0
0.064	0.075	4.241	1.29	282.1	0
0.070	0.11	4.656	1.43	309.6	0
0.077	0.15	5.111	1.60	339.9	0
0.084	0.18	5.611	1.78	373.1	0
0.093	0.21	6.159	1.98	409.6	0
0.102	0.24	6.761	2.19	449.7	0
0.112	0.26	7.422	2.40	493.6	0
0.123	0.28	8.148	2.60	541.9	0
0.134	0.29	8.944	2.78	594.9	0
0.148	0.30	9.819	2.91	653.0	0
0.162	0.30	10.78	2.99	716.9	0
0.178	0.30	11.83	2.99	786.9	0
0.195	0.30	12.99	2.90	863.9	0
0.214	0.28	14.26	2.74	948.3	0
0.235	0.27	15.65	2.54	1041	0
0.258	0.25	17.18	2.36	1143	0
0.284	0.23	18.86	2.20	1255	0
0.311	0.22	20.71	2.08	1377	0
0.342	0.21	22.73	1.97	1512	0
0.375	0.22	24.95	1.81	1660	0
0.412	0.24	27.39	1.60	1822	0
0.452	0.26	30.07	1.37	2000	
0.496	0.29	33.01	1.16		
0.545	0.34	36.24	1.03		
0.598	0.38	39.78	1.01		
0.657	0.44	43.67	1.08		
0.721	0.50	47.94	1.21		
0.791	0.57	52.63	1.36		
0.869	0.64	57.77	1.48		
0.954	0.72	63.42	1.59		
1.047	0.78	69.62	1.70		
1.149	0.83	76.43	1.85		
1.261	0.87	83.90	2.06		
1.385	0.90	92.10	2.30		
1.520	0.91	101.1	2.50		
1.669	0.91	111.0	2.52		
1.832	0.91	121.8	2.28		
2.011	0.90	133.7	1.77		
2.208	0.89	146.8	1.05		
2.423	0.90	161.2	0.42		

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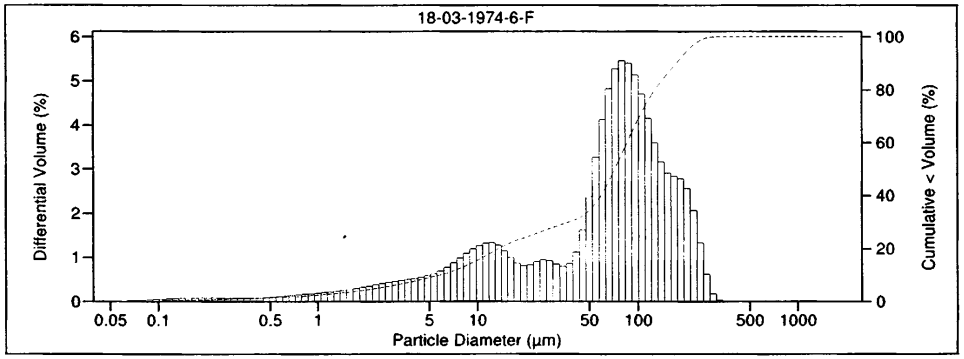
File name:	C:\LS13320\18-03-1974-6-F_26 Mar 2018_20.10.21.$ls 18-03-1974-6-F_26 Mar 2018_20.10.21.$ls		
File ID:	18-03-1974-6-F		
Sample ID:	18-03-1974-6-F		
Operator:	1106		
Run number:	14		
Comment 1:	ASTM D4464M , LPSA 1		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	2.22%		
LS 13 320	Aqueous Liquid Module		
Start time:	20:09 26 Mar 2018	Run length:	51 seconds
Pump speed:	49		
Obscuration:	2%	PIDS Obscur:	13%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) 18-03-1974-6-F_26 Mar 2018_20.10.21.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	80.16 µm	S.D.:	63.46 µm
Median:	72.45 µm	Variance:	4027 µm^2
Mean/Median ratio:	1.106	Skewness:	0.803 Right skewed
Mode:	80.07 µm	Kurtosis:	0.167 Leptokurtic

d_{10}: 5.812 µm d_{50}: 72.45 µm d_{90}: 174.5 µm

Folk and Ward Statistics (Phi)

Mean:	4.40	Median:	3.79	Deviation:	1.93		
Skewness:	0.51	Kurtosis:	1.12				

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
2.329 µm	10.30 µm	22.22 µm	59.33 µm	72.45 µm	114.1 µm	143.9 µm	207.5 µm

Particle Diameter µm	18-03-1974 -6-F_26 Mar 2018 _20.10.21 .$ls Volume
0.04	1.24
0.4	3.09
1.95	3.20
3.91	34.8
62.5	36.6
125	19.9
250	1.23
500	0
1000	0
2000	

18-03-1974-6-F_26 Mar 2018_20.10.21.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0.00073	2.660	0.44	176.9	2.78
0.044	0.0011	2.920	0.46	194.2	2.56
0.048	0.0019	3.206	0.48	213.2	2.06
0.053	0.0039	3.519	0.50	234.1	1.33
0.058	0.0080	3.863	0.53	256.9	0.62
0.064	0.014	4.241	0.55	282.1	0.18
0.070	0.021	4.656	0.58	309.6	0.025
0.077	0.028	5.111	0.63	339.9	0.00096
0.084	0.036	5.611	0.69	373.1	0
0.093	0.043	6.159	0.78	409.6	0
0.102	0.051	6.761	0.88	449.7	0
0.112	0.059	7.422	0.99	493.6	0
0.123	0.065	8.148	1.09	541.9	0
0.134	0.071	8.944	1.19	594.9	0
0.148	0.076	9.819	1.27	653.0	0
0.162	0.081	10.78	1.32	716.9	0
0.178	0.083	11.83	1.33	786.9	0
0.195	0.084	12.99	1.27	863.9	0
0.214	0.082	14.26	1.15	948.3	0
0.235	0.080	15.65	0.99	1041	0
0.258	0.077	17.18	0.87	1143	0
0.284	0.074	18.86	0.81	1255	0
0.311	0.073	20.71	0.83	1377	0
0.342	0.073	22.73	0.90	1512	0
0.375	0.076	24.95	0.95	1660	0
0.412	0.082	27.39	0.92	1822	0
0.452	0.090	30.07	0.85	2000	
0.496	0.10	33.01	0.79		
0.545	0.11	36.24	0.86		
0.598	0.13	39.78	1.11		
0.657	0.14	43.67	1.63		
0.721	0.16	47.94	2.38		
0.791	0.17	52.63	3.26		
0.869	0.18	57.77	4.12		
0.954	0.19	63.42	4.82		
1.047	0.21	69.62	5.28		
1.149	0.22	76.43	5.46		
1.261	0.24	83.90	5.40		
1.385	0.26	92.10	5.14		
1.520	0.28	101.1	4.71		
1.669	0.30	111.0	4.15		
1.832	0.32	121.8	3.60		
2.011	0.35	133.7	3.15		
2.208	0.38	146.8	2.91		
2.423	0.41	161.2	2.83		

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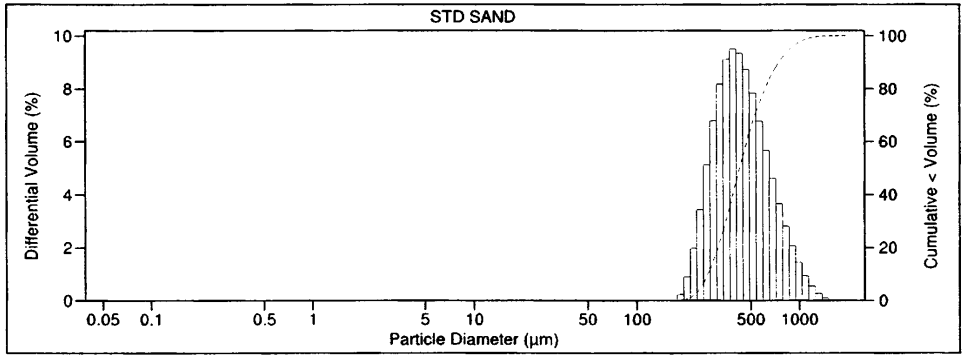
File name:	C:\LS13320\STD SAND_26 Mar 2018_17.59.35.$ls STD SAND_26 Mar 2018_17.59.35.$ls		
File ID:	STD SAND		
Sample ID:	STD SAND		
Operator:	1106		
Run number:	1 Control Sample		
Comment 1:	ASTM D4464M , LPSA 1		
Comment 2:	F120117B, BATCH#023B		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	0.72%		
LS 13 320	Aqueous Liquid Module		
Start time:	17:58 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	5%	PIDS Obscur:	48%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) STD SAND_26 Mar 2018_17.59.35.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	477.4 µm	S.D.:	198.6 µm
Median:	430.0 µm	Variance:	39454 µm^2
Mean/Median ratio:	1.110	Skewness:	1.345 Right skewed
Mode:	391.0 µm	Kurtosis:	2.180 Leptokurtic

d_{10}: 273.9 µm d_{50}: 430.0 µm d_{90}: 751.5 µm

Folk and Ward Statistics (Phi)

Mean:	1.19	Median:	1.22	Deviation:	0.56
Skewness:	-0.10	Kurtosis:	0.97		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
246.6 µm	299.7 µm	333.9 µm	389.5 µm	430.0 µm	572.1 µm	659.0 µm	877.9 µm

Particle Diameter µm	STD SAND _26 Mar 2018_17.59 .35.$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	0
125	5.51
250	58.8
500	33.2
1000	2.48
2000	

STD SAND_26 Mar 2018_17.59.35.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0	2.660	0	176.9	0.22
0.044	0	2.920	0	194.2	0.89
0.048	0	3.206	0	213.2	1.98
0.053	0	3.519	0	234.1	3.44
0.058	0	3.863	0	256.9	5.12
0.064	0	4.241	0	282.1	6.77
0.070	0	4.656	0	309.6	8.17
0.077	0	5.111	0	339.9	9.12
0.084	0	5.611	0	373.1	9.50
0.093	0	6.159	0	409.6	9.34
0.102	0	6.761	0	449.7	8.73
0.112	0	7.422	0	493.6	7.83
0.123	0	8.148	0	541.9	6.76
0.134	0	8.944	0	594.9	5.67
0.148	0	9.819	0	653.0	4.62
0.162	0	10.78	0	716.9	3.66
0.178	0	11.83	0	786.9	2.81
0.195	0	12.99	0	863.9	2.07
0.214	0	14.26	0	948.3	1.44
0.235	0	15.65	0	1041	0.93
0.258	0	17.18	0	1143	0.54
0.284	0	18.86	0	1255	0.27
0.311	0	20.71	0	1377	0.095
0.342	0	22.73	0	1512	0.016
0.375	0	24.95	0	1660	0.00052
0.412	0	27.39	0	1822	0
0.452	0	30.07	0	2000	
0.496	0	33.01	0		
0.545	0	36.24	0		
0.598	0	39.78	0		
0.657	0	43.67	0		
0.721	0	47.94	0		
0.791	0	52.63	0		
0.869	0	57.77	0		
0.954	0	63.42	0		
1.047	0	69.62	0		
1.149	0	76.43	0		
1.261	0	83.90	0		
1.385	0	92.10	0		
1.520	0	101.1	0		
1.669	0	111.0	0		
1.832	0	121.8	0		
2.011	0	133.7	0		
2.208	0	146.8	0		
2.423	0	161.2	0.013		

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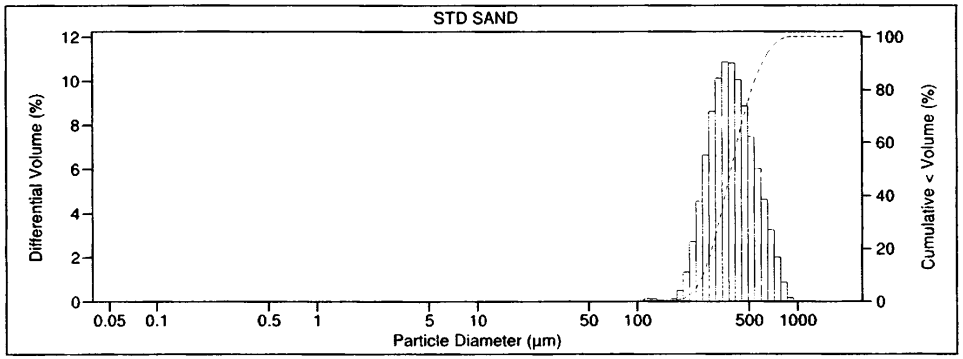
File name:	C:\LS13320\STD SAND_26 Mar 2018_19.54.09.$ls STD SAND_26 Mar 2018_19.54.09.$ls		
File ID:	STD SAND		
Sample ID:	STD SAND		
Operator:	1106		
Run number:	12 Control Sample		
Comment 1:	ASTM D4464M , LPSA 1		
Comment 2:	F120117B, BATCH#023B		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	9.28%		
LS 13 320	Aqueous Liquid Module		
Start time:	19:53 26 Mar 2018	Run length:	52 seconds
Pump speed:	49		
Obscuration:	10%	PIDS Obscur:	40%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) STD SAND_26 Mar 2018_19.54.09.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	411.3 µm	S.D.:	136.0 µm
Median:	387.1 µm	Variance:	18505 µm^2
Mean/Median ratio:	1.062	Skewness:	0.780 Right skewed
Mode:	356.1 µm	Kurtosis:	0.320 Leptokurtic

d_{10}: 258.3 µm d_{50}: 387.1 µm d_{90}: 606.8 µm

Folk and Ward Statistics (Phi)

Mean:	1.35	Median:	1.37	Deviation:	0.48
Skewness:	-0.05	Kurtosis:	0.95		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
233.4 µm	281.1 µm	310.0 µm	355.2 µm	387.1 µm	490.8 µm	550.4 µm	679.0 µm

Particle Diameter µm	STD SAND _26 Mar 2018_19.54 .09.$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	0.25
125	8.01
250	68.3
500	23.4
1000	0.0024
2000	

STD SAND_26 Mar 2018_19.54.09.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0	2.660	0	176.9	0.50
0.044	0	2.920	0	194.2	1.33
0.048	0	3.206	0	213.2	2.70
0.053	0	3.519	0	234.1	4.54
0.058	0	3.863	0	256.9	6.63
0.064	0	4.241	0	282.1	8.61
0.070	0	4.656	0	309.6	10.1
0.077	0	5.111	0	339.9	10.9
0.084	0	5.611	0	373.1	10.8
0.093	0	6.159	0	409.6	10.1
0.102	0	6.761	0	449.7	8.85
0.112	0	7.422	0	493.6	7.45
0.123	0	8.148	0	541.9	6.02
0.134	0	8.944	0	594.9	4.62
0.148	0	9.819	0	653.0	3.26
0.162	0	10.78	0	716.9	2.02
0.178	0	11.83	0	786.9	0.88
0.195	0	12.99	0	863.9	0.16
0.214	0	14.26	0	948.3	0.0055
0.235	0	15.65	0	1041	0
0.258	0	17.18	0	1143	0
0.284	0	18.86	0	1255	0
0.311	0	20.71	0	1377	0
0.342	0	22.73	0	1512	0
0.375	0	24.95	0	1660	0
0.412	0	27.39	0	1822	0
0.452	0	30.07	0	2000	
0.496	0	33.01	0		
0.545	0	36.24	0		
0.598	0	39.78	0		
0.657	0	43.67	0		
0.721	0	47.94	0		
0.791	0	52.63	0		
0.869	0	57.77	0		
0.954	0	63.42	0		
1.047	0	69.62	0		
1.149	0	76.43	0		
1.261	0	83.90	0		
1.385	0	92.10	0.0070		
1.520	0	101.1	0.072		
1.669	0	111.0	0.14		
1.832	0	121.8	0.12		
2.011	0	133.7	0.063		
2.208	0	146.8	0.038		
2.423	0	161.2	0.12		

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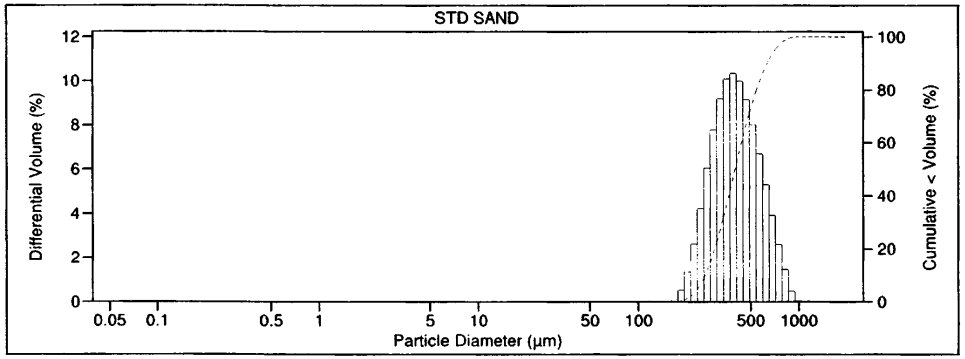
File name:	C:\LS13320\STD SAND_26 Mar 2018_20.43.04.$ls STD SAND_26 Mar 2018_20.43.04.$ls		
File ID:	STD SAND		
Sample ID:	STD SAND		
Operator:	1106		
Run number:	15 Control Sample		
Comment 1:	ASTM D4464M , LPSA 1		
Comment 2:	F120117B, BATCH#023B		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	9.82%		
LS 13 320	Aqueous Liquid Module		
Start time:	20:42 26 Mar 2018	Run length:	51 seconds
Pump speed:	49		
Obscuration:	7%	PIDS Obscur:	45%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) STD SAND_26 Mar 2018_20.43.04.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	427.5 µm	S.D.:	145.2 µm
Median:	401.5 µm	Variance:	21071 µm^2
Mean/Median ratio:	1.065	Skewness:	0.790 Right skewed
Mode:	391.0 µm	Kurtosis:	0.249 Leptokurtic

d_{10}: 261.7 µm d_{50}: 401.5 µm d_{90}: 636.6 µm

Folk and Ward Statistics (Phi)

Mean:	1.30	Median:	1.32	Deviation:	0.49
Skewness:	-0.04	Kurtosis:	0.93		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
236.1 µm	286.0 µm	317.3 µm	366.6 µm	401.5 µm	514.9 µm	577.6 µm	710.1 µm

Particle Diameter µm	STD SAND _26 Mar 2018_20.43 .04.$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	0
125	7.56
250	65.0
500	27.5
1000	0.017
2000	

STD SAND_26 Mar 2018_20.43.04.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0	2.660	0	176.9	0.53
0.044	0	2.920	0	194.2	1.35
0.048	0	3.206	0	213.2	2.61
0.053	0	3.519	0	234.1	4.23
0.058	0	3.863	0	256.9	6.04
0.064	0	4.241	0	282.1	7.79
0.070	0	4.656	0	309.6	9.21
0.077	0	5.111	0	339.9	10.1
0.084	0	5.611	0	373.1	10.3
0.093	0	6.159	0	409.6	9.99
0.102	0	6.761	0	449.7	9.16
0.112	0	7.422	0	493.6	8.02
0.123	0	8.148	0	541.9	6.70
0.134	0	8.944	0	594.9	5.31
0.148	0	9.819	0	653.0	3.92
0.162	0	10.78	0	716.9	2.60
0.178	0	11.83	0	786.9	1.46
0.195	0	12.99	0	863.9	0.48
0.214	0	14.26	0	948.3	0.038
0.235	0	15.65	0	1041	0
0.258	0	17.18	0	1143	0
0.284	0	18.86	0	1255	0
0.311	0	20.71	0	1377	0
0.342	0	22.73	0	1512	0
0.375	0	24.95	0	1660	0
0.412	0	27.39	0	1822	0
0.452	0	30.07	0	2000	
0.496	0	33.01	0		
0.545	0	36.24	0		
0.598	0	39.78	0		
0.657	0	43.67	0		
0.721	0	47.94	0		
0.791	0	52.63	0		
0.869	0	57.77	0		
0.954	0	63.42	0		
1.047	0	69.62	0		
1.149	0	76.43	0		
1.261	0	83.90	0		
1.385	0	92.10	0		
1.520	0	101.1	0		
1.669	0	111.0	0		
1.832	0	121.8	0		
2.011	0	133.7	0		
2.208	0	146.8	0.0065		
2.423	0	161.2	0.12		

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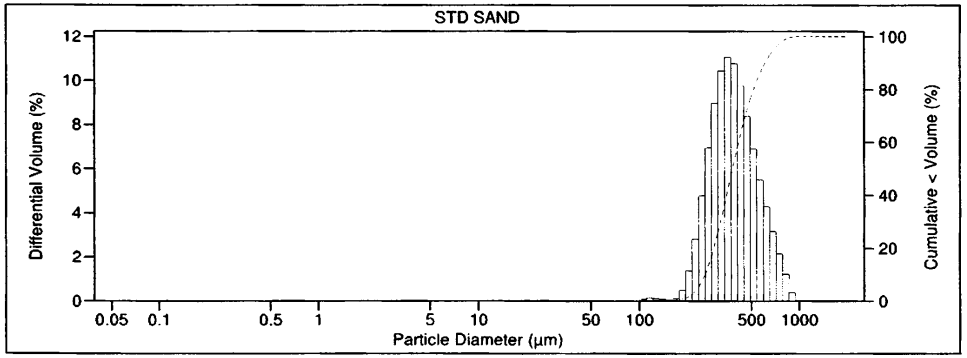
File name:	C:\LS13320\STD SAND_26 Mar 2018_21.02.57.$ls STD SAND_26 Mar 2018_21.02.57.$ls		
File ID:	STD SAND		
Sample ID:	STD SAND		
Operator:	1106		
Run number:	17 Control Sample		
Comment 1:	ASTM D4464M , LPSA 1		
Comment 2:	F120117B, BATCH#023B		
Optical model:	garnet.rf780d PIDS included		
Fluid R.I.:	1.333	Sample R.I.:	1.8 i0.3
Residual:	8.98%		
LS 13 320	Aqueous Liquid Module		
Start time:	21:01 26 Mar 2018	Run length:	51 seconds
Pump speed:	49		
Obscuration:	11%	PIDS Obscur:	49%
Fluid:	Water		
Software:	6.01	Firmware:	4.00



Volume Statistics (Arithmetic) STD SAND_26 Mar 2018_21.02.57.$ls

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	409.6 µm	S.D.:	140.3 µm
Median:	381.7 µm	Variance:	19674 µm^2
Mean/Median ratio:	1.073	Skewness:	0.918 Right skewed
Mode:	356.1 µm	Kurtosis:	0.658 Leptokurtic

d_{10}: 256.8 µm d_{50}: 381.7 µm d_{90}: 611.2 µm

Folk and Ward Statistics (Phi)

Mean:	1.37	Median:	1.39	Deviation:	0.48
Skewness:	-0.08	Kurtosis:	0.97		

<5%	<16%	<25%	<40%	<50%	<75%	<84%	<95%
232.1 µm	278.5 µm	306.7 µm	350.7 µm	381.7 µm	486.3 µm	548.6 µm	691.9 µm

Particle Diameter µm	STD SAND _26 Mar 2018_21.02 57.$ls Volume %
0.04	0
0.4	0
1.95	0
3.91	0
62.5	0.26
125	8.33
250	68.7
500	22.7
1000	0.012
2000	

STD SAND_26 Mar 2018_21.02.57.$ls

Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %	Channel Diameter (Lower) µm	Diff. Volume %
0.040	0	2.660	0	176.9	0.50
0.044	0	2.920	0	194.2	1.37
0.048	0	3.206	0	213.2	2.82
0.053	0	3.519	0	234.1	4.77
0.058	0	3.863	0	256.9	6.95
0.064	0	4.241	0	282.1	8.98
0.070	0	4.656	0	309.6	10.4
0.077	0	5.111	0	339.9	11.1
0.084	0	5.611	0	373.1	10.8
0.093	0	6.159	0	409.6	9.78
0.102	0	6.761	0	449.7	8.38
0.112	0	7.422	0	493.6	6.90
0.123	0	8.148	0	541.9	5.51
0.134	0	8.944	0	594.9	4.27
0.148	0	9.819	0	653.0	3.16
0.162	0	10.78	0	716.9	2.15
0.178	0	11.83	0	786.9	1.21
0.195	0	12.99	0	863.9	0.38
0.214	0	14.26	0	948.3	0.028
0.235	0	15.65	0	1041	0
0.258	0	17.18	0	1143	0
0.284	0	18.86	0	1255	0
0.311	0	20.71	0	1377	0
0.342	0	22.73	0	1512	0
0.375	0	24.95	0	1660	0
0.412	0	27.39	0	1822	0
0.452	0	30.07	0	2000	
0.496	0	33.01	0		
0.545	0	36.24	0		
0.598	0	39.78	0		
0.657	0	43.67	0		
0.721	0	47.94	0		
0.791	0	52.63	0		
0.869	0	57.77	0		
0.954	0	63.42	0		
1.047	0	69.62	0		
1.149	0	76.43	0		
1.261	0	83.90	0		
1.385	0	92.10	0.0072		
1.520	0	101.1	0.075		
1.669	0	111.0	0.15		
1.832	0	121.8	0.13		
2.011	0	133.7	0.070		
2.208	0	146.8	0.039		
2.423	0	161.2	0.12		

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ASTM D4464-10(M) Raw Data Logbook

METHOD	MATRIX	DATE	ANALYST(S)	INSTRUMENT / EQUIPMENT ID #	BATCH NUMBER	COMMENTS
ASTM D4464-10(M)	☑ Aqueous ☐ Solid	Preparation: 3/26/18 Analysis: 3/26/18	1106 1106	Instrument: LPSA 1 Balance: — Sieve (if used): —	180326B01	

DATA FILENAME	RUN #	ECI ID #	MASS (g) SAMPLE	MASS (g) GRAVEL	STANDARD SAND ID #	COMMENTS
STD SAND_DT	1	STD SAND	—	—	F120117B	
18-03-1798-1-F_DT	2	18-03-1798-1-F			—	Low PIDS (18%)
2	3	2				Low PIDS (32%)
3	4	3				
4	5	4				
5	6	5				
6	7	6				
18-03-1974-1-F_DT	8	18-03-1974-1-F				Low PIDS (11%)
2	9	2				Low PIDS (11%)
3	10	3				Low PIDS (14%)
4	11	4				Low PIDS (12%)
STD SAND_DT	12	STD SAND			F120117B	
18-03-1974-5-F_DT	13	18-03-1974-5-F			—	Low PIDS (38%)
18-03-1974-6-F	14	18-03-1974-6-F			—	
STD SAND_DT	15	STD SAND			F120117B	
18-03-1974-3-F-DUP_DT	16	18-03-1974-3-F-DUP			—	Low PIDS (17%)
STD SAND_DT	17	STD SAND			F120117B	

COMMENTS:

Instrument QC: Analyze one DPV control sample daily prior to sample analysis, after every batch of 10 samples or portion thereof within a 24-hour shift, and at the end of sequence. Record the standard sand ID number.

Sample Batch QC: Prepare one Sample Duplicate for every batch of 20 field samples per matrix or portion thereof, and analyze immediately following a DPV control sample. Record the batch number.

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Supplemental Report 3

Subcontract analyses are reported as a stand-alone report. Results with Level IV added.

WORK ORDER NUMBER: 18-03-1974

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL - Gainesville

Client Project Name: SSFL CH661 / 692670.61.SW

Attention: Randy Dean
3011 S.W. Williston Road
Gainesville, FL 32608-3928

Approved for release on 04/19/2018 by:
Virendra Patel
Project Manager

ResultLink

Email your PM

eurofins | Calscience

Contents

Client Project Name: SSFL CH661 / 692670.61.SW
Work Order Number: 18-03-1974

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Work Order Narrative

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 03/22/18. They were assigned to Work Order 18-03-1974.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

DoD Projects:

The test results contained in this report are accredited under the laboratory's ISO/IEC 17025:2005 and DoD-ELAP accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation ADE-1864.

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Chain of Custody Record

COC Number: CALS03221801

JACOBS ch2m

3/22/2018 1:49:30 PM

18-03-1974

Project Name	SSFL	**Location**	Santa Susana Field Lab
Project	CH661 PO 100067108373		
Project Number	692670.61.SW	**Task Order**	661
Project Manager	Randy Dean		
Sample Manager	Jamie Beckett	530 570 5084	
Turnaround Time	10 Days		
PO Number	100067108373		

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
A2BMP0006S005	22-Mar-18 11:00	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
				Total Containers:		7						
A2BMP0007S011	22-Mar-18 11:30	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
				Total Containers:		7						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by	BRYAN BENSON	3/22/18
Relinquished by		3/22/18 1700
Received by	C.C	3/22/18 1500
Relinquished by		3/22/18 1700
Received by		3/22/18 1700

Shipping Details

Shipment Method: FedEx

Airbill No:

Lab Name: CalScience

Lab Phone: (949) 870-8766

On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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Chain of Custody Record

COC Number: CALS03221801 JACOBS ch2m 3/22/2018 1:49:30 PM

Project Name	SSFL	**Location**	Santa Susana Field Lab
Project	CH661 PO 100067108373		
Project Number	692670.61.SW	**Task Order**	661
Project Manager	Randy Dean		
Sample Manager	Jamie Beckett		530 570 5084
Turnaround Time	10 Days		
PO Number	100067108373		

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B																			
EVBMP0002S022	22-Mar-18 7:50	N	Water																												
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
				Total Containers:		8																									
EVBMP0007S010	22-Mar-18 9:00	N	Water																												
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
				Total Containers:		7																									

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by	BRYAN DENON	3/22/18
Relinquished by		3/22/18 1500
Received by	E.C	3/22/18 1500
Relinquished by		3/22/18 1900
Received by		3/22/18 1700

Shipping Details

Shipment Method: FedEx
Airbill No:
Lab Name: CalScience
Lab Phone: (949) 870-8766
On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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Chain of Custody Record

COC Number: CALS03221801

JACOBS ch2m

3/22/2018 1:49:30 PM

Project Name SSFL **Location** Santa Susana Field Lab
Project CH661 PO 100067108373
Project Number 692670.61.SW **Task Order** 661
Project Manager Randy Dean
Sample Manager Jamie Beckett 530 570 5084
Turnaround Time 10 Days
PO Number 100067108373

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
EVBMP0008S013	22-Mar-18 9:20	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		8						
EVBMP0009S011	22-Mar-18 8:50	N	Water									
Dioxins				4'C	☐	2	☐	☐	☐	☐	☐	☑
LAB FILTER - Dissolved Cd, Cu, Pb, Hg				4'C	☐	1	☐	☐	☑	☐	☐	☐
Include Cd, Cu, Pb, Hg				HNO3, 4'C	☐	2	☐	☑	☐	☐	☐	☐
Particle Size Distribution TSS				4'C	☐	2	☐	☐	☐	☑	☑	☐
Turbidity				4'C	☐	1	☑	☐	☐	☐	☐	☐
				Total Containers:		8						

MS = Matrix Spike **SD = Matrix Spike Duplicate**

	Signatures	Date/Time
Sampled by	D Dawson	3/22/18
Relinquished by		3/22/18 1500
Received by	E-C	3/22/18 1500
Relinquished by		3/22/18 1700
Received by		3/22/18 1700

Shipping Details

Shipment Method: FedEx
Airbill No:
Lab Name: CalScience
Lab Phone: (949) 870-8766
On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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Chain of Custody Record

COC Number: CALS03221801

JACOBS ch2m

3/22/2018 1:49:30 PM

Project Name	SSFL	**Location**	Santa Susana Field Lab
Project	CH661 PO 100067108373		
Project Number	692670.61.SW	**Task Order**	661
Project Manager	Randy Dean		
Sample Manager	Jamie Beckett		530 570 5084
Turnaround Time	10 Days		
PO Number	100067108373		

Sample ID	Sample Date/Time	Type	Matrix	Preservative	Field Filtered	# Containers	180.1	200.8/245.1	200.8/245.1F	ASTMD4464	SM2540	SW8290/1613B
FBQW1853Q001	22-Mar-18 14:00	EB	Water									
Dioxins				4°C	☐	2	☐	☐	☐	☐	☐	☑
Include Cd, Cu, Pb, Hg				HNO3, 4°C	☐	2	☐	☑	☐	☐	☐	☐
				Total Containers:		4						

MS = Matrix Spike SD = Matrix Spike Duplicate

	Signatures	Date/Time
Sampled by	BRYAN DENSON	3/22/18
Relinquished by		3/22/18 1500
Received by	EC	3/22/18 1500
Relinquished by		3/22/18 1700
Received by		3/22/18 1700

Shipping Details

Shipment Method: FedEx

Airbill No:

Lab Name: CalScience

Lab Phone: (949) 870-8766

On Ice: yes / no **Cooler Temp** _____

ATTN:

Sample Custody
and
Michele Castro

Special Instructions:

Report Copy to
Mark Fesler
(530) 229-3273

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WORK ORDER NUMBER: 18-03-1474

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 3

CLIENT: CH2M

DATE: 03/22/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.7 °C (w/ CF): 2.9 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 804

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 804

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1140

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☑ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOAh ☐ VOA**na**$_2$ ☐ 100PJ ☐ 100PJ**na**$_2$ ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH<2) (2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☑ 500PB

☑ 1AGB (2) ☐ 1AGB**na**$_2$ ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☑ 1PB (2) ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na**$_2$ = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 1140

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: LRG

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WORK ORDER NUMBER: 18-03-0474

SAMPLE RECEIPT CHECKLIST

COOLER 2 OF 3

CLIENT: CH2M

DATE: 03/22/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.5 °C (w/ CF): 2.7 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 804

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 804

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1140

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☑ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH<2) (2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☑ 500PB

☑ 1AGB (2) ☐ 1AGB**na$_2$** ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☑ 1PB (3) ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 1148

Reviewed by: 419

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WORK ORDER NUMBER: 18-03-1974

SAMPLE RECEIPT CHECKLIST

COOLER 3 OF 3

CLIENT: CH2M

DATE: 03/22/2018

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: +0.2°C); Temperature (w/o CF): 2.6 °C (w/ CF): 2.8 °C; ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 804

CUSTODY SEAL:

Cooler ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 804

Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☑ Not Present ☐ N/A Checked by: 1146

SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☑	☐	☐
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA**h** ☐ VOA**na$_2$** ☐ 100PJ ☐ 100PJ**na$_2$** ☐ 125AGB ☐ 125AGB**h** ☐ 125AGB**p** ☐ 125PB ☐ 125PB**znna** (pH__9)

☐ 250AGB ☐ 250CGB ☐ 250CGB**s** (pH__2) ☐ 250PB ☑ 250PB**n** (pH ✓2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJ**s** (pH__2) ☐ 500PB

☑ 1AGB (2) ☐ 1AGB**na$_2$** ☐ 1AGB**s** (pH__2) ☐ 1AGB**s** (O&G) ☐ 1PB ☐ 1PB**na** (pH__12) ☐ _____ ☐ _____ ☐ _____

Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na$_2$** = $Na_2S_2O_3$, **p** = H_3PO_4, Labeled/Checked by: 1140

s = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH Reviewed by: 697

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Subcontractor Analysis Report

Work Order: 18-03-1974 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

1. Cape Fear Analytical - Wilmington,NC
   EPA 1613B

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CFA | Cape Fear Analytical LLC
an affiliate of The GEL Group INC

3306 Kitty Hawk Road, Suite 120 Wilmington, NC 28405
P 910.795.0421

www.capefearanalytical.com

April 10, 2018

Mr. Virendra Patel
Calscience Environmental Laboratories, Inc.
7440 Lincoln Way
Garden Grove, California 92841-1432

Re: Stormwater RFP Boeing SSFL MECX DXN
Work Order: 13123
SDG: 18-03-1974

Dear Mr. Patel:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 27, 2018. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421 Ext. 2.

Sincerely,

Cynde Larkins

Cynde Larkins
Project Manager

Purchase Order: 18-03-1974
Chain of Custody: 18-03-1974
Enclosures

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Ship to: Cynde Larkins CFA WO# 13123
Cape Fear Analytical
3306 Kitty Hawk Road
Wilmington, NC 28405

CHAIN OF CUSTODY RECORD

DATE: 3/26/2018
PAGE: 1 OF 1

LABORATORY CLIENT: Eurofins Calscience, Inc.
ADDRESS: 7440 Lincoln Way
Garden Grove, CA 92841-1427
TEL: 714-895-5494
VirendraPatel@eurofinsUS.com

CLIENT PROJECT NAME / NUMBER: 18-03-1974
PROJECT CONTACT: Virendra Patel
SAMPLER(S): (SIGNATURE)
COELT LOG CODE
P.O. NO.:
LAB USE ONLY
COOLER RECEIPT Temp = 3.0 °C

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

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ LOCUS EIM53 EDD ☐ COELT EDF ☐

SPECIAL INSTRUCTIONS
BOEING CH661 BOEING SSFL NASA Stormwater
Report with "J" flags - Level IV deliverables
Standard TAT - CH2M Hill Lab Spec 7 EDD format required

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	CEL Sample #	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	EPA 1613B - Dioxins/Furans	
	A2BMP0006S005		03/22/18	11:00	W	2	X	2 x 1 liter ambers 3.4°
	A2BMP0007S011		03/22/18	11:30	W	2	X	2 x 1 liter ambers 3.0
	EVBMP0002S022		03/22/18	07:50	W	2	X	2 x 1 liter ambers 3.4° 3.0°
	EVBMP0007S010		03/22/18	09:00	W	2	X	2 x 1 liter ambers 3.0
	EVBMP0008S013		03/22/18	09:20	W	2	X	2 x 1 liter ambers
	EVBMP0009S011		03/22/18	08:50	W	2	X	2 x 1 liter ambers
	FBQW1853Q001		03/22/18	1400	W	2	X	2 x 1 liter ambers

3/23/18

Relinquished by: (Signature)	Received by: (Signature)	2 x 1 liter ambers	Time:
(Eurofins Calscience)	FedEx AB# 771840038343,8711	3/23/2018	1509
Relinquished by: (Signature) FedEx	Received by: (Signature) Cynde Larkins / CFA	Date: 27MAR18	Time: 1020
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

temp. ok 27MAR18

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SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: CALS	Work Order: 13123
Shipping Company: FedEx	Date/Time Received: 27MAR18 1020

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		✓	
Samples < 2x background?		✓	

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Chain of Custody documents included with shipment?	✓			
3	Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: (ice bags) blue ice dry ice none other (describe) 4.3°-1.3=3.0°C 4.7°-1.3=3.4°C
4	Aqueous samples found to have visible solids?	✓			Sample IDs, containers affected: Minimal visible solids (<1%) in all containers except EVBMP0009S001 and FBRW
5	Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: pH=7 on all. If preservative added, Lot#:
6	Samples requiring preservation have no residual chlorine?	✓			Sample IDs, containers affected: If preservative added, Lot#:
7	Samples received within holding time?	✓			Sample IDs, tests affected:
8	Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10	Number of containers received match number indicated on COC?	✓			List type and number of containers / Sample IDs, containers affected: 2-1L NMA glass jars per sample
11	COC form is properly signed in relinquished/received sections?	✓			

Comments:

Custody seals intact.
Temp. blanks present.
2 coolers.

Checklist performed by: Initials: CF Date: 27MAR18 CF-UD-F-7

High Resolution Dioxins and Furans Analysis

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Case Narrative

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HDOX Case Narrative
Calscience Environmental Laboratories, Inc. (CALS)
SDG 18-03-1974
Work Order 13123

Method/Analysis Information

Product: **Dioxins/Furans by EPA Method 1613B in Liquids**
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3520C
Analytical Batch Number: 37301
Clean Up Batch Number: 37285
Extraction Batch Number: 37284

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
12020981	Method Blank (MB)
12020982	Laboratory Control Sample (LCS)
12020983	Laboratory Control Sample Duplicate (LCSD)
13123001	A2BMP0006S005
13123002	A2BMP0007S011
13123003	EVBMP0002S022
13123004	EVBMP0007S010
13123005	EVBMP0008S013
13123006	EVBMP0009S011
13123007	FBQW1853Q001

The samples in this SDG were analyzed on an "as received" basis.

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 15.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

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Initial Calibration
All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement
The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

Method Blank (MB) Statement
The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery
The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement
The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation
A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications
CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required in this SDG.

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Miscellaneous Information

Nonconformance (NCR) Documentation
A NCR was not required for this SDG.

Manual Integrations
Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

System Configuration
This analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
HRP763_1	Primary Dioxin Analysis	Dioxin Analysis	DB-5MS	60m x 0.25mm, 0.25um

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

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Sample Data Summary

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Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Certificate of Analysis Report
for

CALS001 Calscience Environmental Laboratories, Inc.

Client SDG: 18-03-1974 CFA Work Order: 13123

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a surrogate compound

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature:  **Name: Heather Patterson**

Date: 10 APR 2018 **Title: Group Leader**

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123001**	**Date Collected:**	**03/22/2018 11:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0006S005**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:01**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-4**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1033.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000658	ng/L	0.000658	0.00968
40321-76-4	1,2,3,7,8-PeCDD	JK	0.000542	ng/L	0.000482	0.0484
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00114	ng/L	0.000809	0.0484
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.00186	ng/L	0.000774	0.0484
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.00163	ng/L	0.000813	0.0484
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0323	ng/L	0.00117	0.0484
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.278	ng/L	0.0025	0.0968
51207-31-9	2,3,7,8-TCDF	U	0.00049	ng/L	0.00049	0.00968
57117-41-6	1,2,3,7,8-PeCDF	U	0.000337	ng/L	0.000337	0.0484
57117-31-4	2,3,4,7,8-PeCDF	U	0.000298	ng/L	0.000298	0.0484
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000465	ng/L	0.000465	0.0484
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000441	ng/L	0.000441	0.0484
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.000581	ng/L	0.000482	0.0484
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.00067	ng/L	0.00067	0.0484
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00587	ng/L	0.00054	0.0484
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000803	ng/L	0.000803	0.0484
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0115	ng/L	0.00183	0.0968
41903-57-5	Total TeCDD	U	0.000658	ng/L	0.000658	0.00968
36088-22-9	Total PeCDD	JK	0.000542	ng/L	0.000482	0.0484
34465-46-8	Total HxCDD	JK	0.0112	ng/L	0.000774	0.0484
37871-00-4	Total HpCDD		0.0575	ng/L	0.00117	0.0484
30402-14-3	Total TeCDF	U	0.00049	ng/L	0.00049	0.00968
30402-15-4	Total PeCDF	JK	0.00116	ng/L	0.000298	0.0484
55684-94-1	Total HxCDF	JK	0.00575	ng/L	0.000441	0.0484
38998-75-3	Total HpCDF	J	0.0135	ng/L	0.00054	0.0484
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00153	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00202	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.73	1.94	ng/L	89.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.45	1.94	ng/L	74.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.37	1.94	ng/L	70.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.59	1.94	ng/L	81.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.49	1.94	ng/L	76.7	(23%-140%)
13C-OCDD		2.58	3.87	ng/L	66.5	(17%-157%)
13C-2,3,7,8-TCDF		1.77	1.94	ng/L	91.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.69	1.94	ng/L	87.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.59	1.94	ng/L	82.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.40	1.94	ng/L	72.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.53	1.94	ng/L	79.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.47	1.94	ng/L	76.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.55	1.94	ng/L	80.1	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123001**	**Date Collected:**	**03/22/2018 11:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0006S005**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:01**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-4**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1033.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.35	1.94	ng/L	69.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.38	1.94	ng/L	71.1	(26%-138%)
37Cl-2,3,7,8-TCDD		0.171	0.194	ng/L	88.3	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123002**	**Date Collected:**	**03/22/2018 11:30**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0007S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:49**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-5**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**970.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000797	ng/L	0.000797	0.0103
40321-76-4	1,2,3,7,8-PeCDD	J	0.000989	ng/L	0.000645	0.0515
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00134	ng/L	0.000979	0.0515
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.00262	ng/L	0.000942	0.0515
19408-74-3	1,2,3,7,8,9-HxCDD	JK	0.00192	ng/L	0.000987	0.0515
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0515	ng/L	0.00188	0.0515
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.693	ng/L	0.00398	0.103
51207-31-9	2,3,7,8-TCDF	U	0.000593	ng/L	0.000593	0.0103
57117-41-6	1,2,3,7,8-PeCDF	U	0.000453	ng/L	0.000453	0.0515
57117-31-4	2,3,4,7,8-PeCDF	U	0.000416	ng/L	0.000416	0.0515
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000453	ng/L	0.000453	0.0515
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000451	ng/L	0.000451	0.0515
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.000515	ng/L	0.000474	0.0515
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.00068	ng/L	0.000672	0.0515
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00585	ng/L	0.00056	0.0515
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000845	ng/L	0.000845	0.0515
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0155	ng/L	0.00149	0.103
41903-57-5	Total TeCDD	U	0.000797	ng/L	0.000797	0.0103
36088-22-9	Total PeCDD	JK	0.00181	ng/L	0.000645	0.0515
34465-46-8	Total HxCDD	JK	0.0194	ng/L	0.000942	0.0515
37871-00-4	Total HpCDD		0.111	ng/L	0.00188	0.0515
30402-14-3	Total TeCDF	U	0.000593	ng/L	0.000593	0.0103
30402-15-4	Total PeCDF	JK	0.0015	ng/L	0.000373	0.0515
55684-94-1	Total HxCDF	JK	0.00783	ng/L	0.000451	0.0515
38998-75-3	Total HpCDF	J	0.0159	ng/L	0.00056	0.0515
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00248	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00303	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.84	2.06	ng/L	89.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.57	2.06	ng/L	76.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.60	2.06	ng/L	77.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.82	2.06	ng/L	88.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.75	2.06	ng/L	85.0	(23%-140%)
13C-OCDD		2.96	4.12	ng/L	71.8	(17%-157%)
13C-2,3,7,8-TCDF		1.94	2.06	ng/L	94.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.85	2.06	ng/L	89.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.75	2.06	ng/L	85.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.64	2.06	ng/L	79.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.80	2.06	ng/L	87.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.72	2.06	ng/L	83.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.77	2.06	ng/L	85.8	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123002**	**Date Collected:**	**03/22/2018 11:30**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0007S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:49**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-5**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**970.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.58	2.06	ng/L	76.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.61	2.06	ng/L	77.9	(26%-138%)
37Cl-2,3,7,8-TCDD		0.186	0.206	ng/L	90.4	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123003**	**Date Collected:**	**03/22/2018 07:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0002S022**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 22:38**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-6**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1016 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000563	ng/L	0.000563	0.00984
40321-76-4	1,2,3,7,8-PeCDD	JK	0.000846	ng/L	0.0005	0.0492
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00183	ng/L	0.00131	0.0492
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.0037	ng/L	0.00125	0.0492
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.00283	ng/L	0.00131	0.0492
35822-46-9	1,2,3,4,6,7,8-HpCDD		0.0792	ng/L	0.00205	0.0492
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1.08	ng/L	0.00502	0.0984
51207-31-9	2,3,7,8-TCDF	U	0.000486	ng/L	0.000486	0.00984
57117-41-6	1,2,3,7,8-PeCDF	JK	0.000433	ng/L	0.000319	0.0492
57117-31-4	2,3,4,7,8-PeCDF	JK	0.00065	ng/L	0.000301	0.0492
70648-26-9	1,2,3,4,7,8-HxCDF	JK	0.000709	ng/L	0.000463	0.0492
57117-44-9	1,2,3,6,7,8-HxCDF	JK	0.000531	ng/L	0.000465	0.0492
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.000866	ng/L	0.00049	0.0492
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.00063	ng/L	0.00063	0.0492
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.0157	ng/L	0.000754	0.0492
55673-89-7	1,2,3,4,7,8,9-HpCDF	JK	0.00132	ng/L	0.00107	0.0492
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0753	ng/L	0.00168	0.0984
41903-57-5	Total TeCDD	U	0.000563	ng/L	0.000563	0.00984
36088-22-9	Total PeCDD	JK	0.00185	ng/L	0.0005	0.0492
34465-46-8	Total HxCDD	JK	0.0241	ng/L	0.00125	0.0492
37871-00-4	Total HpCDD		0.202	ng/L	0.00205	0.0492
30402-14-3	Total TeCDF	JK	0.000571	ng/L	0.000486	0.00984
30402-15-4	Total PeCDF	JK	0.00886	ng/L	0.000293	0.0492
55684-94-1	Total HxCDF	JK	0.0145	ng/L	0.000463	0.0492
38998-75-3	Total HpCDF	K	0.0524	ng/L	0.000754	0.0492
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00341	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00375	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.69	1.97	ng/L	85.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.43	1.97	ng/L	72.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.54	1.97	ng/L	78.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.63	1.97	ng/L	82.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.68	1.97	ng/L	85.3	(23%-140%)
13C-OCDD		2.94	3.94	ng/L	74.6	(17%-157%)
13C-2,3,7,8-TCDF		1.73	1.97	ng/L	87.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.66	1.97	ng/L	84.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.59	1.97	ng/L	80.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.56	1.97	ng/L	79.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.59	1.97	ng/L	80.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.61	1.97	ng/L	81.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.71	1.97	ng/L	86.9	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123003**	**Date Collected:**	**03/22/2018 07:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0002S022**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 22:38**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-6**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1016 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.51	1.97	ng/L	76.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.57	1.97	ng/L	79.8	(26%-138%)
37Cl-2,3,7,8-TCDD		0.175	0.197	ng/L	88.6	(35%-197%)

Comments:

J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123004**	**Date Collected:**	**03/22/2018 09:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0007S010**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 23:26**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-7**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1029.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000616	ng/L	0.000616	0.00972
40321-76-4	1,2,3,7,8-PeCDD	U	0.000478	ng/L	0.000478	0.0486
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000764	ng/L	0.000764	0.0486
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000738	ng/L	0.000738	0.0486
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000773	ng/L	0.000773	0.0486
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0187	ng/L	0.00133	0.0486
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.251	ng/L	0.00274	0.0972
51207-31-9	2,3,7,8-TCDF	U	0.000447	ng/L	0.000447	0.00972
57117-41-6	1,2,3,7,8-PeCDF	U	0.000424	ng/L	0.000424	0.0486
57117-31-4	2,3,4,7,8-PeCDF	U	0.000367	ng/L	0.000367	0.0486
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000455	ng/L	0.000455	0.0486
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000441	ng/L	0.000441	0.0486
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000466	ng/L	0.000466	0.0486
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.000622	ng/L	0.000622	0.0486
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00394	ng/L	0.000484	0.0486
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000698	ng/L	0.000698	0.0486
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0145	ng/L	0.00168	0.0972
41903-57-5	Total TeCDD	U	0.000616	ng/L	0.000616	0.00972
36088-22-9	Total PeCDD	U	0.000478	ng/L	0.000478	0.0486
34465-46-8	Total HxCDD	JK	0.00455	ng/L	0.000738	0.0486
37871-00-4	Total HpCDD		0.052	ng/L	0.00133	0.0486
30402-14-3	Total TeCDF	U	0.000447	ng/L	0.000447	0.00972
30402-15-4	Total PeCDF	JK	0.00101	ng/L	0.000293	0.0486
55684-94-1	Total HxCDF	JK	0.00243	ng/L	0.000441	0.0486
38998-75-3	Total HpCDF	J	0.0118	ng/L	0.000484	0.0486
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000306	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00115	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.81	1.94	ng/L	93.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.52	1.94	ng/L	78.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.63	1.94	ng/L	83.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.70	1.94	ng/L	87.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.74	1.94	ng/L	89.5	(23%-140%)
13C-OCDD		2.93	3.89	ng/L	75.4	(17%-157%)
13C-2,3,7,8-TCDF		1.89	1.94	ng/L	97.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.75	1.94	ng/L	89.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.71	1.94	ng/L	87.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.65	1.94	ng/L	85.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.69	1.94	ng/L	87.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.71	1.94	ng/L	87.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.77	1.94	ng/L	91.1	(29%-147%)

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123004**	**Date Collected:**	**03/22/2018 09:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0007S010**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 23:26**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-7**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1029.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.57	1.94	ng/L	80.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.60	1.94	ng/L	82.1	(26%-138%)
37Cl-2,3,7,8-TCDD		0.179	0.194	ng/L	92.2	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123005**	**Date Collected:**	**03/22/2018 09:20**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0008S013**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 00:15**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-8**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1053.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000678	ng/L	0.000678	0.00949
40321-76-4	1,2,3,7,8-PeCDD	U	0.000446	ng/L	0.000446	0.0475
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000636	ng/L	0.000636	0.0475
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000575	ng/L	0.000575	0.0475
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000623	ng/L	0.000623	0.0475
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.00697	ng/L	0.000892	0.0475
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.105	ng/L	0.00156	0.0949
51207-31-9	2,3,7,8-TCDF	U	0.000516	ng/L	0.000516	0.00949
57117-41-6	1,2,3,7,8-PeCDF	U	0.000298	ng/L	0.000298	0.0475
57117-31-4	2,3,4,7,8-PeCDF	U	0.00027	ng/L	0.00027	0.0475
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000372	ng/L	0.000372	0.0475
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000338	ng/L	0.000338	0.0475
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000382	ng/L	0.000382	0.0475
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.000778	ng/L	0.000509	0.0475
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	0.00139	ng/L	0.000361	0.0475
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000562	ng/L	0.000562	0.0475
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.00617	ng/L	0.00135	0.0949
41903-57-5	Total TeCDD	U	0.000678	ng/L	0.000678	0.00949
36088-22-9	Total PeCDD	U	0.000446	ng/L	0.000446	0.0475
34465-46-8	Total HxCDD	JK	0.0023	ng/L	0.000575	0.0475
37871-00-4	Total HpCDD	JK	0.0189	ng/L	0.000892	0.0475
30402-14-3	Total TeCDF	U	0.000516	ng/L	0.000516	0.00949
30402-15-4	Total PeCDF	U	0.00027	ng/L	0.00027	0.0475
55684-94-1	Total HxCDF	JK	0.00125	ng/L	0.000338	0.0475
38998-75-3	Total HpCDF	JK	0.00372	ng/L	0.000361	0.0475
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000195	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.000976	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.56	1.90	ng/L	82.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.40	1.90	ng/L	73.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.52	1.90	ng/L	80.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.54	1.90	ng/L	81.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.54	1.90	ng/L	80.9	(23%-140%)
13C-OCDD		2.61	3.80	ng/L	68.7	(17%-157%)
13C-2,3,7,8-TCDF		1.59	1.90	ng/L	84.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.62	1.90	ng/L	85.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.53	1.90	ng/L	80.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.46	1.90	ng/L	77.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.54	1.90	ng/L	81.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.51	1.90	ng/L	79.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.57	1.90	ng/L	82.7	(29%-147%)

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123005**	**Date Collected:**	**03/22/2018 09:20**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0008S013**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 00:15**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-8**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1053.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.42	1.90	ng/L	75.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.40	1.90	ng/L	73.6	(26%-138%)
37Cl-2,3,7,8-TCDD		0.174	0.190	ng/L	91.8	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123006**	**Date Collected:**	**03/22/2018 08:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0009S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:03**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-9**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1024.9 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000562	ng/L	0.000562	0.00976
40321-76-4	1,2,3,7,8-PeCDD	U	0.000355	ng/L	0.000355	0.0488
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000531	ng/L	0.000531	0.0488
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.000956	ng/L	0.000541	0.0488
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000552	ng/L	0.000552	0.0488
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.0166	ng/L	0.00113	0.0488
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.220	ng/L	0.00265	0.0976
51207-31-9	2,3,7,8-TCDF	U	0.000336	ng/L	0.000336	0.00976
57117-41-6	1,2,3,7,8-PeCDF	JK	0.000332	ng/L	0.000263	0.0488
57117-31-4	2,3,4,7,8-PeCDF	U	0.000248	ng/L	0.000248	0.0488
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000433	ng/L	0.000433	0.0488
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000427	ng/L	0.000427	0.0488
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000453	ng/L	0.000453	0.0488
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.000578	ng/L	0.000578	0.0488
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00341	ng/L	0.000704	0.0488
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.00104	ng/L	0.00104	0.0488
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0131	ng/L	0.0016	0.0976
41903-57-5	Total TeCDD	U	0.000562	ng/L	0.000562	0.00976
36088-22-9	Total PeCDD	U	0.000355	ng/L	0.000355	0.0488
34465-46-8	Total HxCDD	JK	0.00502	ng/L	0.000531	0.0488
37871-00-4	Total HpCDD	JK	0.048	ng/L	0.00113	0.0488
30402-14-3	Total TeCDF	U	0.000336	ng/L	0.000336	0.00976
30402-15-4	Total PeCDF	JK	0.00127	ng/L	0.000248	0.0488
55684-94-1	Total HxCDF	J	0.00209	ng/L	0.000427	0.0488
38998-75-3	Total HpCDF	J	0.010	ng/L	0.000704	0.0488
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000375	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00104	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.92	1.95	ng/L	98.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.55	1.95	ng/L	79.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.66	1.95	ng/L	84.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.72	1.95	ng/L	88.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.70	1.95	ng/L	87.3	(23%-140%)
13C-OCDD		2.93	3.90	ng/L	75.0	(17%-157%)
13C-2,3,7,8-TCDF		1.97	1.95	ng/L	101	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.84	1.95	ng/L	94.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.72	1.95	ng/L	88.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.69	1.95	ng/L	86.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.73	1.95	ng/L	88.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.72	1.95	ng/L	88.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.88	1.95	ng/L	96.4	(29%-147%)

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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123006**	**Date Collected:**	**03/22/2018 08:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0009S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:03**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-9**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1024.9 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.55	1.95	ng/L	79.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.55	1.95	ng/L	79.5	(26%-138%)
37Cl-2,3,7,8-TCDD		0.193	0.195	ng/L	98.8	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Hi-Res Dioxins/Furans
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Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123007**	**Date Collected:**	**03/22/2018 14:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**FBQW1853Q001**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-10**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1060.8 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.00072	ng/L	0.00072	0.00943
40321-76-4	1,2,3,7,8-PeCDD	U	0.000494	ng/L	0.000494	0.0471
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000584	ng/L	0.000584	0.0471
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000552	ng/L	0.000552	0.0471
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000584	ng/L	0.000584	0.0471
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	0.000654	ng/L	0.000654	0.0471
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.00117	ng/L	0.00114	0.0943
51207-31-9	2,3,7,8-TCDF	U	0.000441	ng/L	0.000441	0.00943
57117-41-6	1,2,3,7,8-PeCDF	U	0.000322	ng/L	0.000322	0.0471
57117-31-4	2,3,4,7,8-PeCDF	U	0.000279	ng/L	0.000279	0.0471
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000341	ng/L	0.000341	0.0471
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000354	ng/L	0.000354	0.0471
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000358	ng/L	0.000358	0.0471
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.000773	ng/L	0.000469	0.0471
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	0.000394	ng/L	0.000394	0.0471
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000586	ng/L	0.000586	0.0471
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.00112	ng/L	0.00112	0.0943
41903-57-5	Total TeCDD	U	0.00072	ng/L	0.00072	0.00943
36088-22-9	Total PeCDD	U	0.000494	ng/L	0.000494	0.0471
34465-46-8	Total HxCDD	JK	0.000603	ng/L	0.000552	0.0471
37871-00-4	Total HpCDD	U	0.000654	ng/L	0.000654	0.0471
30402-14-3	Total TeCDF	U	0.000441	ng/L	0.000441	0.00943
30402-15-4	Total PeCDF	U	0.000279	ng/L	0.000279	0.0471
55684-94-1	Total HxCDF	J	0.000773	ng/L	0.000341	0.0471
38998-75-3	Total HpCDF	U	0.000394	ng/L	0.000394	0.0471
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0000777	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.000901	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.25	1.89	ng/L	66.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.01	1.89	ng/L	53.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.07	1.89	ng/L	56.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.20	1.89	ng/L	63.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.19	1.89	ng/L	63.2	(23%-140%)
13C-OCDD		2.02	3.77	ng/L	53.6	(17%-157%)
13C-2,3,7,8-TCDF		1.27	1.89	ng/L	67.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.18	1.89	ng/L	62.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.14	1.89	ng/L	60.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.08	1.89	ng/L	57.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.13	1.89	ng/L	59.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.16	1.89	ng/L	61.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.22	1.89	ng/L	64.7	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123007**	**Date Collected:**	**03/22/2018 14:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**FBQW1853Q001**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-10**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1060.8 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.05	1.89	ng/L	55.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.09	1.89	ng/L	57.8	(26%-138%)
37Cl-2,3,7,8-TCDD		0.122	0.189	ng/L	64.7	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quality Control Summary

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Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 18-03-1974

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12020982	LCS for batch 37284	13C-2,3,7,8-TCDD		87.2	(20%-175%)
		13C-1,2,3,7,8-PeCDD		81.5	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		80.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		80.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		86.6	(22%-166%)
		13C-OCDD		80.1	(13%-199%)
		13C-2,3,7,8-TCDF		94.2	(22%-152%)
		13C-1,2,3,7,8-PeCDF		93.9	(21%-192%)
		13C-2,3,4,7,8-PeCDF		91.7	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		80.7	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		81.5	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		82.3	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		84.9	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		78.6	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		82.9	(20%-186%)
		37Cl-2,3,7,8-TCDD		89.0	(31%-191%)
12020983	LCSD for batch 37284	13C-2,3,7,8-TCDD		82.7	(20%-175%)
		13C-1,2,3,7,8-PeCDD		75.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		76.3	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		80.5	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		85.5	(22%-166%)
		13C-OCDD		77.4	(13%-199%)
		13C-2,3,7,8-TCDF		87.1	(22%-152%)
		13C-1,2,3,7,8-PeCDF		84.5	(21%-192%)
		13C-2,3,4,7,8-PeCDF		84.9	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		77.3	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		80.4	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		80.0	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		82.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		77.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		81.4	(20%-186%)
		37Cl-2,3,7,8-TCDD		84.9	(31%-191%)
12020981	MB for batch 37284	13C-2,3,7,8-TCDD		85.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		78.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.7	(23%-140%)
		13C-OCDD		80.2	(17%-157%)
		13C-2,3,7,8-TCDF		91.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		90.9	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		83.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		84.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		87.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		85.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		88.1	(35%-197%)
13123001	A2BMP0006S005	13C-2,3,7,8-TCDD		89.2	(25%-164%)

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Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 18-03-1974

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
13123001	A2BMP0006S005	13C-1,2,3,7,8-PeCDD		74.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		70.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		76.7	(23%-140%)
		13C-OCDD		66.5	(17%-157%)
		13C-2,3,7,8-TCDF		91.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		87.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		82.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		72.5	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		79.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		76.2	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		69.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		71.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		88.3	(35%-197%)
13123002	A2BMP0007S011	13C-2,3,7,8-TCDD		89.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		76.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		77.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		88.4	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.0	(23%-140%)
		13C-OCDD		71.8	(17%-157%)
		13C-2,3,7,8-TCDF		94.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		85.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		87.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		83.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		77.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		90.4	(35%-197%)
13123003	EVBMP0002S022	13C-2,3,7,8-TCDD		85.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		72.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		78.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.3	(23%-140%)
		13C-OCDD		74.6	(17%-157%)
		13C-2,3,7,8-TCDF		87.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		80.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		80.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		86.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		79.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		88.6	(35%-197%)
13123004	EVBMP0007S010	13C-2,3,7,8-TCDD		93.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		78.2	(25%-181%)

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Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 18-03-1974

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
13123004	EVBMP0007S010	13C-1,2,3,4,7,8-HxCDD		83.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		87.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		89.5	(23%-140%)
		13C-OCDD		75.4	(17%-157%)
		13C-2,3,7,8-TCDF		97.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		85.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		87.2	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		87.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		91.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		82.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		92.2	(35%-197%)
13123005	EVBMP0008S013	13C-2,3,7,8-TCDD		82.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		73.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		81.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		80.9	(23%-140%)
		13C-OCDD		68.7	(17%-157%)
		13C-2,3,7,8-TCDF		84.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		85.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		80.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		81.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		75.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		73.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		91.8	(35%-197%)
13123006	EVBMP0009S011	13C-2,3,7,8-TCDD		98.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		79.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		88.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		87.3	(23%-140%)
		13C-OCDD		75.0	(17%-157%)
		13C-2,3,7,8-TCDF		101	(24%-169%)
		13C-1,2,3,7,8-PeCDF		94.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		88.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		86.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		88.6	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		88.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		96.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		79.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		98.8	(35%-197%)
13123007	FBQW1853Q001	13C-2,3,7,8-TCDD		66.5	(25%-164%)
		13C-1,2,3,7,8-PeCDD		53.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		56.5	(32%-141%)

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Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 18-03-1974

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
13123007	FBQW1853Q001	13C-1,2,3,6,7,8-HxCDD		63.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		63.2	(23%-140%)
		13C-OCDD		53.6	(17%-157%)
		13C-2,3,7,8-TCDF		67.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		62.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		60.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		57.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		59.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		61.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		64.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		55.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		57.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		64.7	(35%-197%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

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Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number: 18-03-1974 **Sample Type:** Laboratory Control Sample
Client ID: LCS for batch 37284 **Matrix:** WATER
Lab Sample ID: 12020982
Instrument: HRP763 **Analysis Date:** 03/29/2018 21:15 **Dilution:** 1
Analyst: CLP **Prep Batch ID:** 37284
Batch ID: 37301

CAS No.		Parmname	Amount Added ng/L	Spike Conc. ng/L	Recovery %	Acceptance Limits
1746-01-6	LCS	2,3,7,8-TCDD	0.200	0.219	109	67-158
40321-76-4	LCS	1,2,3,7,8-PeCDD	1.00	1.20	120	70-142
39227-28-6	LCS	1,2,3,4,7,8-HxCDD	1.00	1.14	114	70-164
57653-85-7	LCS	1,2,3,6,7,8-HxCDD	1.00	1.13	113	74-134
19408-74-3	LCS	1,2,3,7,8,9-HxCDD	1.00	1.16	116	64-162
35822-46-9	LCS	1,2,3,4,6,7,8-HpCDD	1.00	0.989	98.9	70-140
3268-87-9	LCS	1,2,3,4,6,7,8,9-OCDD	2.00	2.16	108	78-144
51207-31-9	LCS	2,3,7,8-TCDF	0.200	0.199	99.4	75-158
57117-41-6	LCS	1,2,3,7,8-PeCDF	1.00	1.01	101	80-134
57117-31-4	LCS	2,3,4,7,8-PeCDF	1.00	1.01	101	68-160
70648-26-9	LCS	1,2,3,4,7,8-HxCDF	1.00	1.09	109	72-134
57117-44-9	LCS	1,2,3,6,7,8-HxCDF	1.00	1.09	109	84-130
60851-34-5	LCS	2,3,4,6,7,8-HxCDF	1.00	1.10	110	70-156
72918-21-9	LCS	1,2,3,7,8,9-HxCDF	1.00	1.11	111	78-130
67562-39-4	LCS	1,2,3,4,6,7,8-HpCDF	1.00	1.08	108	82-122
55673-89-7	LCS	1,2,3,4,7,8,9-HpCDF	1.00	1.13	113	78-138
39001-02-0	LCS	1,2,3,4,6,7,8,9-OCDF	2.00	2.19	109	63-170

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Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number: 18-03-1974 **Sample Type:** Laboratory Control Sample Duplicate
Client ID: LCSD for batch 37284 **Matrix:** WATER
Lab Sample ID: 12020983
Instrument: HRP763 **Analysis Date:** 03/29/2018 22:03 **Dilution:** 1
Analyst: CLP **Prep Batch ID:** 37284
Batch ID: 37301

CAS No.		Parmname	Amount Added ng/L	Spike Conc. ng/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD	2,3,7,8-TCDD	0.200	0.210	105	67-158	4.23	0-20
40321-76-4	LCSD	1,2,3,7,8-PeCDD	1.00	1.19	119	70-142	0.453	0-20
39227-28-6	LCSD	1,2,3,4,7,8-HxCDD	1.00	1.14	114	70-164	0.214	0-20
57653-85-7	LCSD	1,2,3,6,7,8-HxCDD	1.00	1.12	112	74-134	0.705	0-20
19408-74-3	LCSD	1,2,3,7,8,9-HxCDD	1.00	1.15	115	64-162	0.974	0-20
35822-46-9	LCSD	1,2,3,4,6,7,8-HpCDD	1.00	0.985	98.5	70-140	0.383	0-20
3268-87-9	LCSD	1,2,3,4,6,7,8,9-OCDD	2.00	2.16	108	78-144	0.260	0-20
51207-31-9	LCSD	2,3,7,8-TCDF	0.200	0.195	97.4	75-158	1.98	0-20
57117-41-6	LCSD	1,2,3,7,8-PeCDF	1.00	1.04	104	80-134	2.78	0-20
57117-31-4	LCSD	2,3,4,7,8-PeCDF	1.00	1.01	101	68-160	0.913	0-20
70648-26-9	LCSD	1,2,3,4,7,8-HxCDF	1.00	1.10	110	72-134	0.277	0-20
57117-44-9	LCSD	1,2,3,6,7,8-HxCDF	1.00	1.10	110	84-130	0.971	0-20
60851-34-5	LCSD	2,3,4,6,7,8-HxCDF	1.00	1.10	110	70-156	0.843	0-20
72918-21-9	LCSD	1,2,3,7,8,9-HxCDF	1.00	1.11	111	78-130	0.0306	0-20
67562-39-4	LCSD	1,2,3,4,6,7,8-HpCDF	1.00	1.08	108	82-122	0.447	0-20
55673-89-7	LCSD	1,2,3,4,7,8,9-HpCDF	1.00	1.08	108	78-138	4.73	0-20
39001-02-0	LCSD	1,2,3,4,6,7,8,9-OCDF	2.00	2.20	110	63-170	0.554	0-20

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Method Blank Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Matrix:**	**WATER**
Client ID:	**MB for batch 37284**	**Instrument ID:**	**HRP763**	**Data File:**	**b28mar18b_4-3**
Lab Sample ID:	**12020981**	**Prep Date:**	**28-MAR-18**	**Analyzed:**	**03/29/18 22:52**
Column:					

This method blank applies to the following samples and quality control samples:

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01	LCS for batch 37284	12020982	b28mar18b_4-1	03/29/18	2115
02	LCSD for batch 37284	12020983	b28mar18b_4-2	03/29/18	2203
03	A2BMP0006S005	13123001	b30mar18a_2-4	03/30/18	2101
04	A2BMP0007S011	13123002	b30mar18a_2-5	03/30/18	2149
05	EVBMP0002S022	13123003	b30mar18a_2-6	03/30/18	2238
06	EVBMP0007S010	13123004	b30mar18a_2-7	03/30/18	2326
07	EVBMP0008S013	13123005	b30mar18a_2-8	03/31/18	0015
08	EVBMP0009S011	13123006	b30mar18a_2-9	03/31/18	0103
09	FBQW1853Q001	13123007	b30mar18a_2-10	03/31/18	0152

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Sample Raw Data

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123001**	**Date Collected:**	**03/22/2018 11:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0006S005**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:01**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-4**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1033.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000658	ng/L	0.000658	0.00968
40321-76-4	1,2,3,7,8-PeCDD	JK	0.000542	ng/L	0.000482	0.0484
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00114	ng/L	0.000809	0.0484
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.00186	ng/L	0.000774	0.0484
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.00163	ng/L	0.000813	0.0484
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0323	ng/L	0.00117	0.0484
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.278	ng/L	0.0025	0.0968
51207-31-9	2,3,7,8-TCDF	U	0.00049	ng/L	0.00049	0.00968
57117-41-6	1,2,3,7,8-PeCDF	U	0.000337	ng/L	0.000337	0.0484
57117-31-4	2,3,4,7,8-PeCDF	U	0.000298	ng/L	0.000298	0.0484
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000465	ng/L	0.000465	0.0484
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000441	ng/L	0.000441	0.0484
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.000581	ng/L	0.000482	0.0484
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.00067	ng/L	0.00067	0.0484
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00587	ng/L	0.00054	0.0484
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000803	ng/L	0.000803	0.0484
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0115	ng/L	0.00183	0.0968
41903-57-5	Total TeCDD	U	0.000658	ng/L	0.000658	0.00968
36088-22-9	Total PeCDD	JK	0.000542	ng/L	0.000482	0.0484
34465-46-8	Total HxCDD	JK	0.0112	ng/L	0.000774	0.0484
37871-00-4	Total HpCDD		0.0575	ng/L	0.00117	0.0484
30402-14-3	Total TeCDF	U	0.00049	ng/L	0.00049	0.00968
30402-15-4	Total PeCDF	JK	0.00116	ng/L	0.000298	0.0484
55684-94-1	Total HxCDF	JK	0.00575	ng/L	0.000441	0.0484
38998-75-3	Total HpCDF	J	0.0135	ng/L	0.00054	0.0484
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00153	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00202	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.73	1.94	ng/L	89.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.45	1.94	ng/L	74.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.37	1.94	ng/L	70.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.59	1.94	ng/L	81.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.49	1.94	ng/L	76.7	(23%-140%)
13C-OCDD		2.58	3.87	ng/L	66.5	(17%-157%)
13C-2,3,7,8-TCDF		1.77	1.94	ng/L	91.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.69	1.94	ng/L	87.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.59	1.94	ng/L	82.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.40	1.94	ng/L	72.5	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.53	1.94	ng/L	79.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.47	1.94	ng/L	76.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.55	1.94	ng/L	80.1	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123001**	**Date Collected:**	**03/22/2018 11:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0006S005**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:01**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-4**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1033.1 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.35	1.94	ng/L	69.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.38	1.94	ng/L	71.1	(26%-138%)
37Cl-2,3,7,8-TCDD		0.171	0.194	ng/L	88.3	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 10:54:27 Eastern Standard Time
Printed: Wednesday, April 04, 2018 10:54:49 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD							NO		0.0340		1598			1158			
2	12378-PeCDD	2.30e2	1.15e2	3.45e2	33.61	1.000	1.99	YES	0.028	0.0249	7.07e3	1519	4.7	3.70e3	1113	3.3	bb	bb
3	123478-HxCDD	3.23e2	2.75e2	5.97e2	36.06	1.000	1.17	NO	0.059	0.0418	7.33e3	1792	4.1	5.82e3	1613	3.6	bd	bd
4	123678-HxCDD	6.39e2	5.87e2	1.23e3	36.17	1.001	1.09	NO	0.096	0.0400	1.16e4	1792	6.5	1.22e4	1613	7.6	db	db
5	123789-HxCDD	5.38e2	3.97e2	9.35e2	36.37	1.006	1.36	NO	0.084	0.0420	9.97e3	1792	5.6	1.02e4	1613	6.3	bb	bb
6	1234678-HpCDD	8.33e3	7.71e3	1.60e4	39.24	1.001	1.08	NO	1.668	0.0604	1.21e5	1704	70.8	1.22e5	1450	84.1	bb	bd
7	OCDD	5.04e4	5.42e4	1.05e5	43.14	1.000	0.93	NO	14.357	0.129	5.42e5	1792	302.5	5.73e5	1850	309.7	bd	bd
8	2378-TCDF	9.18e1	6.84e1	1.60e2	29.51	1.002	1.34	YES	0.007	0.0253	2.05e3	915	2.2	3.61e3	1695	2.1	bb	bb
9	12378-PeCDF	2.19e2	9.70e1	3.16e2	32.84	1.000	2.26	YES	0.016	0.0174	3.96e3	1182	3.4	3.12e3	1693	1.8	bb	bb
10	23478-PeCDF	1.74e2	1.51e2	3.25e2	33.43	1.000	1.15	YES	0.016	0.0154	3.14e3	1182	2.7	3.81e3	1693	2.2	bb	MM
11	123478-HxCDF	1.31e2	1.16e2	2.47e2	35.38	1.000	1.13	NO	0.019	0.0240	3.00e3	1385	2.2	2.41e3	1215	2.0	bd	bd
12	123678-HxCDF	1.29e2	8.83e1	2.18e2	35.48	1.000	1.47	YES	0.014	0.0228	2.44e3	1385	1.8	2.99e3	1215	2.5	db	db
13	234678-HxCDF	2.18e2	2.02e2	4.21e2	35.94	1.000	1.08	NO	0.030	0.0249	5.36e3	1385	3.9	6.36e3	1215	5.2	MM	bb
14	123789-HxCDF	1.91e2	2.31e2	4.22e2	36.69	1.001	0.83	YES	0.034	0.0346	5.98e3	1385	4.3	3.18e3	1215	2.6	bb	MM
15	1234678-HpCDF	1.66e3	1.61e3	3.27e3	38.06	1.000	1.03	NO	0.303	0.0279	3.11e4	1064	29.2	2.62e4	788	33.3	bb	bd
16	1234789-HpCDF							NO		0.0415		1064			788			
17	OCDF	2.10e3	2.29e3	4.38e3	43.41	1.007	0.92	NO	0.594	0.0947	2.08e4	1404	14.8	2.52e4	1314	19.2	MM	MM
18	13C-2378-TCDD	9.50e5	1.25e6	2.20e6	30.39	1.024	0.76	NO	89.156	0.0767	9.83e6	4894	2008.5	1.30e7	3204	4058.6	bb	bb
19	13C-12378-PeCDD	9.55e5	6.03e5	1.56e6	33.61	1.133	1.58	NO	74.949	0.0878	2.05e7	4407	4661.5	1.29e7	3404	3775.7	bb	bb
20	13C-123478-HxCDD	6.64e5	5.40e5	1.20e6	36.06	0.991	1.23	NO	70.648	0.137	1.34e7	8445	1588.8	1.09e7	5672	1913.6	bd	bd
21	13C-123678-HxCDD	8.44e5	6.83e5	1.53e6	36.15	0.994	1.24	NO	81.884	0.125	1.40e7	8445	1656.6	1.13e7	5672	1987.4	dd	dd
22	13C-1234678-HpCDD	4.82e5	4.77e5	9.59e5	39.22	1.078	1.01	NO	76.716	0.150	6.54e6	5576	1173.5	6.10e6	5711	1068.6	bb	bd
23	13C-OCDD	7.46e5	8.56e5	1.60e6	43.13	1.186	0.87	NO	133.036	0.151	7.24e6	5789	1251.5	8.43e6	5204	1619.7	bb	bd
24	13C-2378-TCDF	1.15e6	1.49e6	2.64e6	29.44	0.992	0.78	NO	91.390	0.0926	1.22e7	7293	1679.6	1.58e7	4158	3792.5	bb	bb
25	13C-12378-PeCDF	1.44e6	9.00e5	2.34e6	32.83	1.107	1.60	NO	87.065	0.102	3.10e7	5830	5311.4	2.03e7	5946	3408.0	bd	bb
26	13C-23478-PeCDF	1.34e6	8.50e5	2.19e6	33.42	1.127	1.57	NO	82.060	0.103	3.09e7	5830	5294.0	1.94e7	5946	3266.3	bb	bb
27	13C-123478-HxCDF	4.41e5	8.81e5	1.32e6	35.39	0.973	0.50	NO	72.502	0.157	9.04e6	8063	1121.4	1.79e7	9197	1943.1	bd	bd
28	13C-123678-HxCDF	5.54e5	1.12e6	1.67e6	35.48	0.975	0.50	NO	79.133	0.135	1.01e7	8063	1255.0	1.97e7	9197	2140.0	db	db
29	13C-234678-HxCDF	4.52e5	9.11e5	1.36e6	35.94	0.988	0.50	NO	76.156	0.160	8.37e6	8063	1038.4	1.65e7	9197	1798.2	bb	bd
30	13C-123789-HxCDF	4.44e5	8.68e5	1.31e6	36.65	1.008	0.51	NO	80.090	0.175	6.66e6	8063	826.1	1.30e7	9197	1409.9	bd	bd
31	13C-1234678-HpCDF	2.95e5	6.88e5	9.83e5	38.05	1.046	0.43	NO	69.743	0.130	4.55e6	3731	1220.5	1.05e7	7343	1430.7	bb	bd

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 10:54:27 Eastern Standard Time
Printed: Wednesday, April 04, 2018 10:54:49 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.40e5	5.56e5	7.96e5	39.83	1.095	0.43	NO	71.057	0.164	3.04e6	3731	814.5	7.02e6	7343	955.4	bd	bd
33	13C-1234-TCDD	9.41e5	1.22e6	2.16e6	29.67	0.000	0.77	NO	100.000	0.0875	1.01e7	4894	2057.1	1.32e7	3204	4131.0	bb	bb
34	13C-123789-HxCDD	9.16e5	7.43e5	1.66e6	36.37	0.000	1.23	NO	100.000	0.141	1.38e7	8445	1636.7	1.12e7	5672	1979.9	dd	dd
35	37Cl-2378-TCDD	2.22e5		2.22e5	30.40	1.025			8.827	0.0132	2.26e6	1414	1596.5				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 10:54:27 Eastern Standard Time
Printed: Wednesday, April 04, 2018 10:54:49 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetradioxins	5.00e1	7.50e1	1.25e2	29.21	0.67	NO	0.006	0.0340	1.55e3	1598	1.0	1.63e3	1158	1.4	bb	bb
2	Total-tetradioxins	5.62e1	7.18e1	1.28e2	28.80	0.78	NO	0.007	0.0340	2.04e3	1598	1.3	2.15e3	1158	1.9	bb	bb
3	Total-tetradioxins	5.22e1	5.43e1	1.06e2	28.39	0.96	YES	0.005	0.0340	1.85e3	1598	1.2	2.28e3	1158	2.0	bb	bb
4	Total-tetradioxins	9.08e1	7.13e1	1.62e2	27.16	1.27	YES	0.008	0.0340	1.83e3	1598	1.1	2.77e3	1158	2.4	bb	bd
5	Total-tetradioxins	6.75e1	5.37e1	1.21e2	25.26	1.26	YES	0.006	0.0340	1.97e3	1598	1.2	1.21e3	1158	1.0	bb	bb
6	Total-tetradioxins	1.13e2	7.42e1	1.87e2	31.38	1.52	YES	0.010	0.0340	2.12e3	1598	1.3	1.40e3	1158	1.2	bb	bb
7	Total-tetradioxins	2.92e2	6.02e1	3.53e2	29.46	4.86	YES	0.018	0.0340	3.96e3	1598	2.5	1.30e3	1158	1.1	db	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	2.30e2	1.15e2	3.45e2	33.61	1.99	YES	0.028	0.0249	7.07e3	1519	4.7	3.70e3	1113	3.3	bb	bb
2	Total-pentadioxins	1.91e2	6.83e1	2.59e2	33.41	2.79	YES	0.021	0.0249	5.04e3	1519	3.3	1.89e3	1113	1.7	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDD	5.38e2	3.97e2	9.35e2	36.37	1.36	NO	0.084	0.0420	9.97e3	1792	5.6	1.02e4	1613	6.3	bb	bb
2	123678-HxCDD	6.39e2	5.87e2	1.23e3	36.17	1.09	NO	0.096	0.0400	1.16e4	1792	6.5	1.22e4	1613	7.6	db	db
3	123478-HxCDD	3.23e2	2.75e2	5.97e2	36.06	1.17	NO	0.059	0.0418	7.33e3	1792	4.1	5.82e3	1613	3.6	bd	bd
4	Total-hexadioxins	2.58e2	1.73e2	4.32e2	35.96	1.49	YES	0.038	0.0412	4.52e3	1792	2.5	2.88e3	1613	1.8	bb	bb
5	Total-hexadioxins	1.65e3	1.09e3	2.75e3	35.54	1.51	YES	0.242	0.0412	2.27e4	1792	12.7	1.56e4	1613	9.7	db	MM
6	Total-hexadioxins	3.53e2	1.99e2	5.52e2	35.38	1.78	YES	0.049	0.0412	6.63e3	1792	3.7	2.87e3	1613	1.8	bd	MM
7	Total-hexadioxins	6.36e2	4.39e2	1.07e3	34.91	1.45	YES	0.095	0.0412	1.35e4	1792	7.5	8.43e3	1613	5.2	bb	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	1234678-HpCDD	8.33e3	7.71e3	1.60e4	39.24	1.08	NO	1.668	0.0604	1.21e5	1704	70.8	1.22e5	1450	84.1	bb	bd
2	Total-heptadioxins	6.26e3	6.26e3	1.25e4	38.38	1.00	NO	1.303	0.0604	8.84e4	1704	51.9	1.03e5	1450	71.2	bb	bd

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 10:54:27 Eastern Standard Time
Printed: Wednesday, April 04, 2018 10:54:49 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	6.55e1	6.70e1	1.33e2	31.34	0.98	YES	0.005	0.0253	1.43e3	915	1.6	1.83e3	1695	1.1	bb	bb
2	Total-tetrafurans	6.53e1	1.25e2	1.90e2	31.19	0.52	YES	0.008	0.0253	2.20e3	915	2.4	2.29e3	1695	1.4	bb	bb
3	2378-TCDF	9.18e1	6.84e1	1.60e2	29.51	1.34	YES	0.007	0.0253	2.05e3	915	2.2	3.61e3	1695	2.1	bb	bb
4	Total-tetrafurans	6.09e1	9.95e1	1.60e2	29.30	0.61	YES	0.007	0.0253	2.28e3	915	2.5	2.62e3	1695	1.5	bb	dd
5	Total-tetrafurans	7.56e1	5.95e1	1.35e2	26.87	1.27	YES	0.006	0.0253	3.31e3	915	3.6	1.63e3	1695	1.0	db	bb
6	Total-tetrafurans	8.39e1	9.79e1	1.82e2	26.69	0.86	NO	0.007	0.0253	1.89e3	915	2.1	1.74e3	1695	1.0	bd	bb

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	6.48e2	5.42e2	1.19e3	31.34	1.19	YES	0.060	0.0183	1.05e4	1273	8.3	1.09e4	1959	5.6	bb	bb
2	Total-pentafurans (F1)	6.87e1	8.20e1	1.51e2	27.58	0.84	YES	0.008	0.0183	3.17e3	1273	2.5	2.74e3	1959	1.4	bb	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	23478-PeCDF	1.74e2	1.51e2	3.25e2	33.43	1.15	YES	0.016	0.0154	3.14e3	1182	2.7	3.81e3	1693	2.2	bb	MM
2	12378-PeCDF	2.19e2	9.70e1	3.16e2	32.84	2.26	YES	0.016	0.0174	3.96e3	1182	3.4	3.12e3	1693	1.8	bb	bb
3	Total-pentafurans	1.80e2	1.26e2	3.05e2	32.32	1.43	NO	0.015	0.0163	3.70e3	1182	3.1	2.64e3	1693	1.6	MM	bb

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-hexafurans	9.75e2	6.25e2	1.60e3	34.63	1.56	YES	0.115	0.0263	2.17e4	1385	15.7	1.72e4	1215	14.2	db	db
2	Total-hexafurans	2.89e2	3.23e2	6.12e2	34.51	0.90	YES	0.044	0.0263	6.76e3	1385	4.9	1.11e4	1215	9.2	bd	bd
3	123789-HxCDF	1.91e2	2.31e2	4.22e2	36.69	0.83	YES	0.034	0.0346	5.98e3	1385	4.3	3.18e3	1215	2.6	bb	MM
4	234678-HxCDF	2.18e2	2.02e2	4.21e2	35.94	1.08	NO	0.030	0.0249	5.36e3	1385	3.9	6.36e3	1215	5.2	MM	bb
5	123678-HxCDF	1.29e2	8.83e1	2.18e2	35.48	1.47	YES	0.014	0.0228	2.44e3	1385	1.8	2.99e3	1215	2.5	db	db
6	123478-HxCDF	1.31e2	1.16e2	2.47e2	35.38	1.13	NO	0.019	0.0240	3.00e3	1385	2.2	2.41e3	1215	2.0	bd	bd
7	Total-hexafurans	8.81e2	6.25e2	1.51e3	35.02	1.41	NO	0.108	0.0263	1.80e4	1385	13.0	1.54e4	1215	12.7	bb	bb

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 10:54:27 Eastern Standard Time
Printed: Wednesday, April 04, 2018 10:54:49 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	1.96e3	1.90e3	3.86e3	38.55	1.04	NO	0.393	0.0340	3.35e4	1064	31.5	3.24e4	788	41.1	bd	bb
2	1234678-HpCDF	1.66e3	1.61e3	3.27e3	38.06	1.03	NO	0.303	0.0279	3.11e4	1064	29.2	2.62e4	788	33.3	bb	bd

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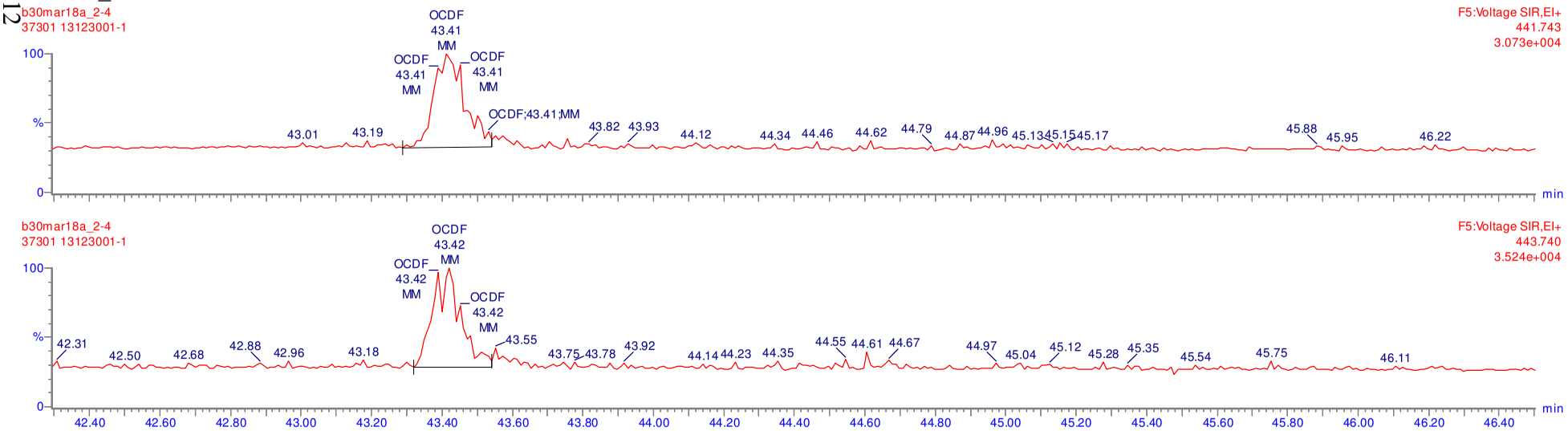
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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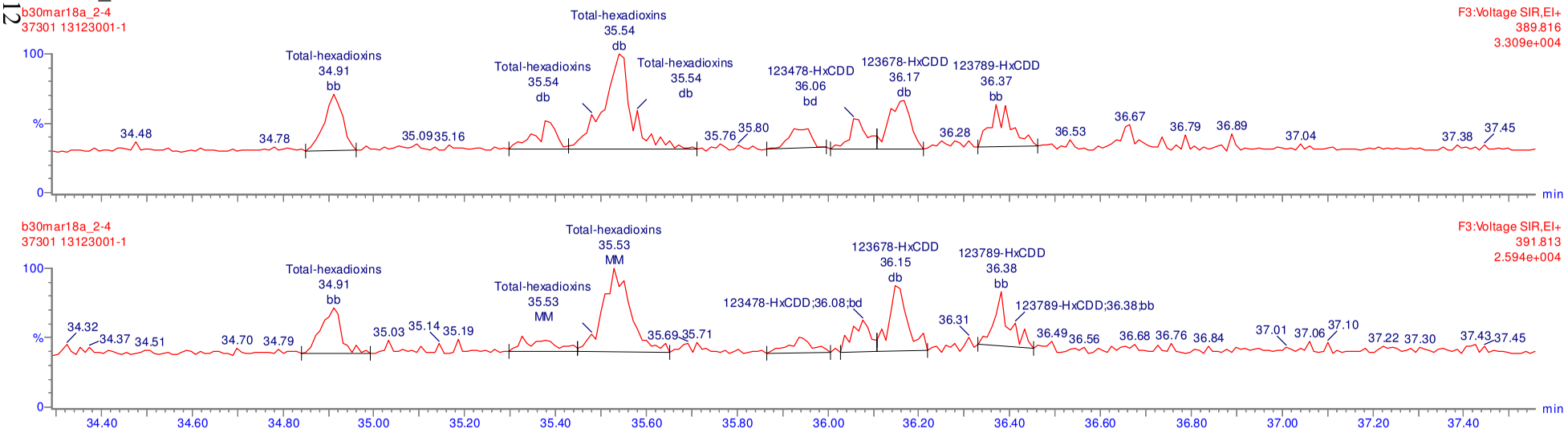
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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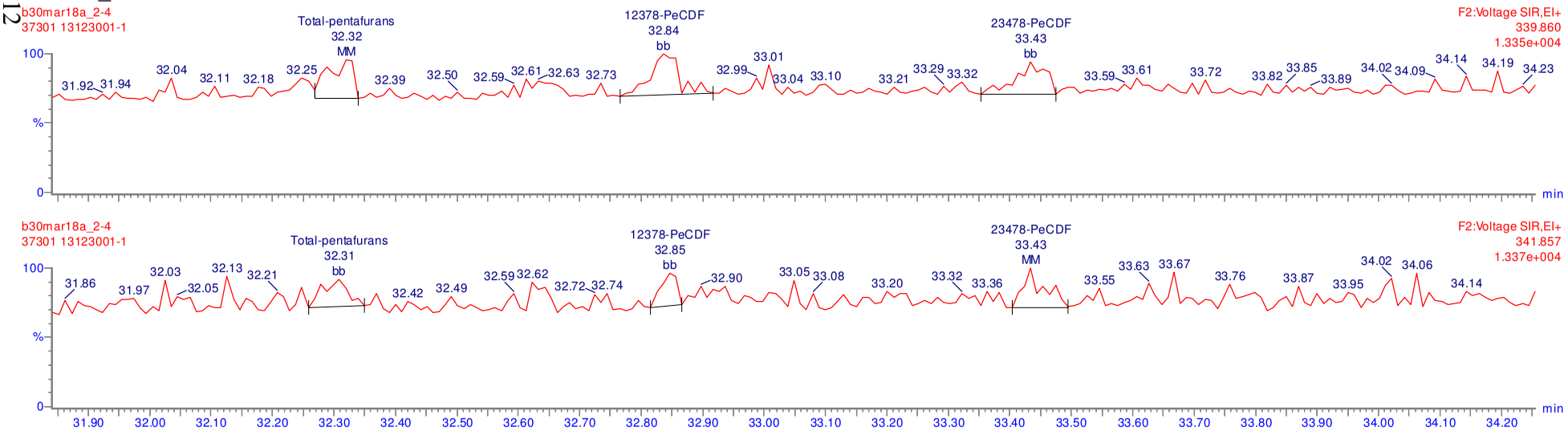
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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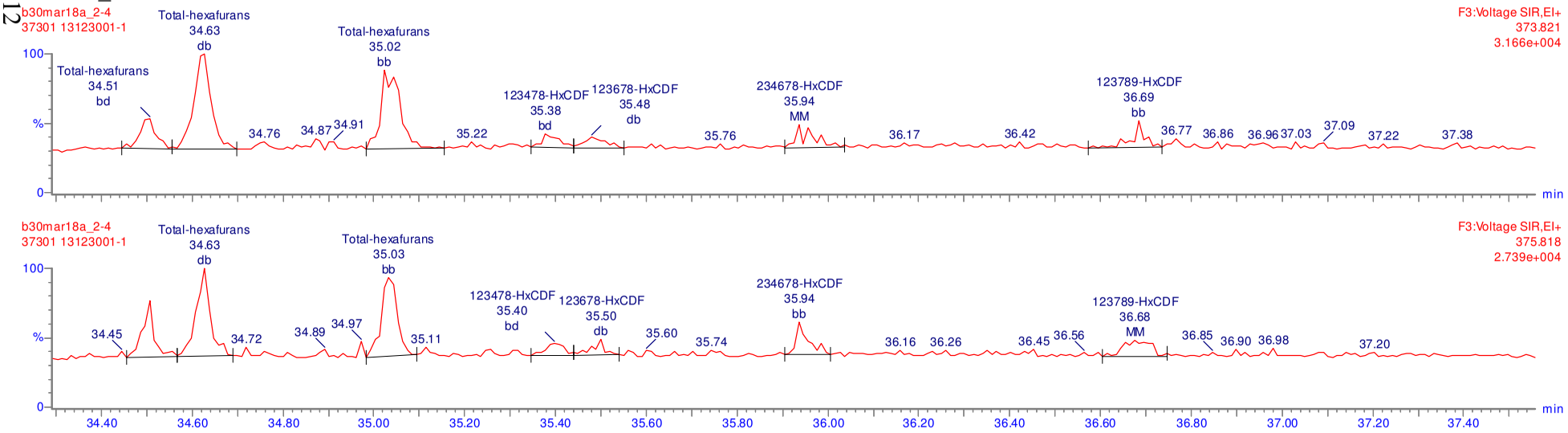
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

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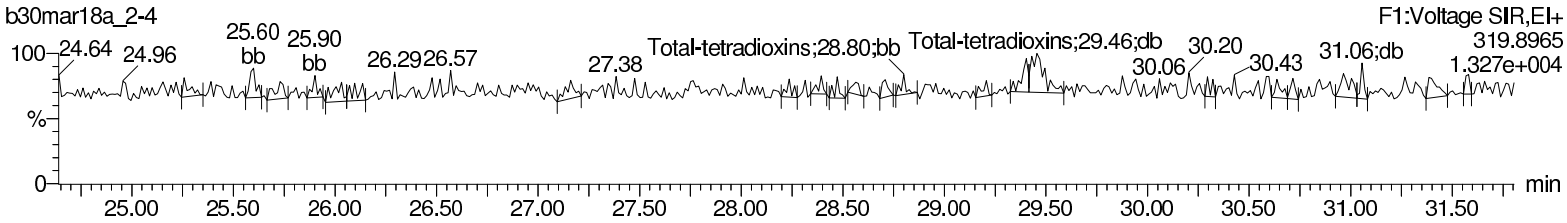

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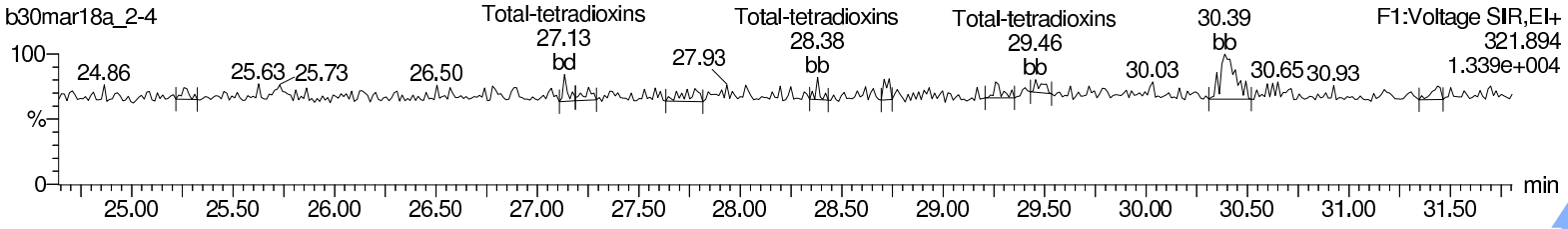

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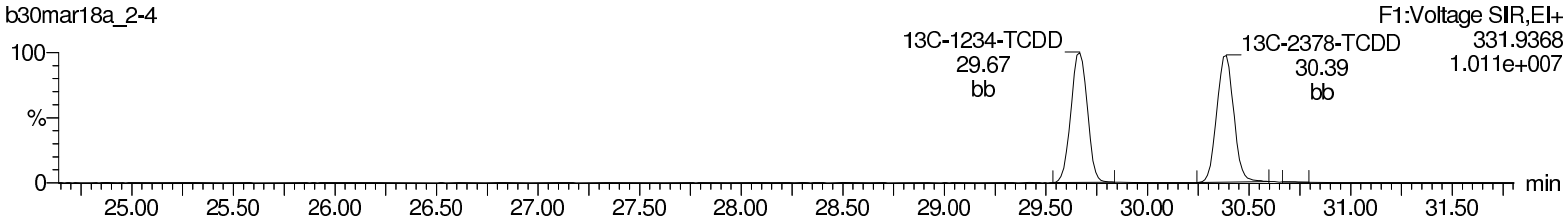

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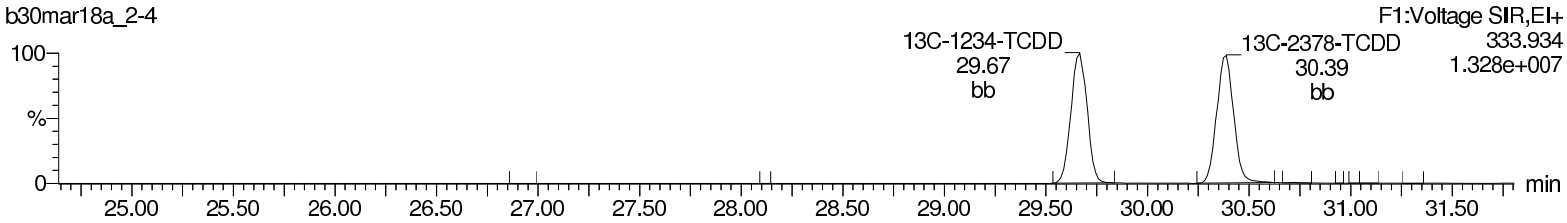

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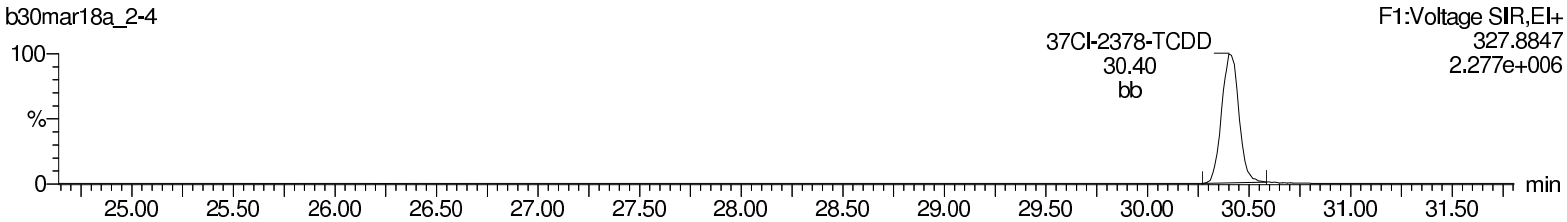

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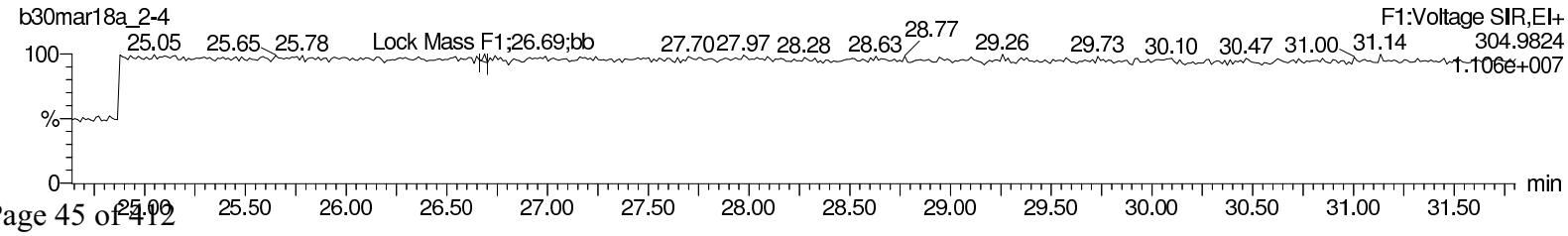

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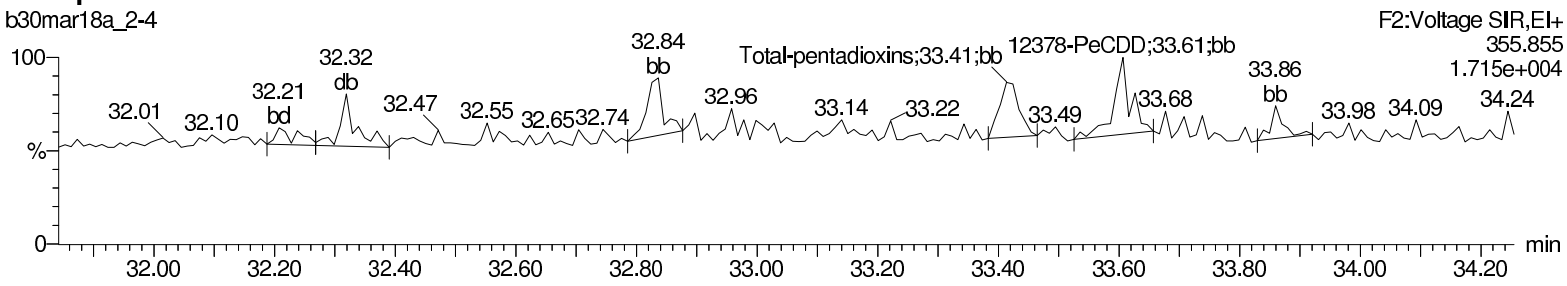
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



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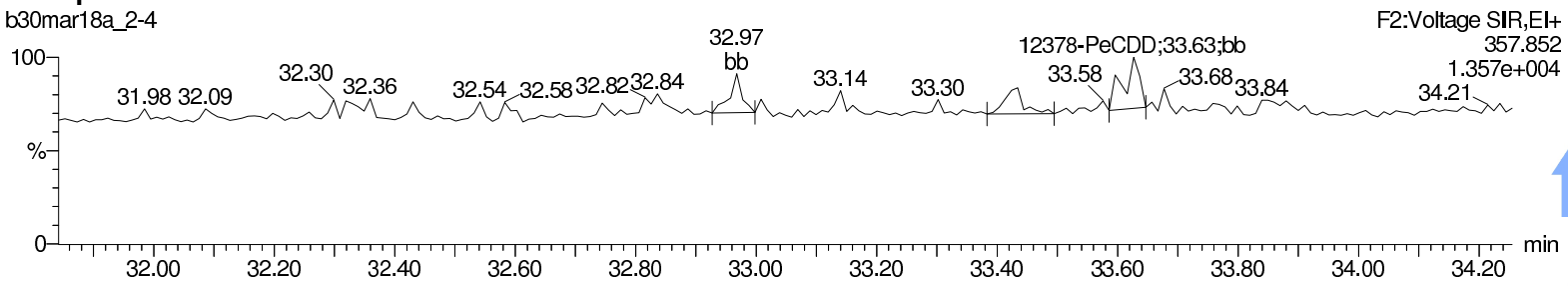

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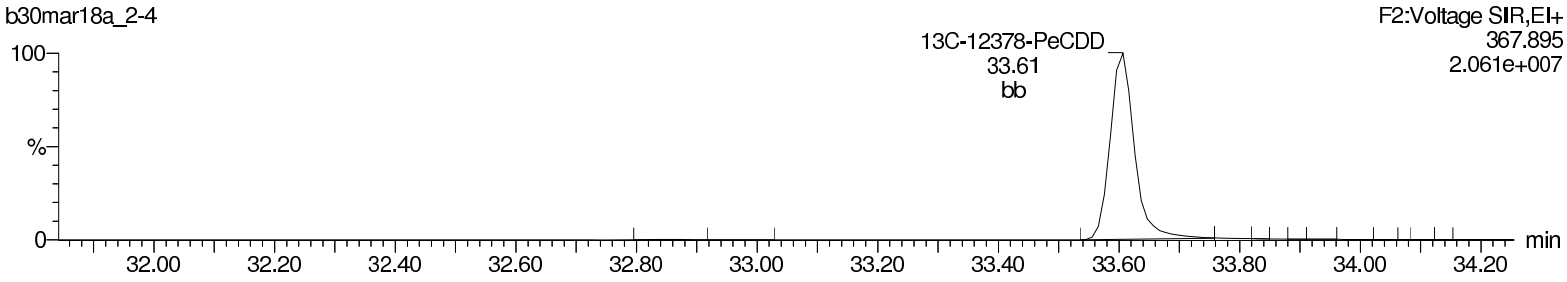

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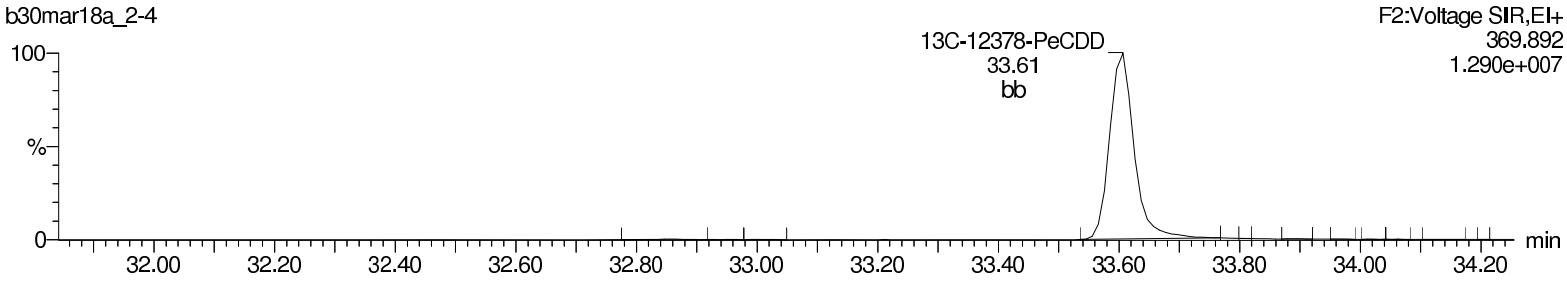

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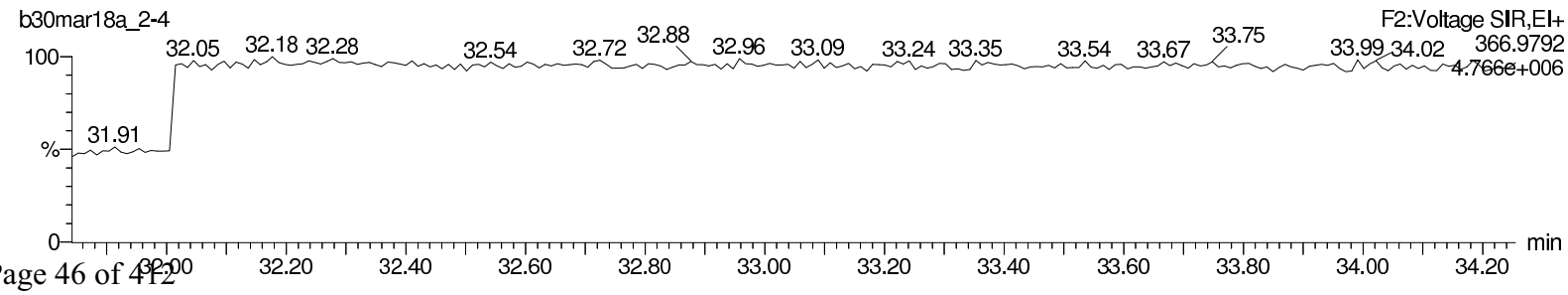

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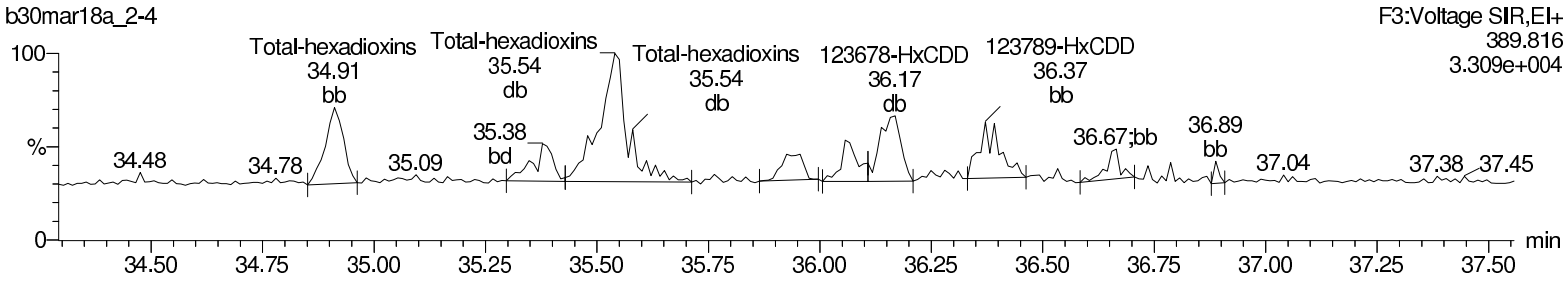
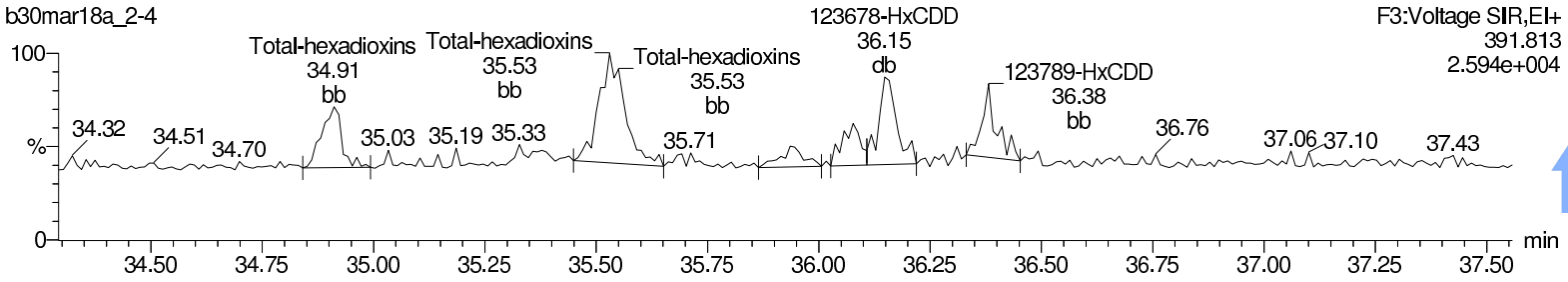
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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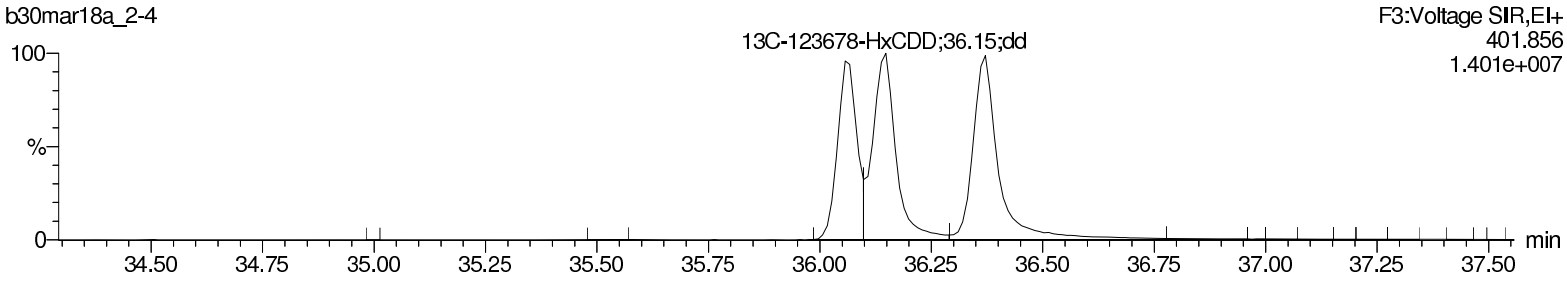

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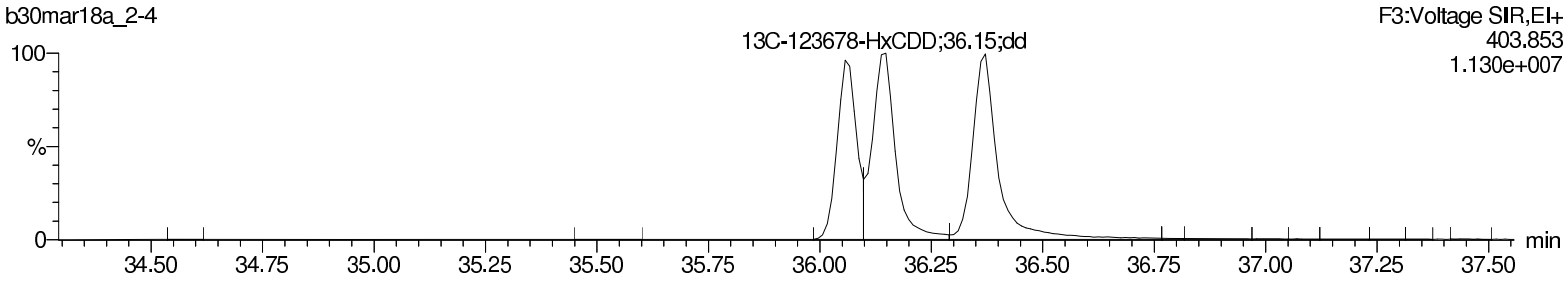

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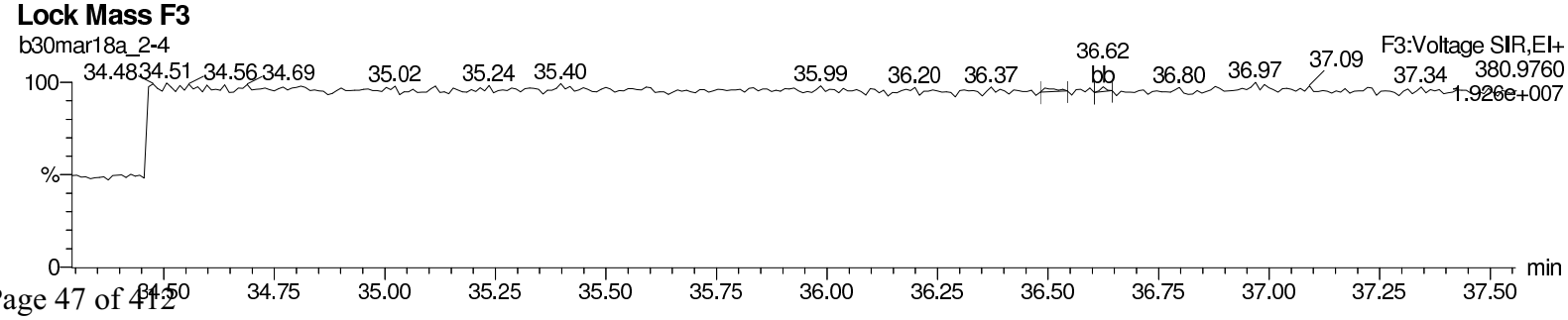

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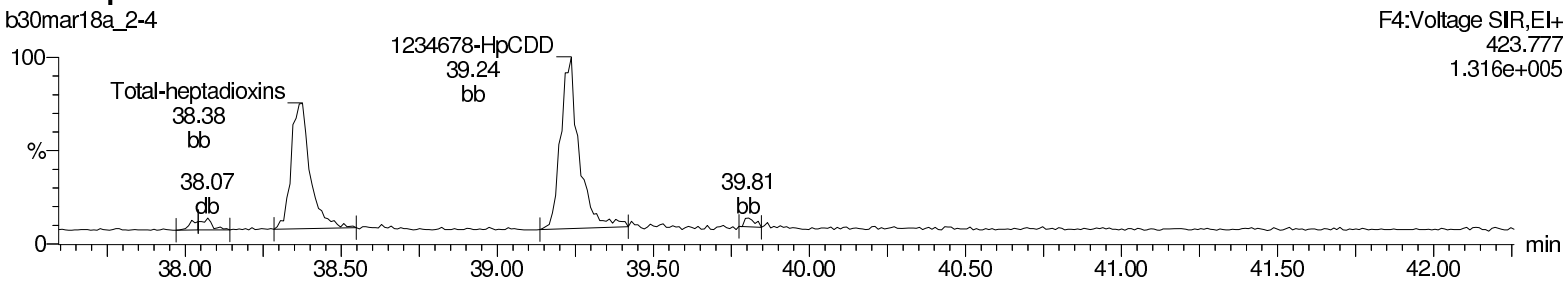
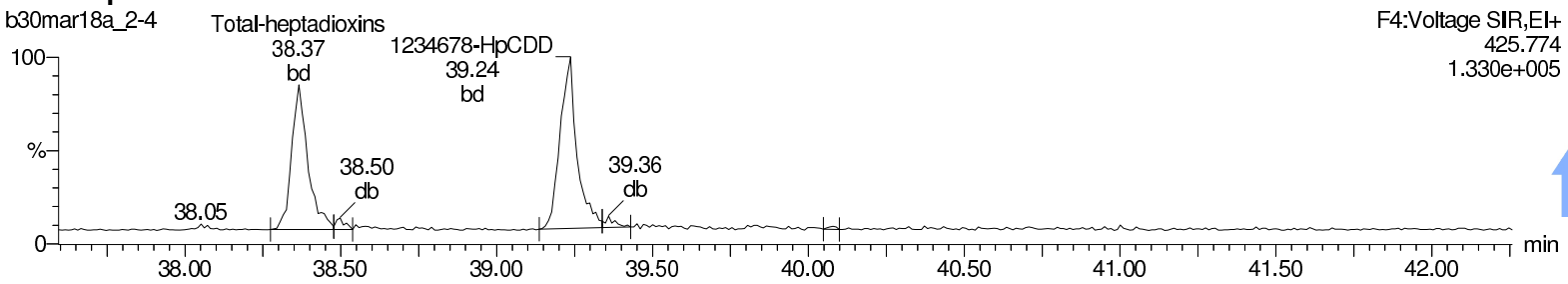
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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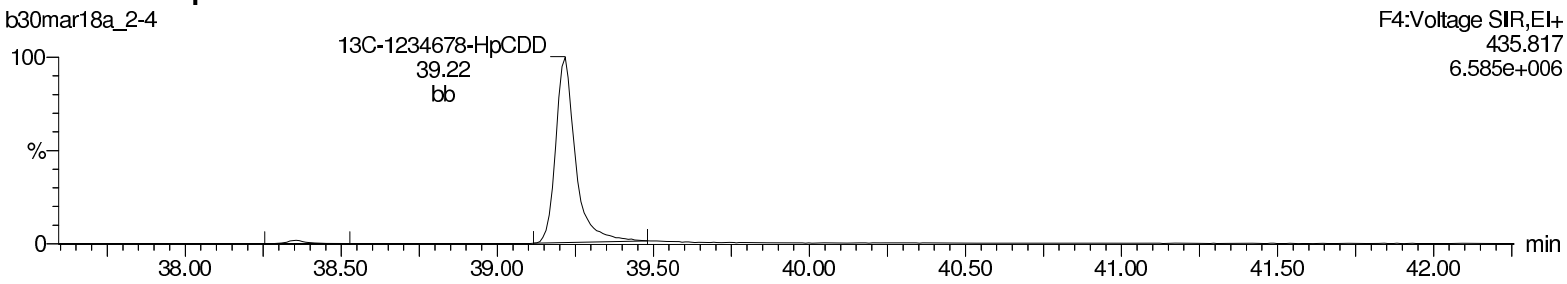

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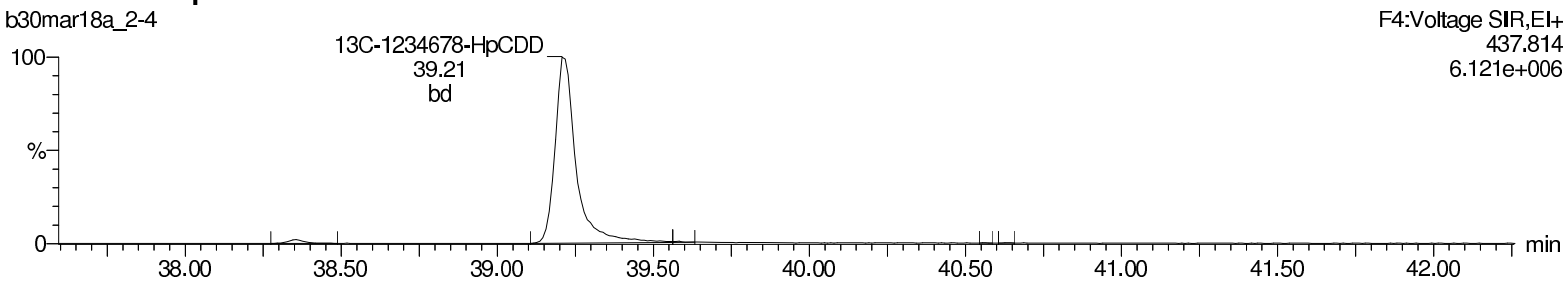

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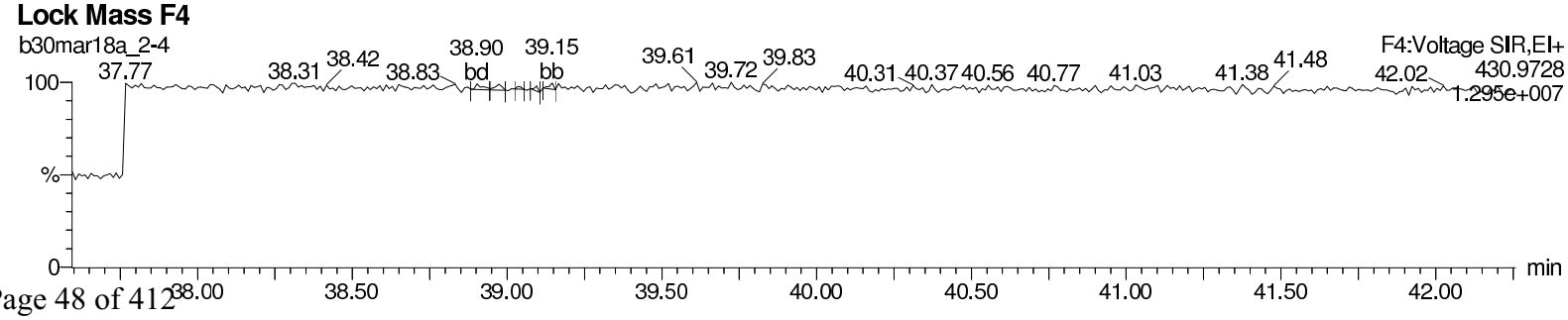

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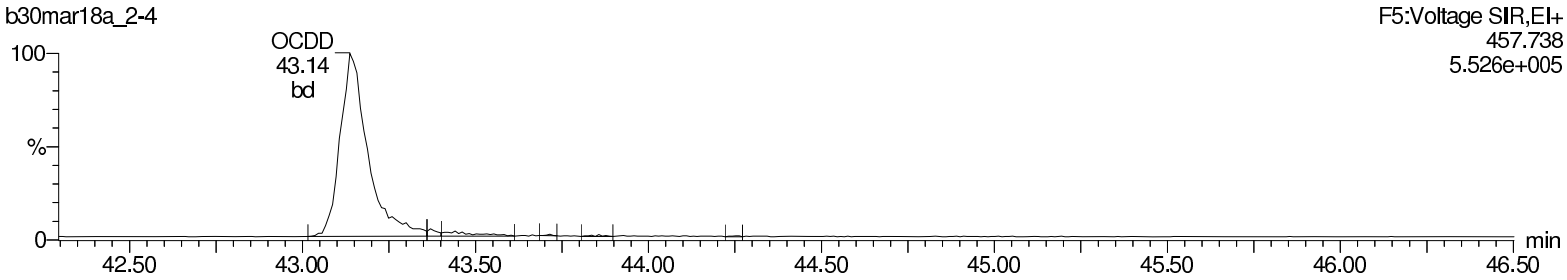
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



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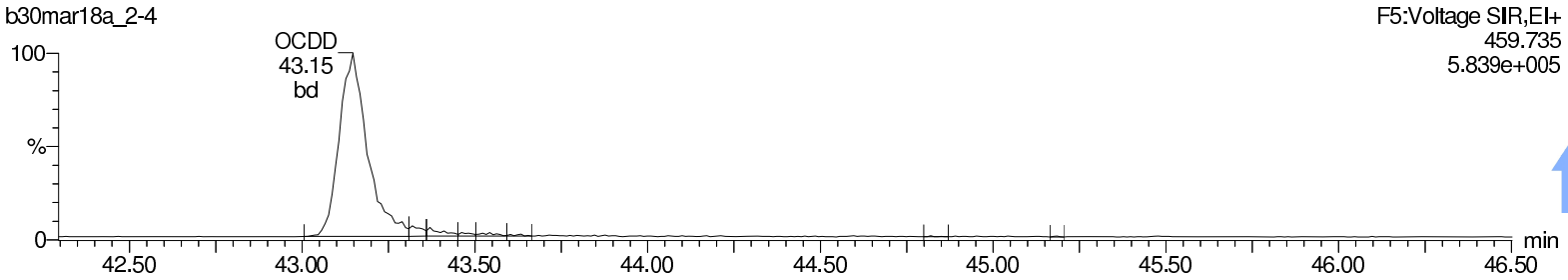

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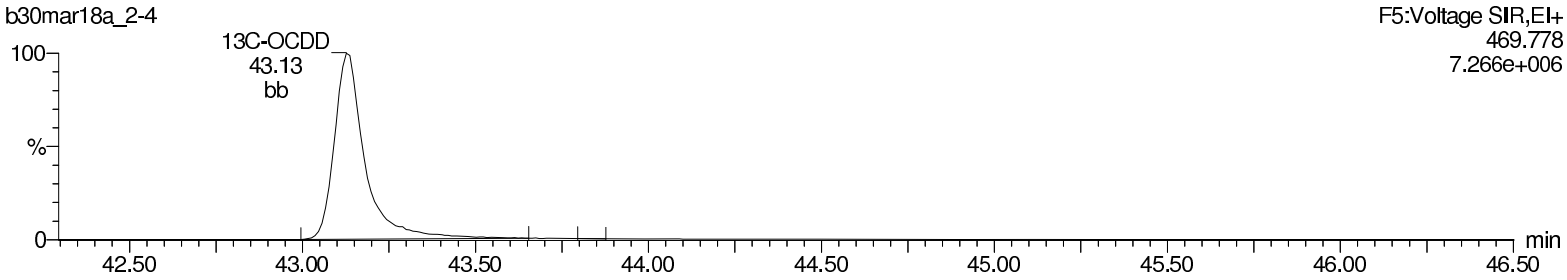

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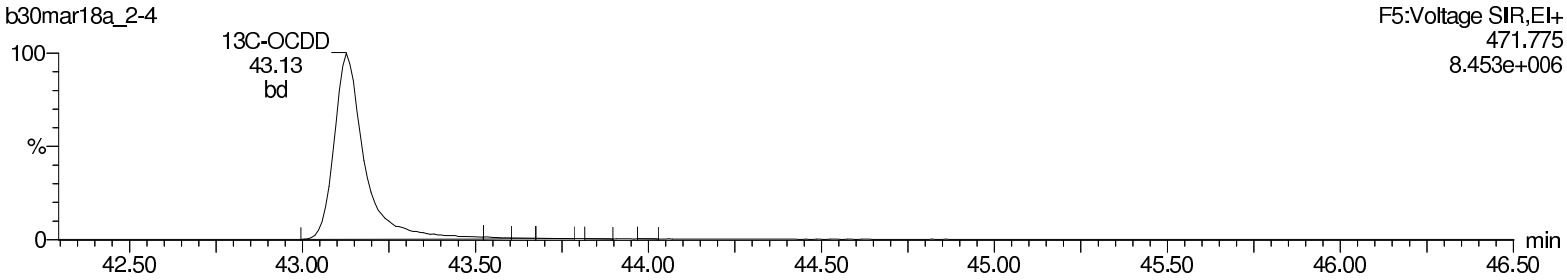

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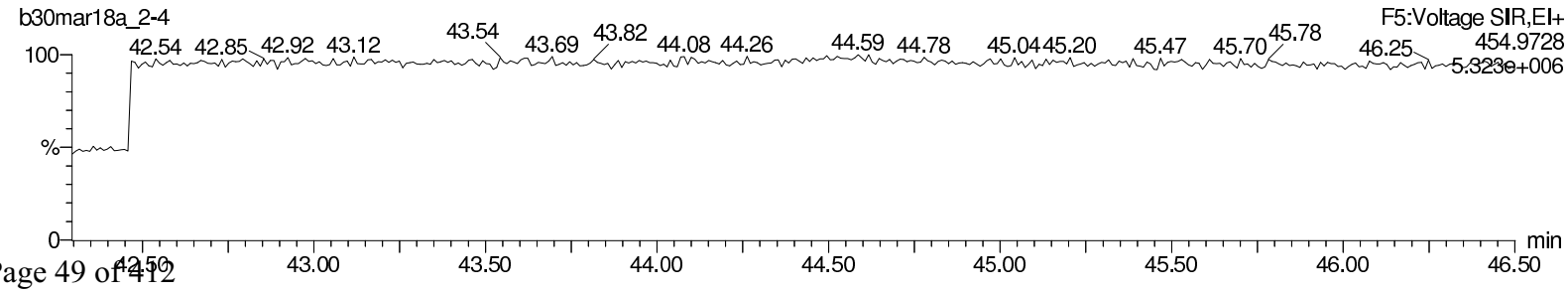

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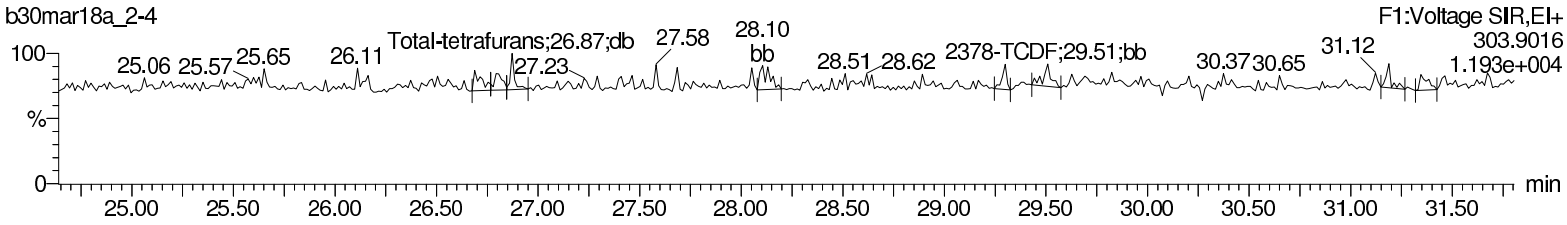
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

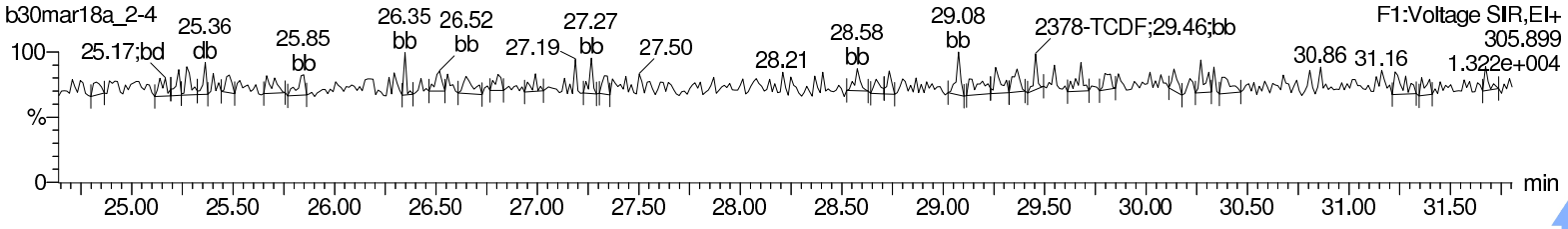
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

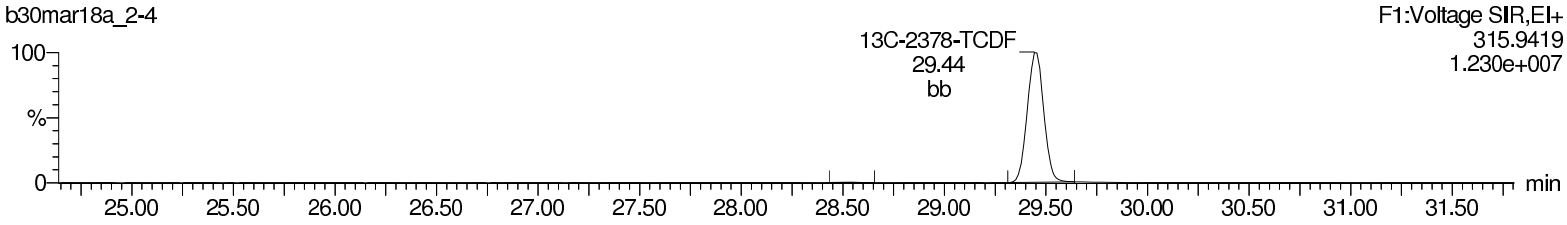
Total-tetrafurans



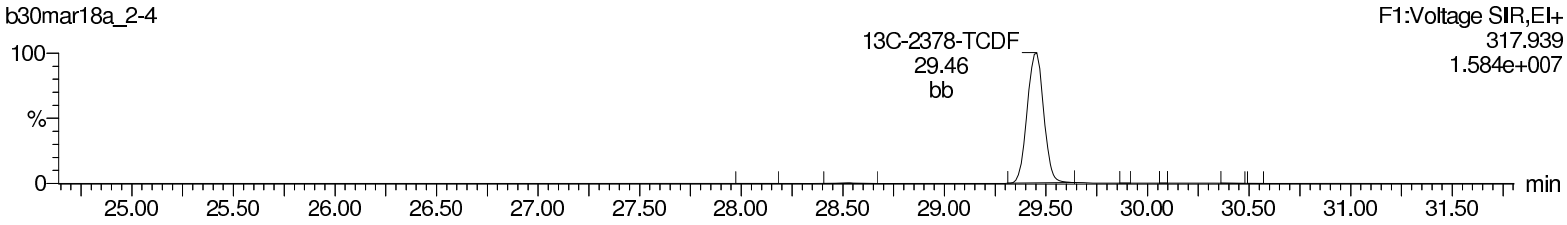
Total-tetrafurans



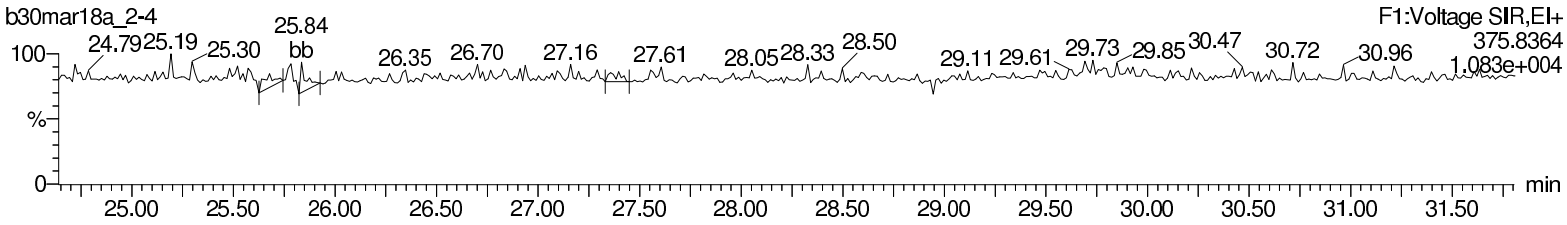
13C-2378-TCDF



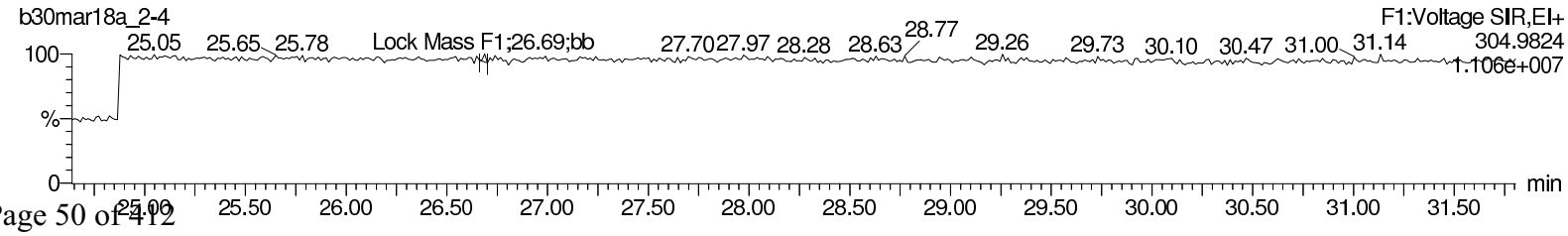
13C-2378-TCDF



HxDPE



Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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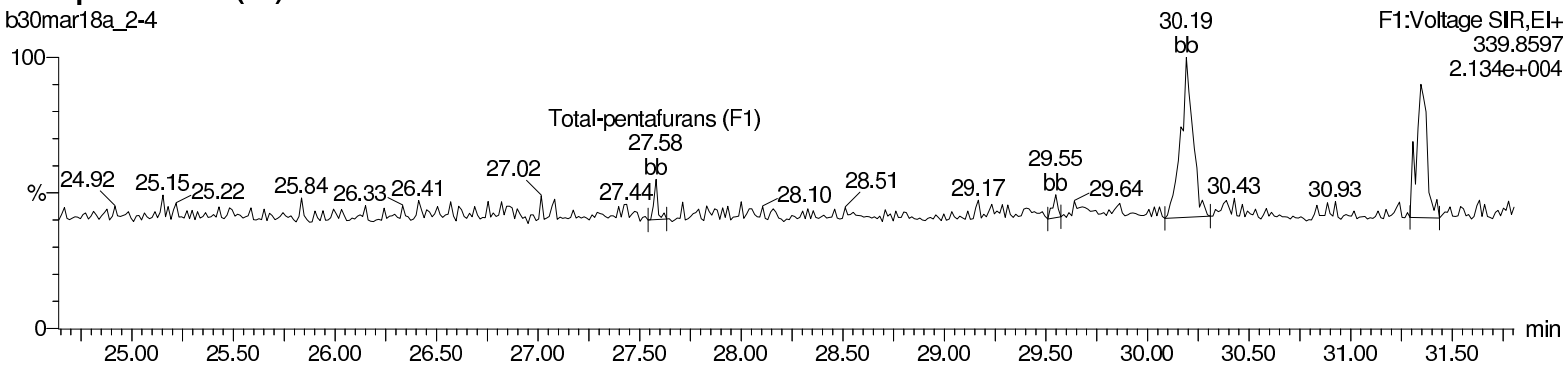
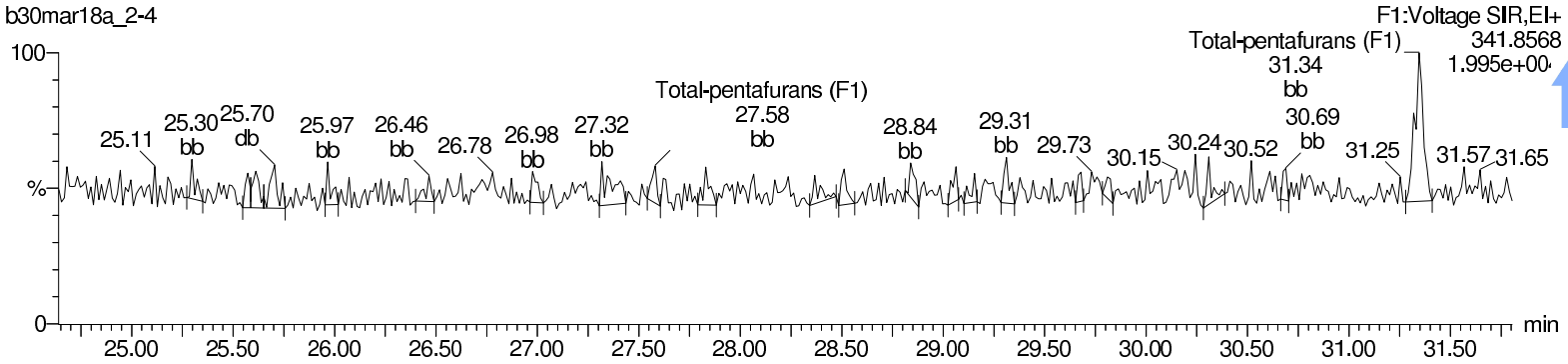
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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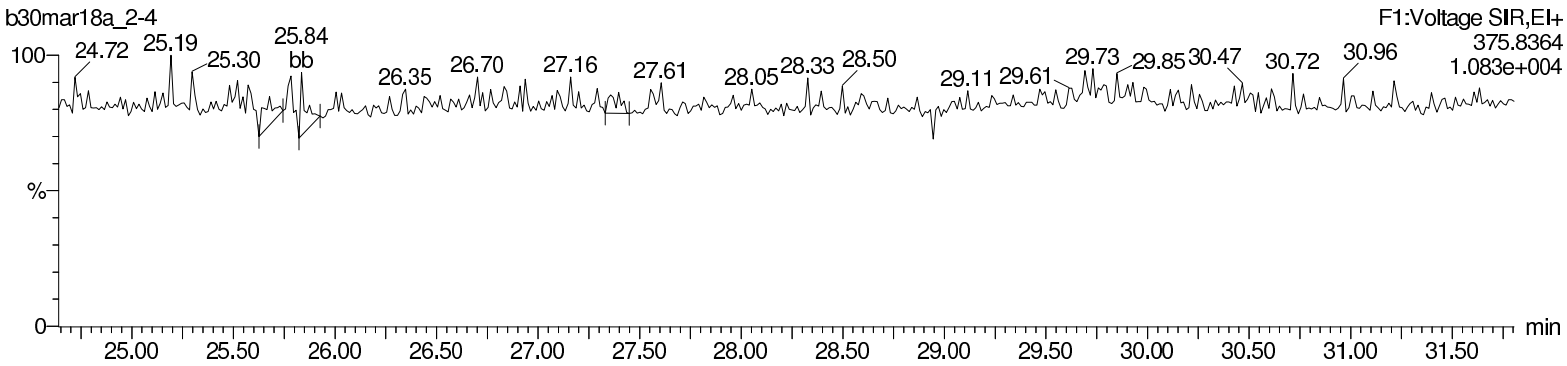
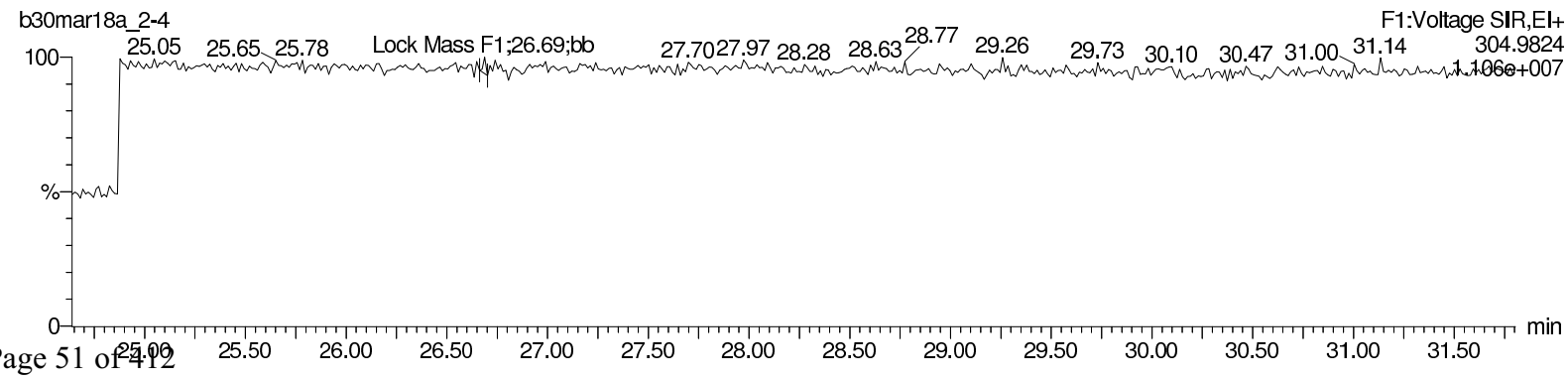


Lock Mass F1



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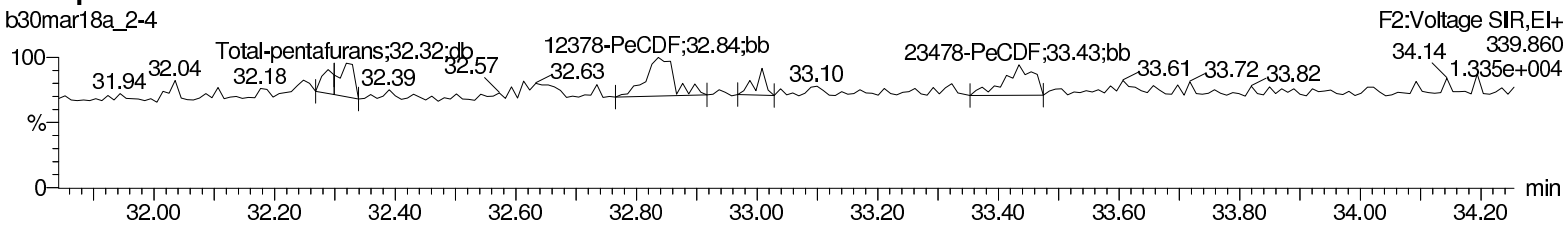
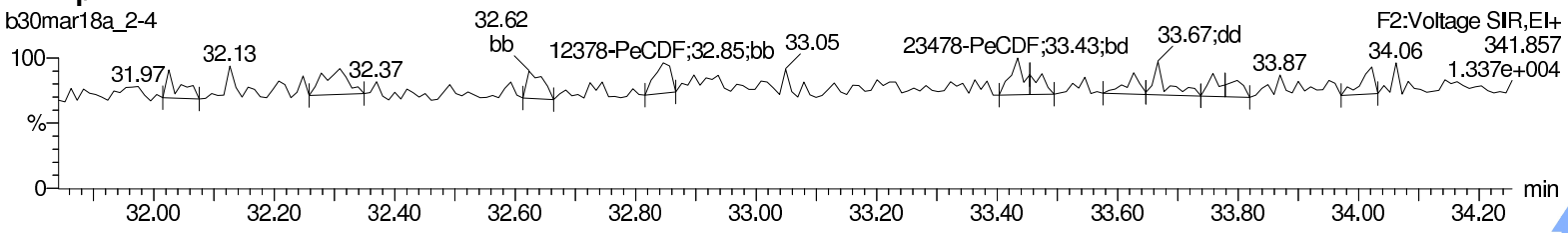
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

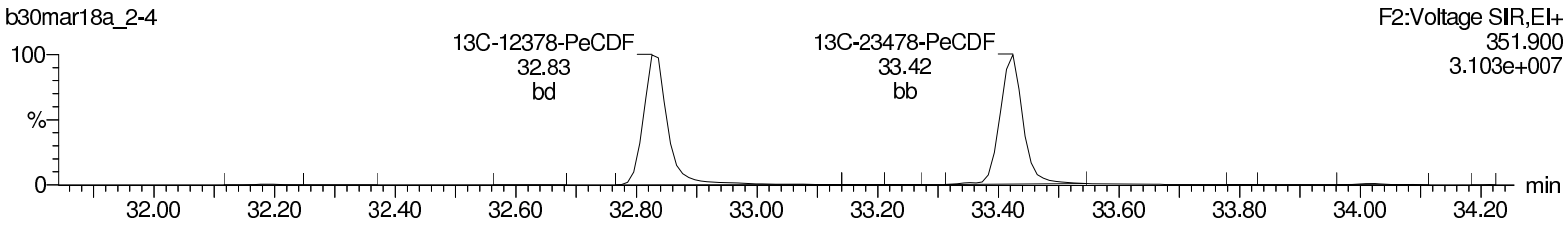
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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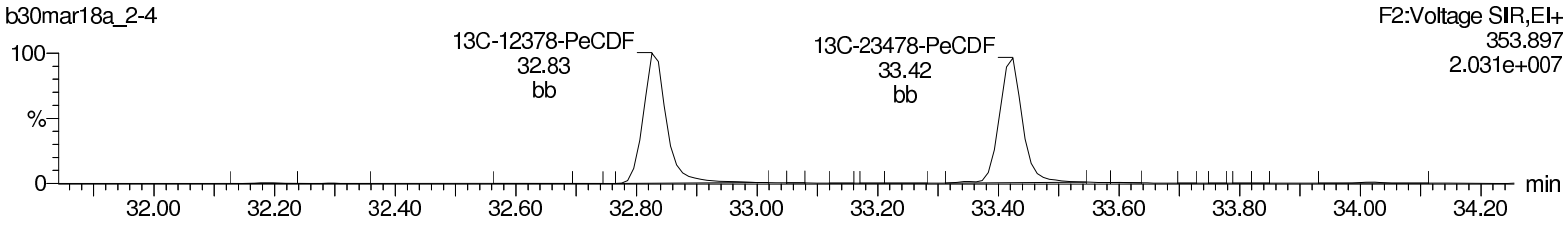
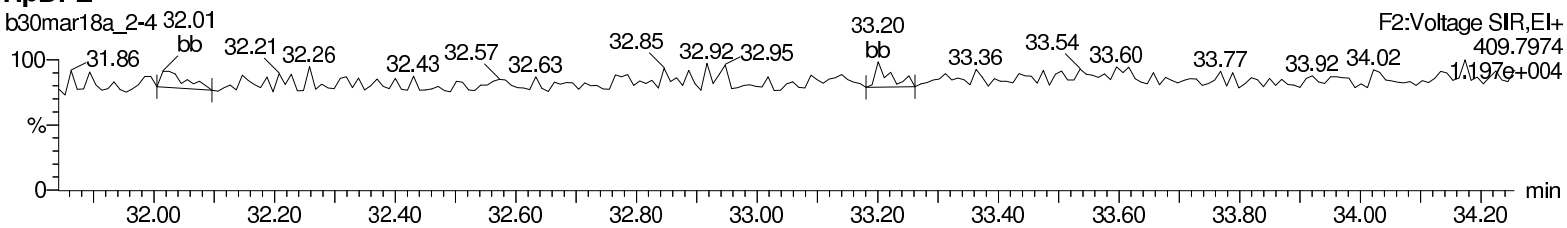


HpDPE



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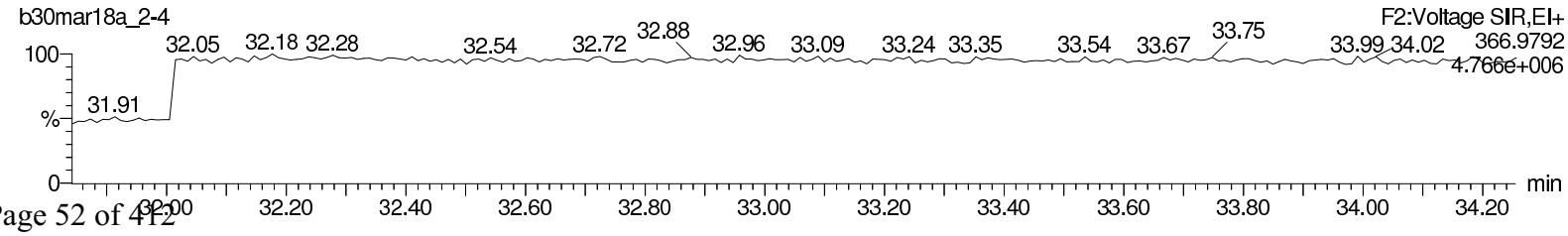
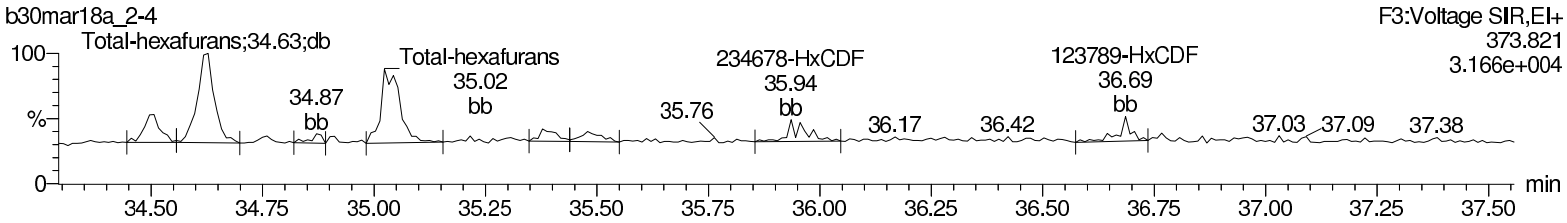


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

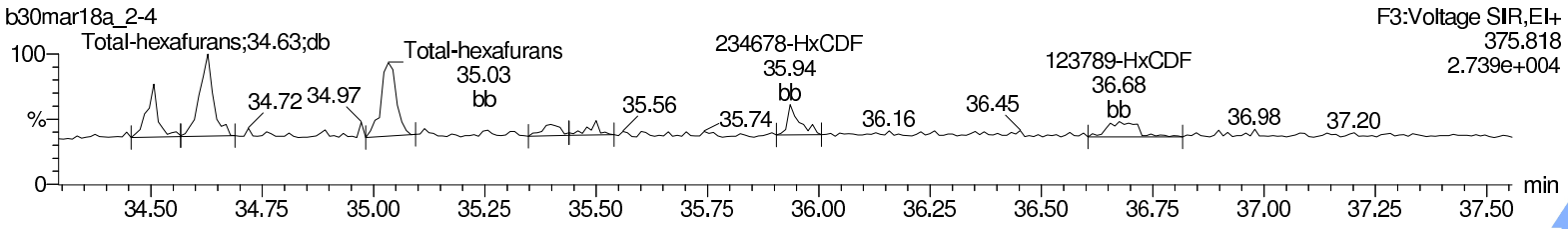
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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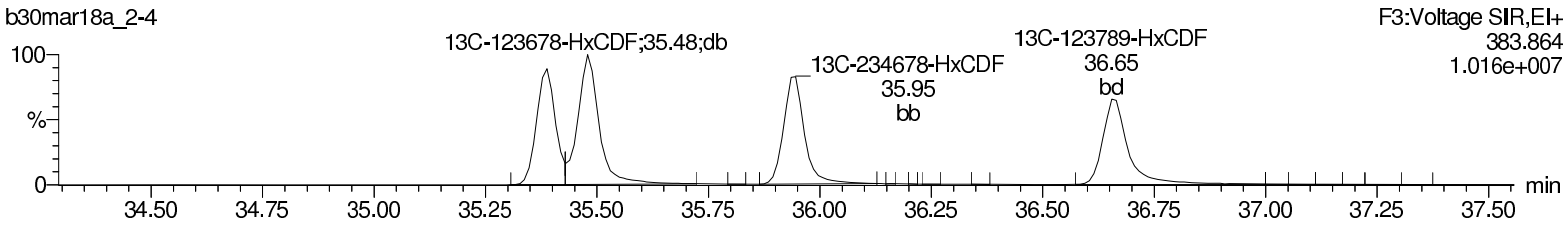

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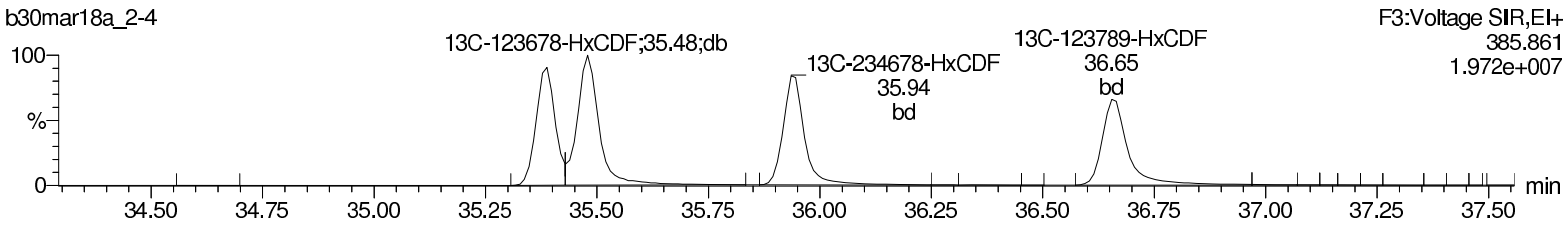
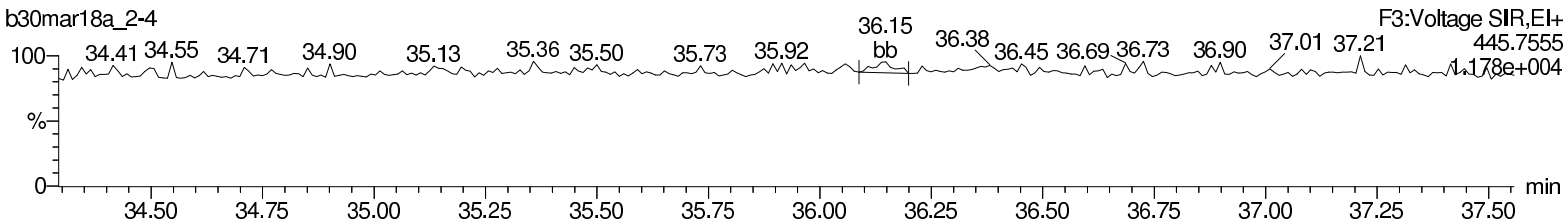
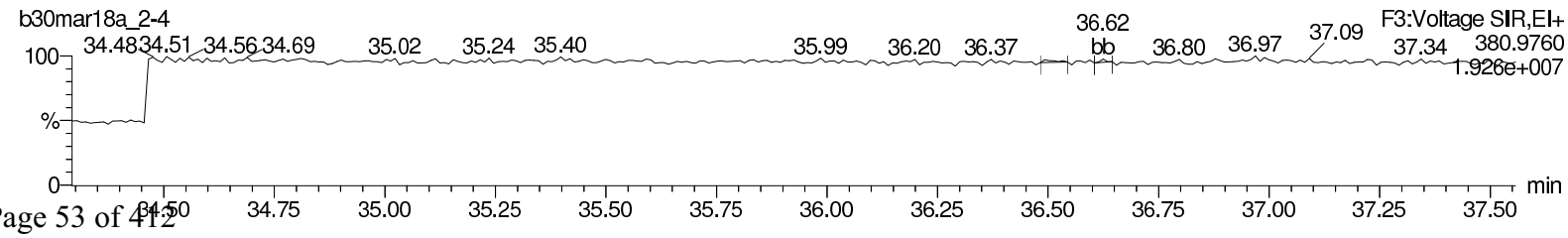


OcDPE



Lock Mass F3



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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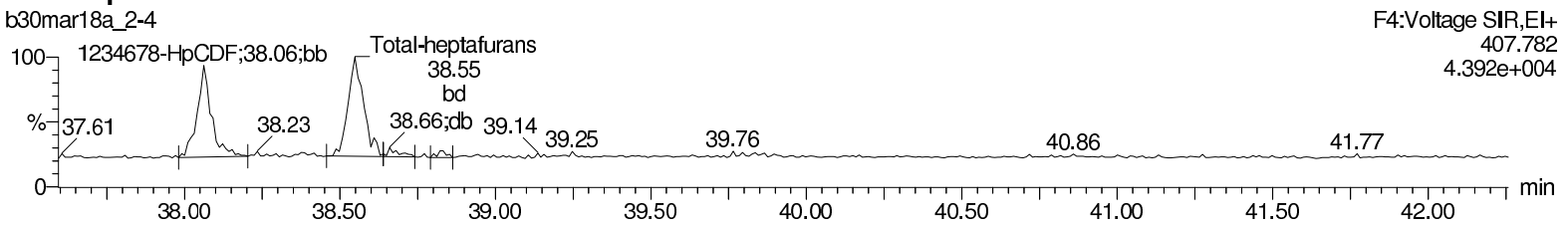
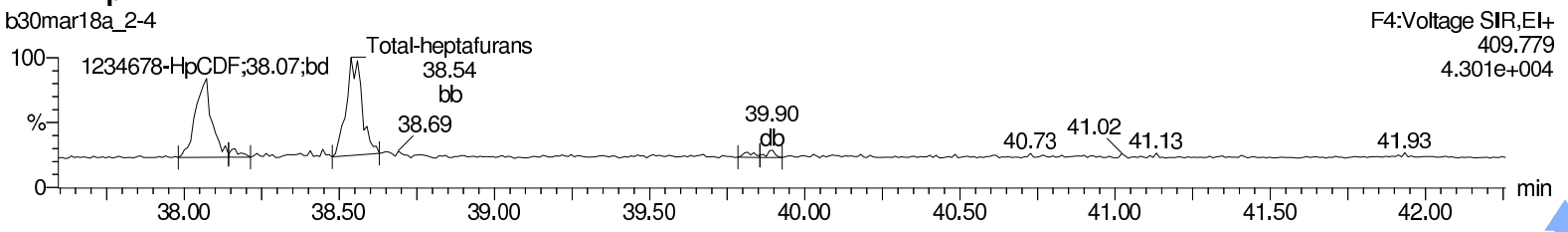
Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptafurans



Total-heptafurans



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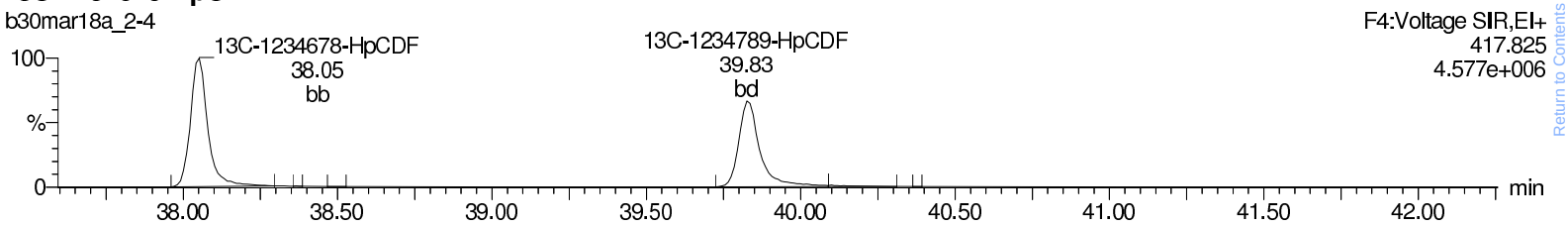

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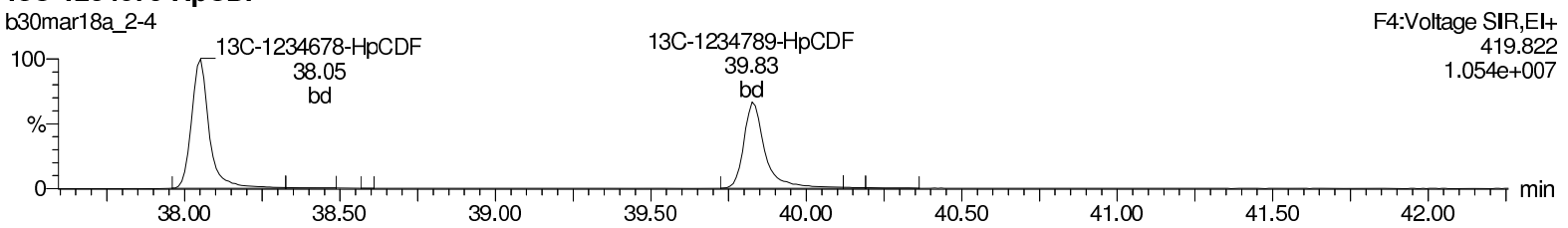
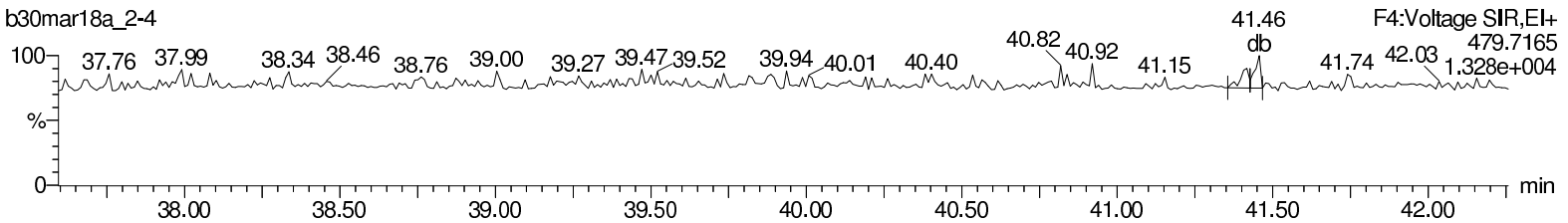
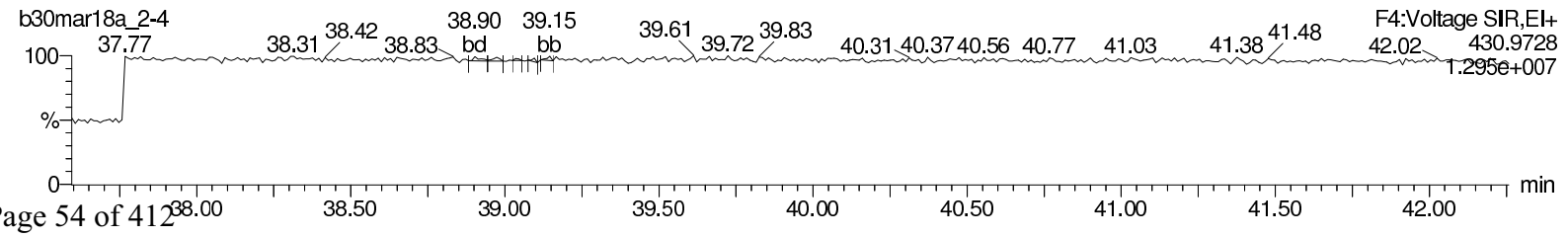


NoDPE



Lock Mass F4

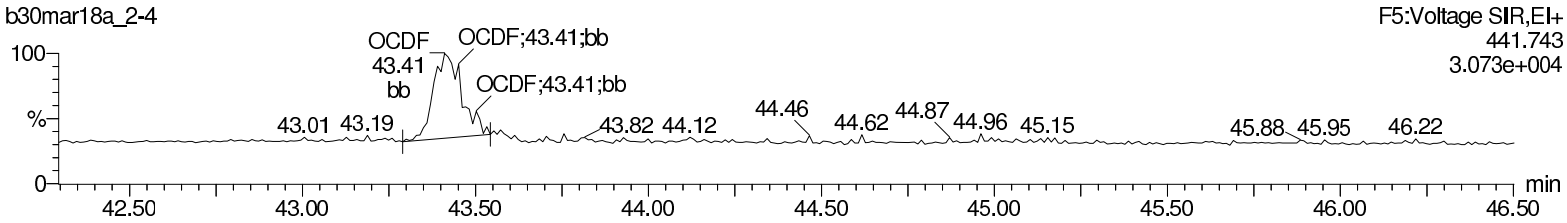


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

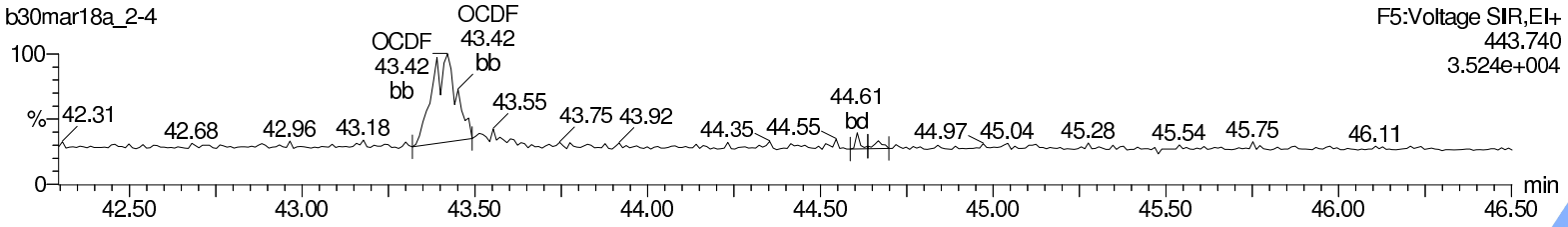
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-4, Date: 30-Mar-2018, Time: 21:01:01, ID: 13123001-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

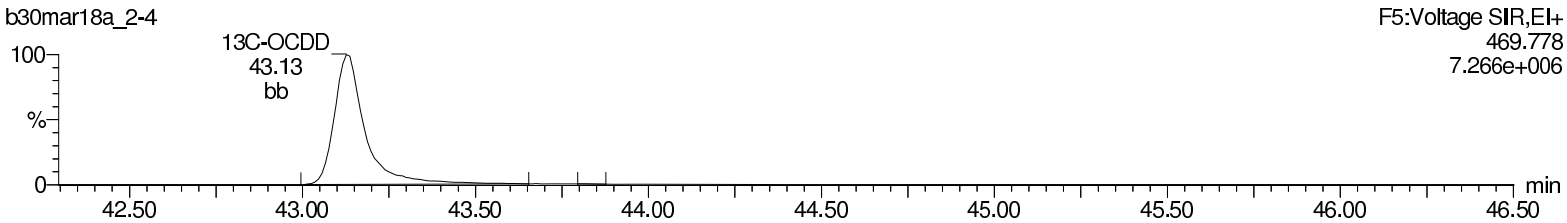
OCDF



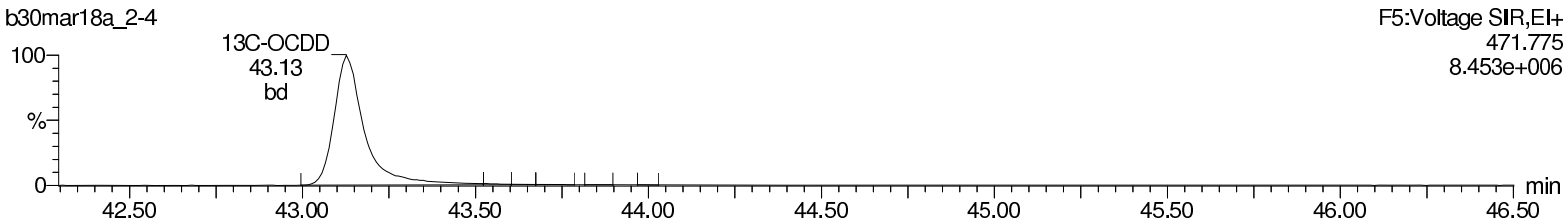
OCDF



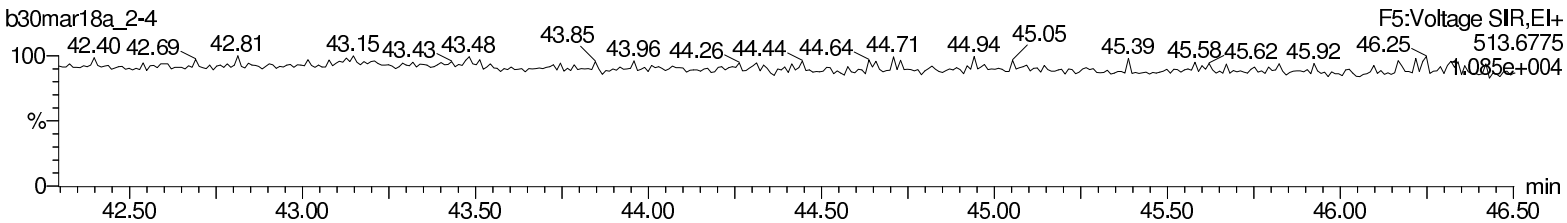
13C-OCDD



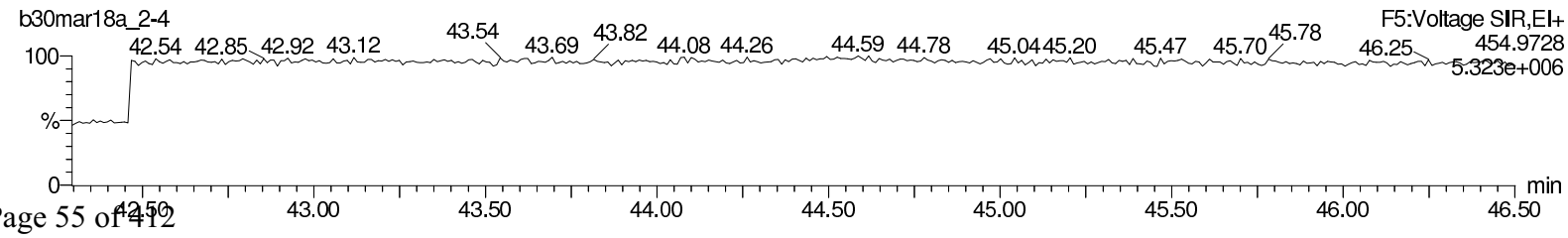
13C-OCDD



DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123002**	**Date Collected:**	**03/22/2018 11:30**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0007S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:49**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-5**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**970.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000797	ng/L	0.000797	0.0103
40321-76-4	1,2,3,7,8-PeCDD	J	0.000989	ng/L	0.000645	0.0515
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00134	ng/L	0.000979	0.0515
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.00262	ng/L	0.000942	0.0515
19408-74-3	1,2,3,7,8,9-HxCDD	JK	0.00192	ng/L	0.000987	0.0515
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0515	ng/L	0.00188	0.0515
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.693	ng/L	0.00398	0.103
51207-31-9	2,3,7,8-TCDF	U	0.000593	ng/L	0.000593	0.0103
57117-41-6	1,2,3,7,8-PeCDF	U	0.000453	ng/L	0.000453	0.0515
57117-31-4	2,3,4,7,8-PeCDF	U	0.000416	ng/L	0.000416	0.0515
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000453	ng/L	0.000453	0.0515
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000451	ng/L	0.000451	0.0515
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.000515	ng/L	0.000474	0.0515
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.00068	ng/L	0.000672	0.0515
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00585	ng/L	0.00056	0.0515
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000845	ng/L	0.000845	0.0515
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0155	ng/L	0.00149	0.103
41903-57-5	Total TeCDD	U	0.000797	ng/L	0.000797	0.0103
36088-22-9	Total PeCDD	JK	0.00181	ng/L	0.000645	0.0515
34465-46-8	Total HxCDD	JK	0.0194	ng/L	0.000942	0.0515
37871-00-4	Total HpCDD		0.111	ng/L	0.00188	0.0515
30402-14-3	Total TeCDF	U	0.000593	ng/L	0.000593	0.0103
30402-15-4	Total PeCDF	JK	0.0015	ng/L	0.000373	0.0515
55684-94-1	Total HxCDF	JK	0.00783	ng/L	0.000451	0.0515
38998-75-3	Total HpCDF	J	0.0159	ng/L	0.00056	0.0515
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00248	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00303	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.84	2.06	ng/L	89.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.57	2.06	ng/L	76.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.60	2.06	ng/L	77.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.82	2.06	ng/L	88.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.75	2.06	ng/L	85.0	(23%-140%)
13C-OCDD		2.96	4.12	ng/L	71.8	(17%-157%)
13C-2,3,7,8-TCDF		1.94	2.06	ng/L	94.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.85	2.06	ng/L	89.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.75	2.06	ng/L	85.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.64	2.06	ng/L	79.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.80	2.06	ng/L	87.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.72	2.06	ng/L	83.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.77	2.06	ng/L	85.8	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123002**	**Date Collected:**	**03/22/2018 11:30**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**A2BMP0007S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 21:49**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-5**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**970.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.58	2.06	ng/L	76.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.61	2.06	ng/L	77.9	(26%-138%)
37Cl-2,3,7,8-TCDD		0.186	0.206	ng/L	90.4	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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Printed: Wednesday, April 04, 2018 11:03:56 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD							NO		0.0387		1594			1224			
2	12378-PeCDD	3.34e2	2.07e2	5.41e2	33.61	1.000	1.61	NO	0.048	0.0313	7.60e3	1644	4.6	5.45e3	1480	3.7	MM	bb
3	123478-HxCDD	3.46e2	2.76e2	6.22e2	36.08	1.000	1.25	NO	0.065	0.0475	8.95e3	1795	5.0	4.97e3	1817	2.7	bd	bd
4	123678-HxCDD	8.12e2	7.06e2	1.52e3	36.15	1.000	1.15	NO	0.127	0.0457	1.80e4	1795	10.0	1.33e4	1817	7.3	db	db
5	123789-HxCDD	4.97e2	4.74e2	9.72e2	36.38	1.007	1.05	YES	0.093	0.0479	8.81e3	1795	4.9	8.15e3	1817	4.5	bb	db
6	1234678-HpCDD	1.16e4	1.14e4	2.30e4	39.24	1.001	1.02	NO	2.498	0.0914	1.55e5	2274	68.3	1.57e5	2127	73.6	bb	bb
7	OCDD	1.08e5	1.21e5	2.29e5	43.15	1.000	0.89	NO	33.641	0.193	1.09e6	2958	368.7	1.26e6	2044	615.9	bd	bd
8	2378-TCDF							NO		0.0288		1064			1732			
9	12378-PeCDF	1.81e2	2.17e2	3.98e2	32.84	1.000	0.83	YES	0.022	0.0220	4.29e3	1493	2.9	6.54e3	1974	3.3	db	bd
10	23478-PeCDF							NO		0.0202		1493			1974			
11	123478-HxCDF	1.46e2	7.48e1	2.20e2	35.40	1.000	1.95	YES	0.018	0.0220	4.97e3	1051	4.7	3.53e3	1250	2.8	bd	bb
12	123678-HxCDF							NO		0.0219		1051			1250			
13	234678-HxCDF	1.97e2	1.36e2	3.33e2	35.97	1.001	1.45	YES	0.025	0.0230	5.47e3	1051	5.2	3.14e3	1250	2.5	bb	MM
14	123789-HxCDF	1.99e2	1.88e2	3.87e2	36.71	1.001	1.06	NO	0.033	0.0326	3.23e3	1051	3.1	4.31e3	1250	3.4	MM	bb
15	1234678-HpCDF	1.53e3	1.38e3	2.91e3	38.06	1.000	1.11	NO	0.284	0.0272	2.91e4	857	33.9	2.91e4	906	32.1	bb	bb
16	1234789-HpCDF							NO		0.0410		857			906			
17	OCDF	2.44e3	2.73e3	5.17e3	43.40	1.006	0.89	NO	0.751	0.0721	2.68e4	647	41.4	2.91e4	1242	23.4	bd	bb
18	13C-2378-TCDD	8.74e5	1.14e6	2.01e6	30.37	1.024	0.77	NO	89.517	0.0882	8.88e6	4678	1898.2	1.16e7	4354	2674.0	bb	bb
19	13C-12378-PeCDD	8.83e5	5.58e5	1.44e6	33.61	1.133	1.58	NO	76.171	0.0856	1.94e7	2455	7897.8	1.22e7	4922	2484.4	bb	bb
20	13C-123478-HxCDD	6.34e5	5.08e5	1.14e6	36.07	0.992	1.25	NO	77.572	0.147	1.26e7	8478	1485.0	9.84e6	5624	1749.2	bd	bd
21	13C-123678-HxCDD	7.77e5	6.47e5	1.42e6	36.14	0.994	1.20	NO	88.443	0.134	1.28e7	8478	1514.1	1.06e7	5624	1884.8	dd	dd
22	13C-1234678-HpCDD	4.67e5	4.51e5	9.17e5	39.22	1.078	1.04	NO	84.959	0.156	6.11e6	5625	1086.0	5.97e6	5360	1114.2	bd	bb
23	13C-OCDD	7.00e5	7.95e5	1.49e6	43.13	1.186	0.88	NO	143.689	0.146	6.65e6	5543	1199.8	7.76e6	4381	1772.1	bd	bd
24	13C-2378-TCDF	1.08e6	1.40e6	2.48e6	29.44	0.992	0.77	NO	94.353	0.0870	1.15e7	6515	1757.8	1.51e7	3913	3858.3	bb	bb
25	13C-12378-PeCDF	1.34e6	8.53e5	2.19e6	32.84	1.107	1.57	NO	89.549	0.151	2.93e7	9366	3125.7	1.82e7	7509	2429.7	bd	bd
26	13C-23478-PeCDF	1.26e6	8.00e5	2.06e6	33.42	1.127	1.58	NO	85.025	0.153	2.84e7	9366	3029.7	1.78e7	7509	2374.6	bb	bb
27	13C-123478-HxCDF	4.22e5	8.32e5	1.25e6	35.39	0.973	0.51	NO	79.635	0.170	8.80e6	6698	1313.5	1.74e7	10830	1602.7	bd	bd
28	13C-123678-HxCDF	5.44e5	1.05e6	1.59e6	35.48	0.975	0.52	NO	87.246	0.147	9.64e6	6698	1438.8	1.92e7	10830	1769.4	dd	db
29	13C-234678-HxCDF	4.37e5	8.53e5	1.29e6	35.94	0.988	0.51	NO	83.344	0.174	8.20e6	6698	1224.6	1.59e7	10830	1464.6	bb	bb
30	13C-123789-HxCDF	4.20e5	7.94e5	1.21e6	36.65	1.008	0.53	NO	85.784	0.190	6.41e6	6698	956.6	1.24e7	10830	1141.9	bd	bb
31	13C-1234678-HpCDF	2.76e5	6.58e5	9.34e5	38.05	1.046	0.42	NO	76.740	0.116	4.37e6	3824	1142.5	1.01e7	5435	1853.0	bb	bd

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:03:35 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:03:56 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.25e5	5.29e5	7.54e5	39.83	1.095	0.43	NO	77.902	0.146	2.90e6	3824	757.8	6.65e6	5435	1224.3	bd	bd
33	13C-1234-TCDD	8.63e5	1.11e6	1.97e6	29.67	0.000	0.78	NO	100.000	0.101	9.82e6	4678	2100.3	1.21e7	4354	2788.6	bb	bb
34	13C-123789-HxCDD	7.67e5	6.67e5	1.43e6	36.37	0.000	1.15	NO	100.000	0.151	1.25e7	8478	1476.3	1.04e7	5624	1857.6	db	dd
35	37Cl-2378-TCDD	2.07e5		2.07e5	30.41	1.025			9.040	0.0146	2.19e6	1522	1441.0				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:03:35 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:03:56 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetradioxins	8.19e1	1.24e2	2.06e2	31.58	0.66	NO	0.011	0.0387	3.07e3	1594	1.9	2.37e3	1224	1.9	bb	bd
2	Total-tetradioxins	2.31e2	8.77e1	3.18e2	29.46	2.63	YES	0.018	0.0387	3.82e3	1594	2.4	2.07e3	1224	1.7	bb	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	3.34e2	2.07e2	5.41e2	33.61	1.61	NO	0.048	0.0313	7.60e3	1644	4.6	5.45e3	1480	3.7	MM	bb
2	Total-pentadioxins	1.40e2	1.25e2	2.65e2	33.15	1.12	YES	0.023	0.0313	3.16e3	1644	1.9	3.55e3	1480	2.4	bb	bb
3	Total-pentadioxins	8.06e1	1.48e2	2.29e2	33.00	0.54	YES	0.020	0.0313	2.77e3	1644	1.7	6.76e3	1480	4.6	db	bd
4	Total-pentadioxins	2.09e2	2.42e2	4.51e2	32.33	0.86	YES	0.040	0.0313	4.72e3	1644	2.9	4.43e3	1480	3.0	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDD	4.97e2	4.74e2	9.72e2	36.38	1.05	YES	0.093	0.0479	8.81e3	1795	4.9	8.15e3	1817	4.5	bb	db
2	123678-HxCDD	8.12e2	7.06e2	1.52e3	36.15	1.15	NO	0.127	0.0457	1.80e4	1795	10.0	1.33e4	1817	7.3	db	db
3	123478-HxCDD	3.46e2	2.76e2	6.22e2	36.08	1.25	NO	0.065	0.0475	8.95e3	1795	5.0	4.97e3	1817	2.7	bd	bd
4	Total-hexadioxins	2.28e3	1.84e3	4.12e3	35.53	1.24	NO	0.386	0.0470	3.11e4	1795	17.3	3.07e4	1817	16.9	db	bb
5	Total-hexadioxins	5.35e2	2.48e2	7.83e2	35.38	2.15	YES	0.073	0.0470	9.12e3	1795	5.1	6.34e3	1817	3.5	bd	bb
6	Total-hexadioxins	1.13e3	9.98e2	2.12e3	34.91	1.13	NO	0.199	0.0470	2.38e4	1795	13.2	2.26e4	1817	12.4	bb	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	1234678-HpCDD	1.16e4	1.14e4	2.30e4	39.24	1.02	NO	2.498	0.0914	1.55e5	2274	68.3	1.57e5	2127	73.6	bb	bb
2	Total-heptadioxins	1.32e4	1.36e4	2.68e4	38.37	0.97	NO	2.913	0.0914	1.99e5	2274	87.5	1.93e5	2127	90.8	bb	bb
3	Total-heptadioxins	5.55e2	1.31e2	6.86e2	38.05	4.23	YES	0.075	0.0914	8.39e3	2274	3.7	5.08e3	2127	2.4	bb	bb

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:03:35 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:03:56 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	5.38e1	6.24e1	1.16e2	28.14	0.86	NO	0.005	0.0288	2.28e3	1064	2.1	2.66e3	1732	1.5	db	db
2	Total-tetrafurans	7.24e1	7.84e1	1.51e2	28.09	0.92	YES	0.007	0.0288	1.83e3	1064	1.7	3.27e3	1732	1.9	dd	bd
3	Total-tetrafurans	5.81e1	1.40e2	1.98e2	26.49	0.41	YES	0.009	0.0288	2.39e3	1064	2.2	4.21e3	1732	2.4	bb	bb

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	7.63e2	5.93e2	1.36e3	31.34	1.29	YES	0.073	0.0181	1.61e4	960	16.8	1.54e4	2026	7.6	bb	bb
2	Total-pentafurans (F1)	7.01e1	9.79e1	1.68e2	29.65	0.72	YES	0.009	0.0181	1.13e3	960	1.2	3.32e3	2026	1.6	bb	bd
3	Total-pentafurans (F1)	5.37e1	1.41e2	1.95e2	27.71	0.38	YES	0.010	0.0181	1.10e3	960	1.1	3.64e3	2026	1.8	bb	bb
4	Total-pentafurans (F1)	6.34e1	6.20e1	1.25e2	26.37	1.02	YES	0.007	0.0181	1.55e3	960	1.6	2.29e3	2026	1.1	bb	bb
5	Total-pentafurans (F1)	7.08e1	6.39e1	1.35e2	25.27	1.11	YES	0.007	0.0181	2.64e3	960	2.7	2.96e3	2026	1.5	bb	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDF	1.81e2	2.17e2	3.98e2	32.84	0.83	YES	0.022	0.0220	4.29e3	1493	2.9	6.54e3	1974	3.3	db	bd
2	Total-pentafurans	1.43e2	1.02e2	2.46e2	32.60	1.40	NO	0.013	0.0210	4.08e3	1493	2.7	2.43e3	1974	1.2	MM	bb
3	Total-pentafurans	2.45e2	2.04e2	4.49e2	32.30	1.20	YES	0.024	0.0210	5.62e3	1493	3.8	3.97e3	1974	2.0	db	MM

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDF	1.99e2	1.88e2	3.87e2	36.71	1.06	NO	0.033	0.0326	3.23e3	1051	3.1	4.31e3	1250	3.4	MM	bb
2	234678-HxCDF	1.97e2	1.36e2	3.33e2	35.97	1.45	YES	0.025	0.0230	5.47e3	1051	5.2	3.14e3	1250	2.5	bb	MM
3	123478-HxCDF	1.46e2	7.48e1	2.20e2	35.40	1.95	YES	0.018	0.0220	4.97e3	1051	4.7	3.53e3	1250	2.8	bd	bb
4	Total-hexafurans	9.82e2	6.97e2	1.68e3	35.04	1.41	NO	0.128	0.0245	2.27e4	1051	21.6	1.78e4	1250	14.3	bb	bb
5	Total-hexafurans	1.08e3	7.65e2	1.84e3	34.62	1.41	NO	0.141	0.0245	2.49e4	1051	23.7	1.62e4	1250	13.0	db	db
6	Total-hexafurans	3.66e2	3.26e2	6.92e2	34.51	1.12	NO	0.053	0.0245	6.15e3	1051	5.9	7.57e3	1250	6.1	bd	bd

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:03:35 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:03:56 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	9.09e1	1.12e2	2.02e2	38.66	0.81	YES	0.022	0.0334	2.78e3	857	3.2	2.32e3	906	2.6	db	db
2	Total-heptafurans	2.37e3	2.18e3	4.55e3	38.55	1.09	NO	0.489	0.0334	3.82e4	857	44.6	3.38e4	906	37.3	bd	bd
3	1234678-HpCDF	1.53e3	1.38e3	2.91e3	38.06	1.11	NO	0.284	0.0272	2.91e4	857	33.9	2.91e4	906	32.1	bb	bb

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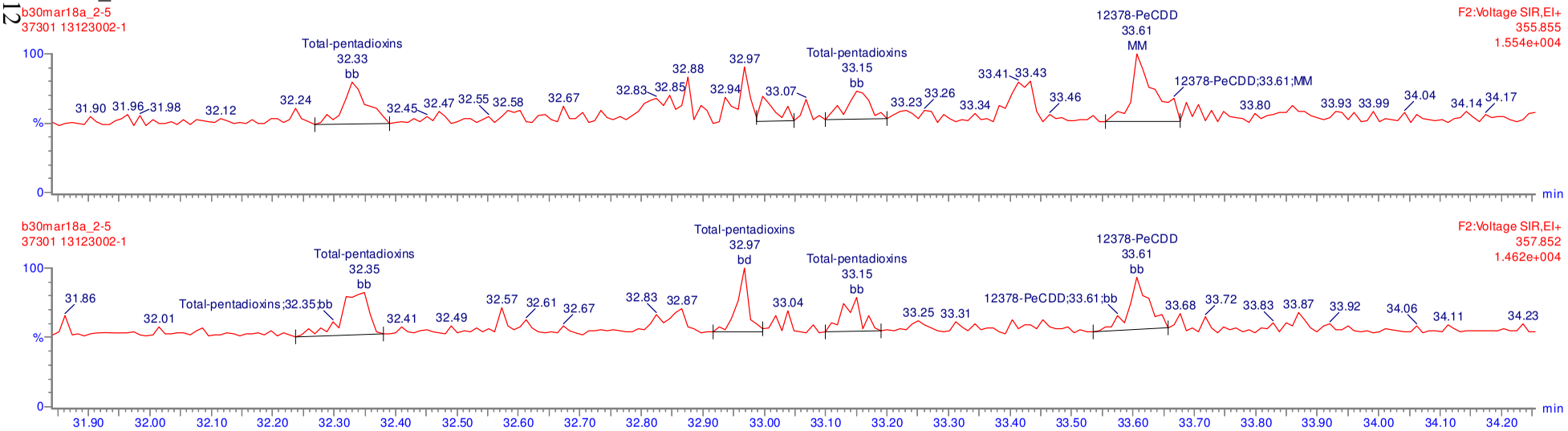
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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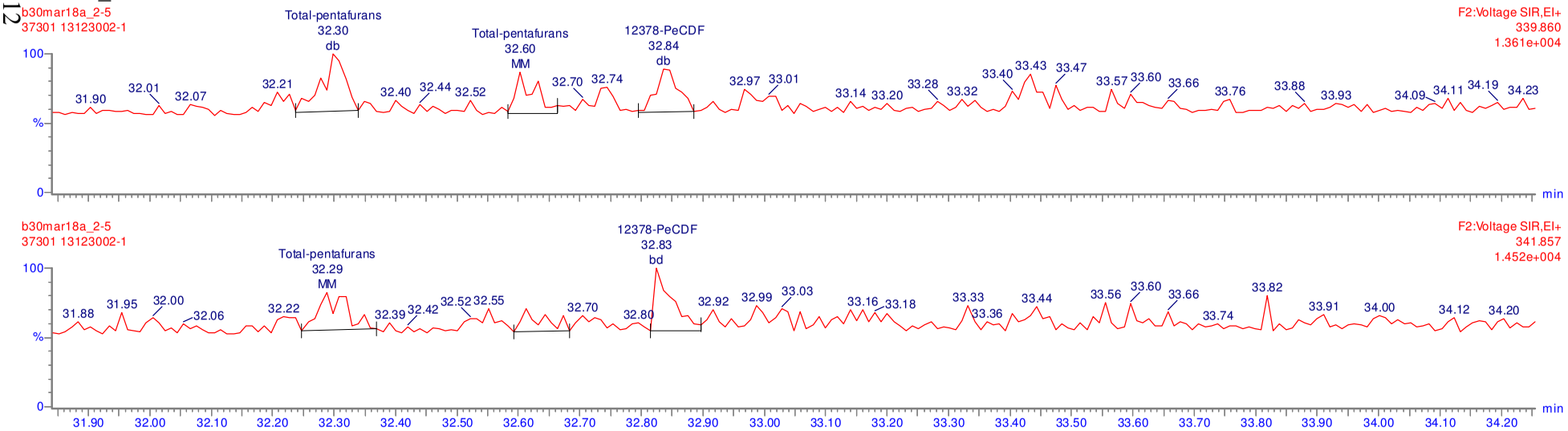
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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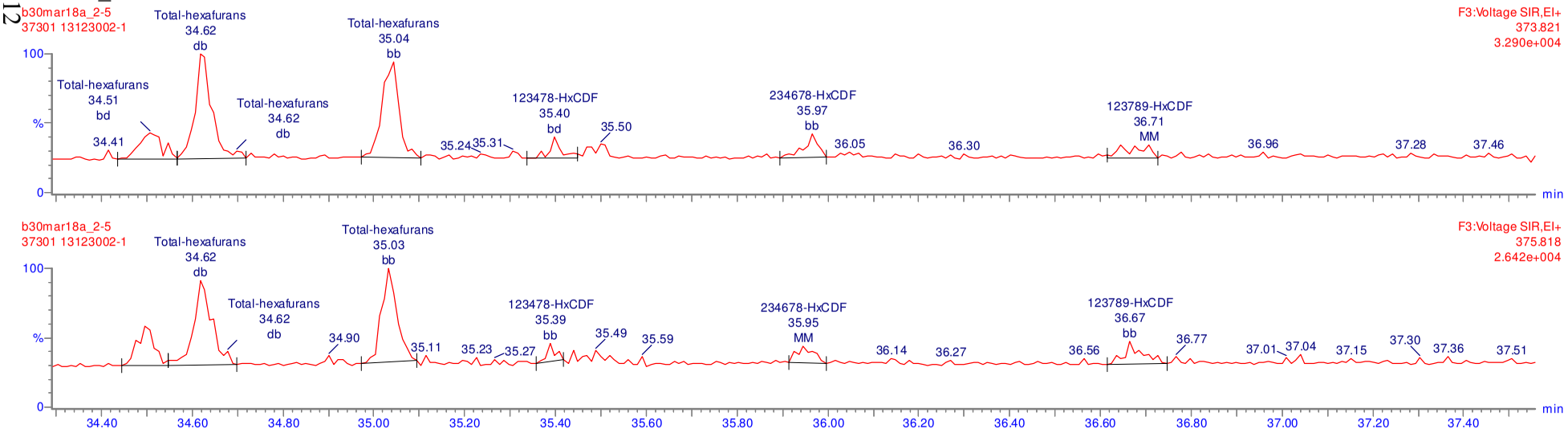
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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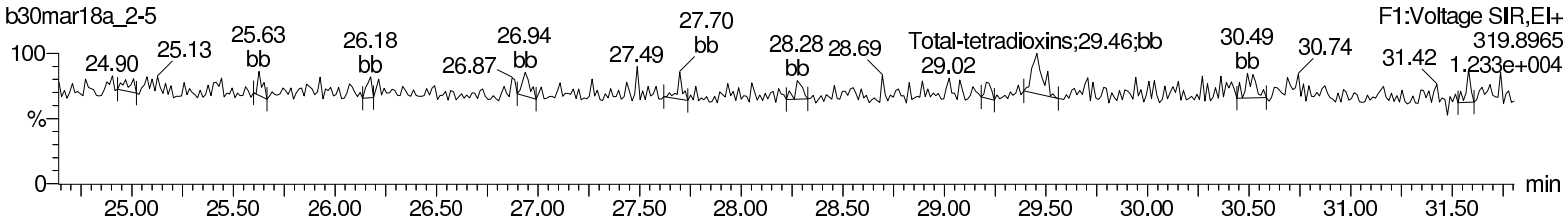
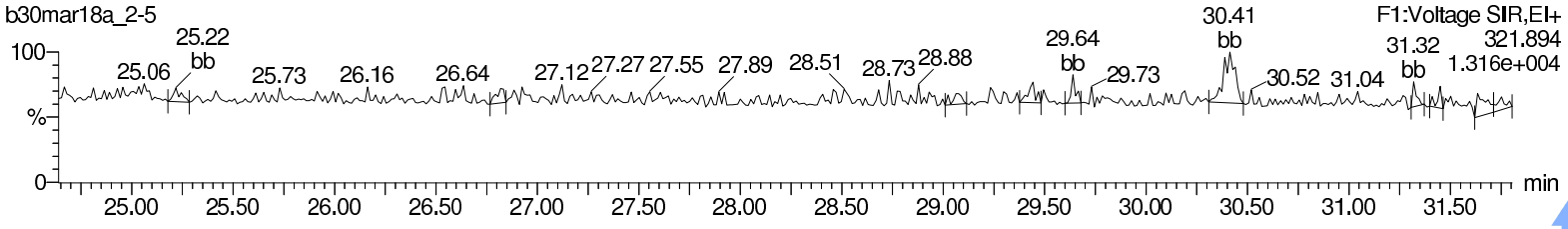
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

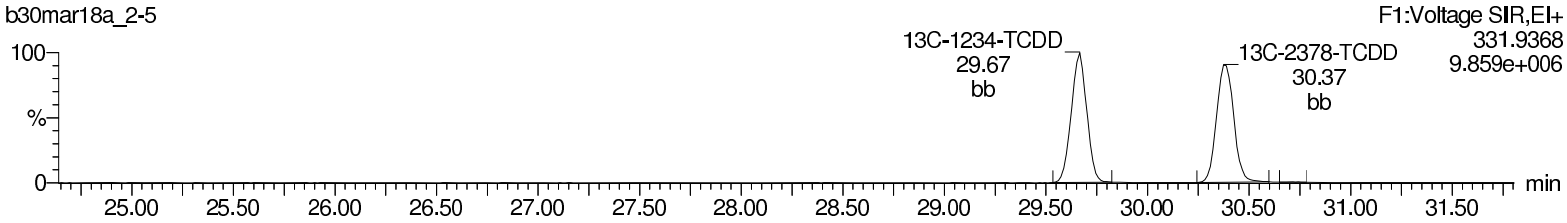
Total-tetradioxins



Total-tetradioxins



13C-2378-TCDD



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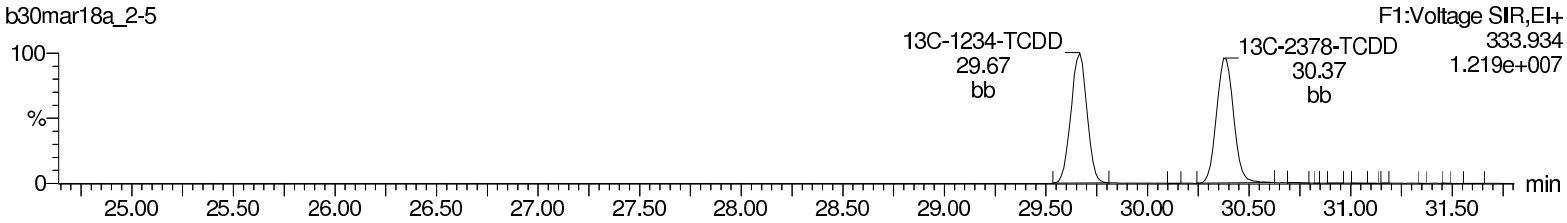
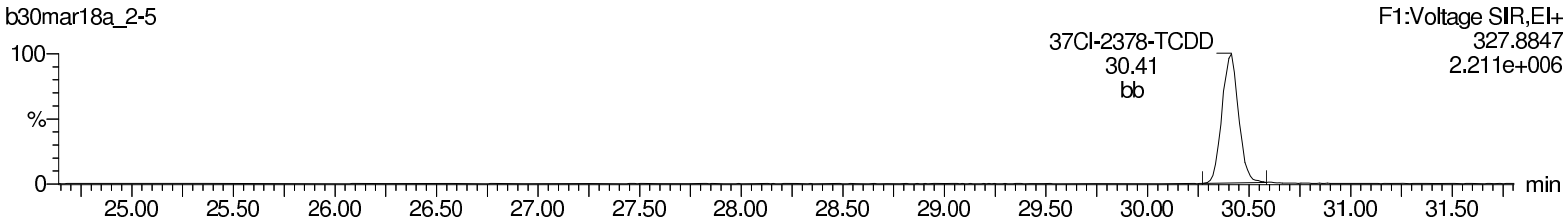
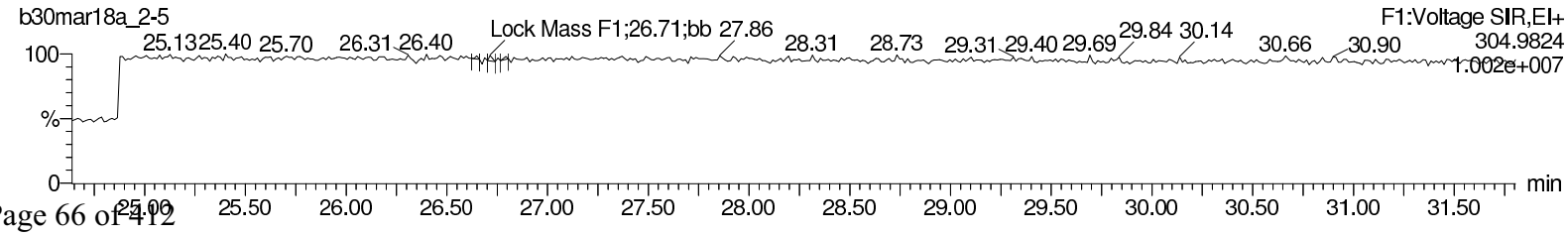


37Cl-2378-TCDD



Lock Mass F1



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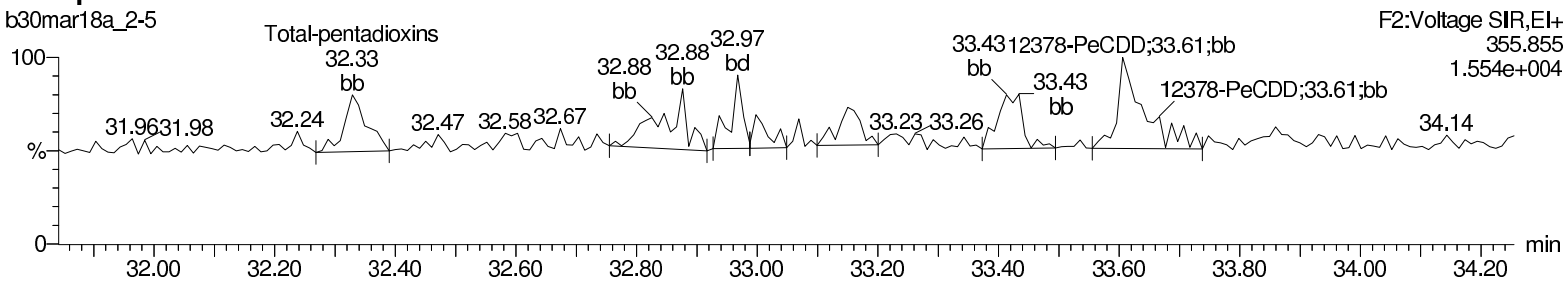
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

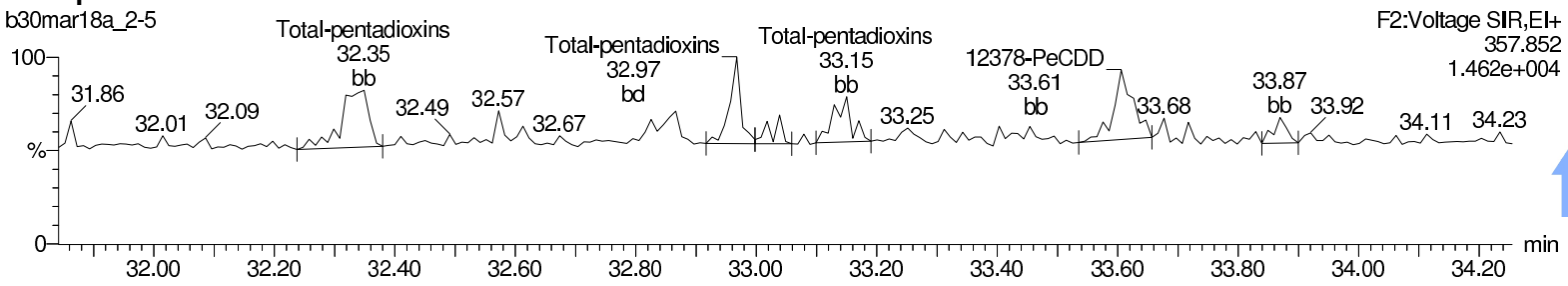
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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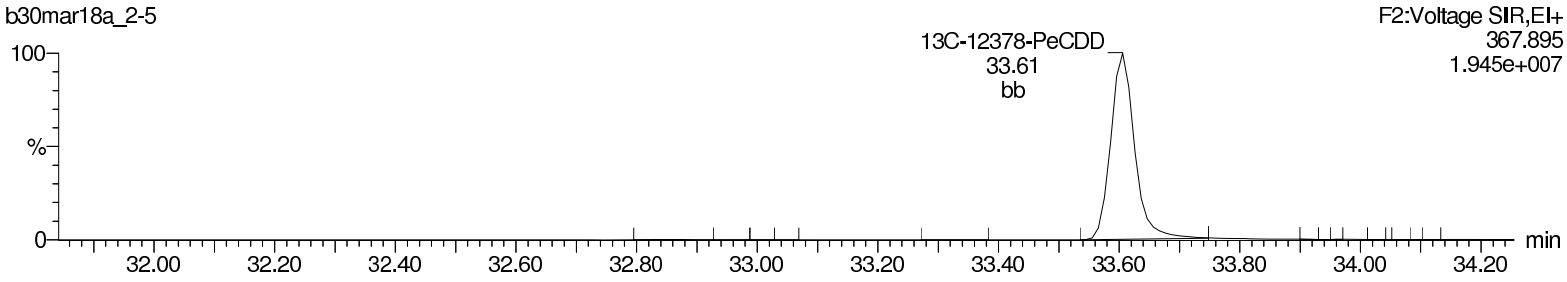

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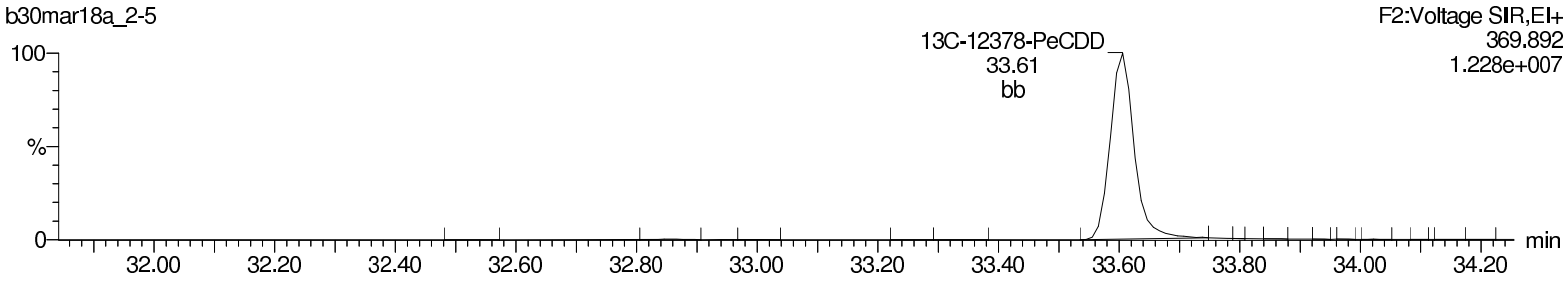
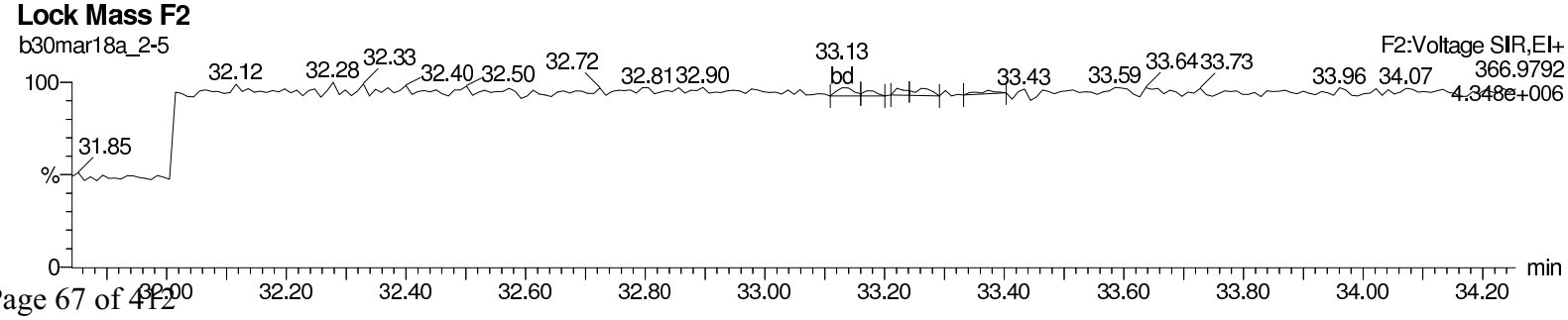


Lock Mass F2



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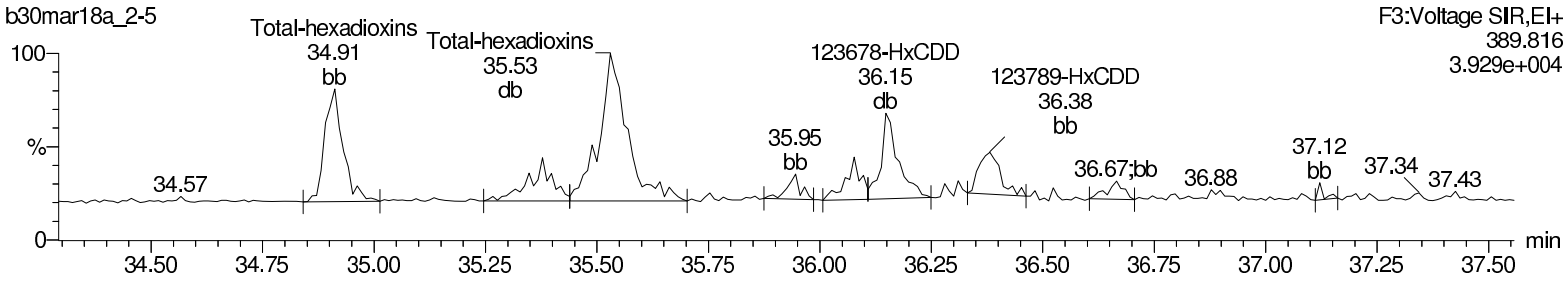
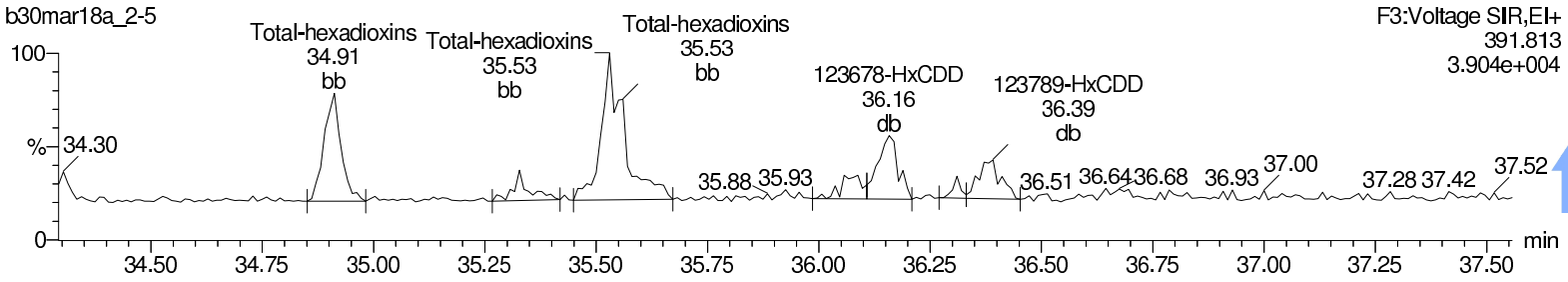
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

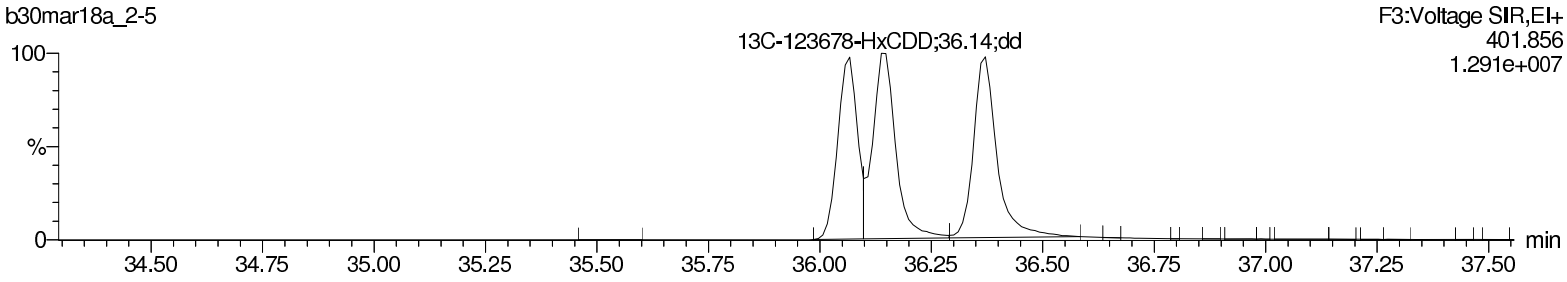
Total-hexadioxins



Total-hexadioxins



13C-123478-HxCDD



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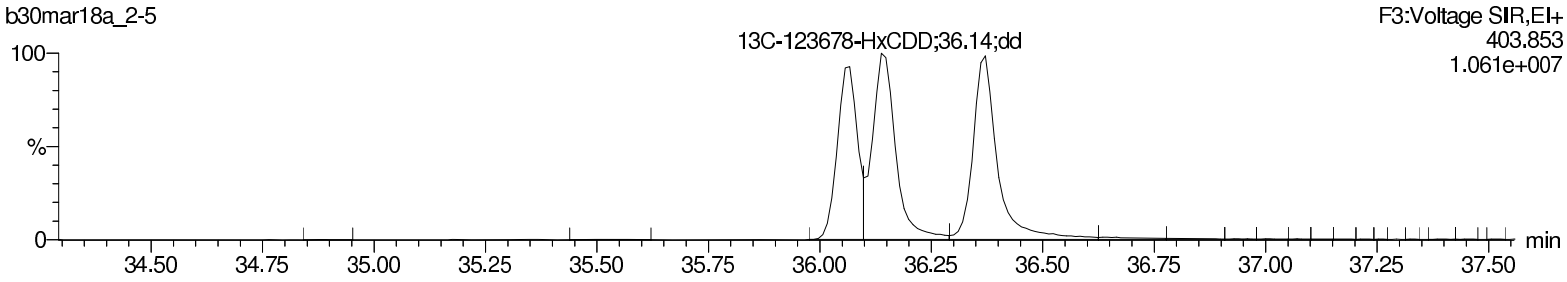
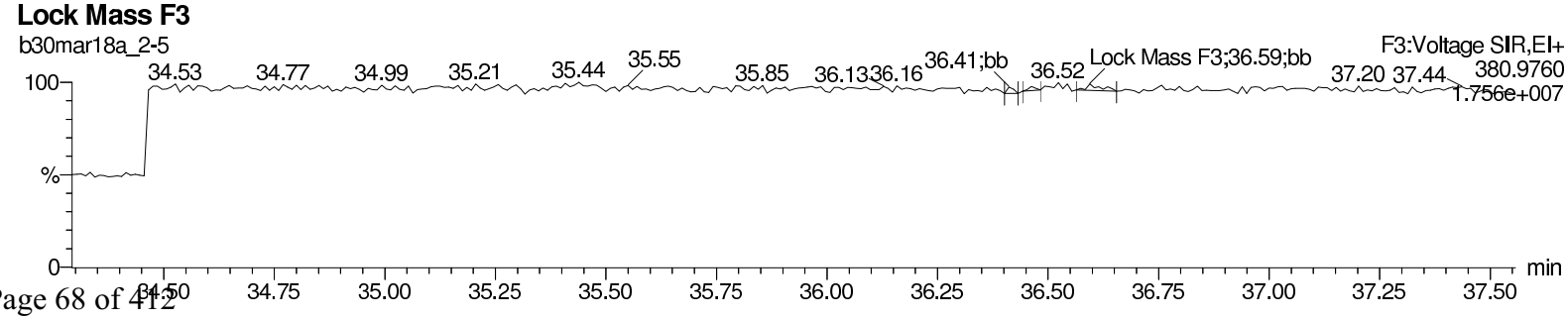


Lock Mass F3



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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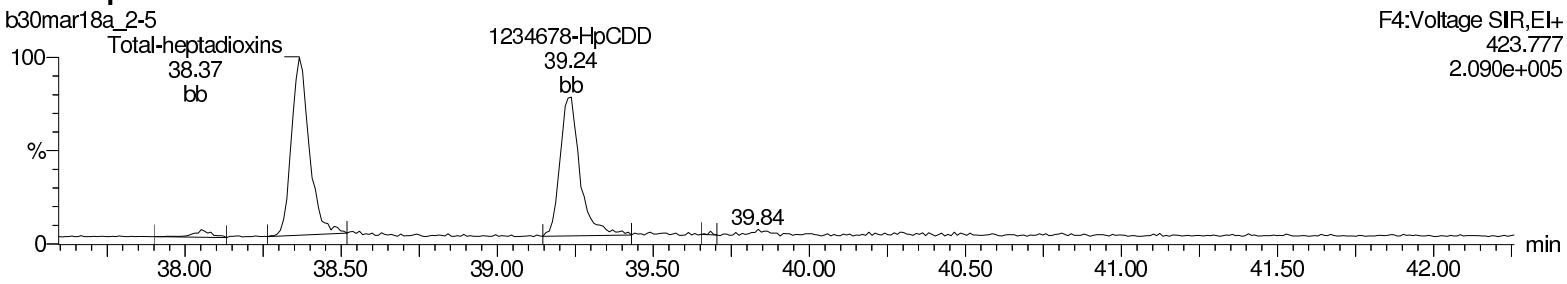
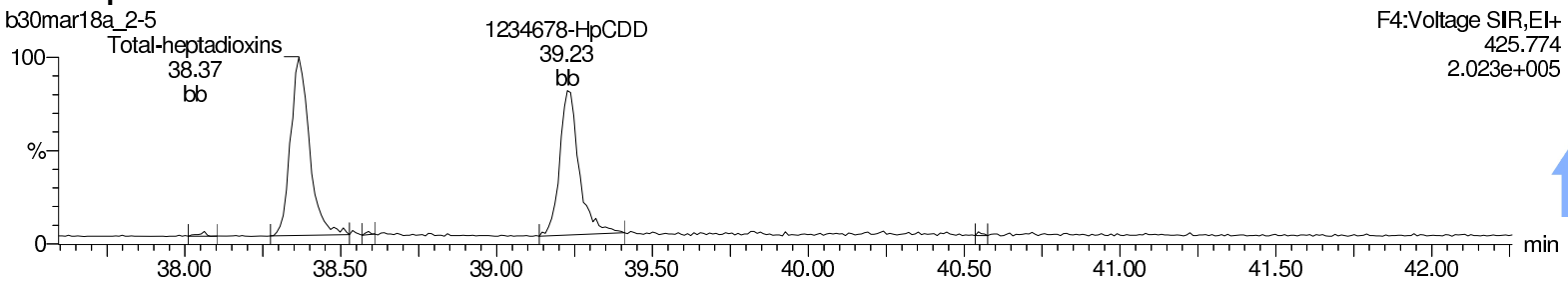
Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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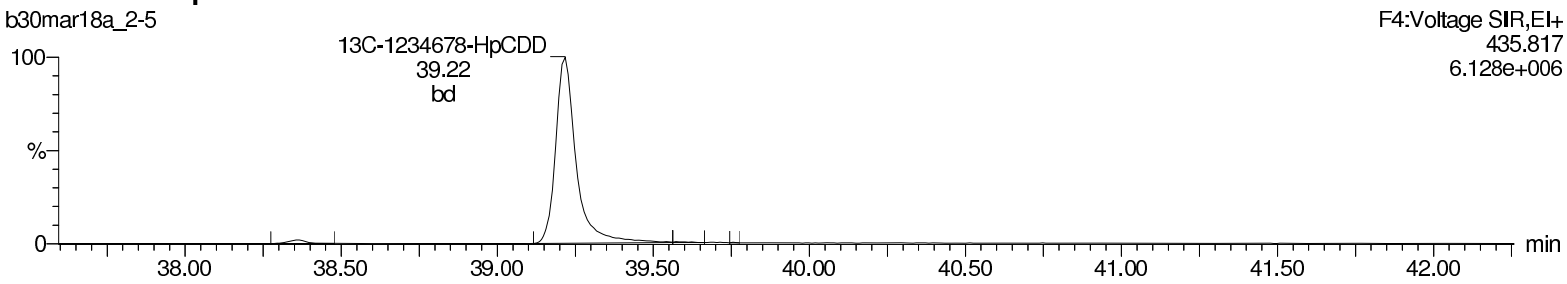

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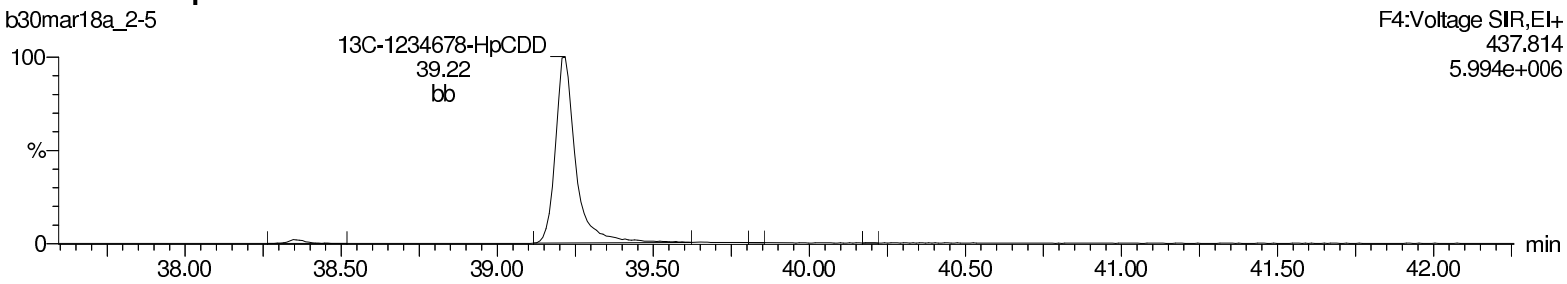
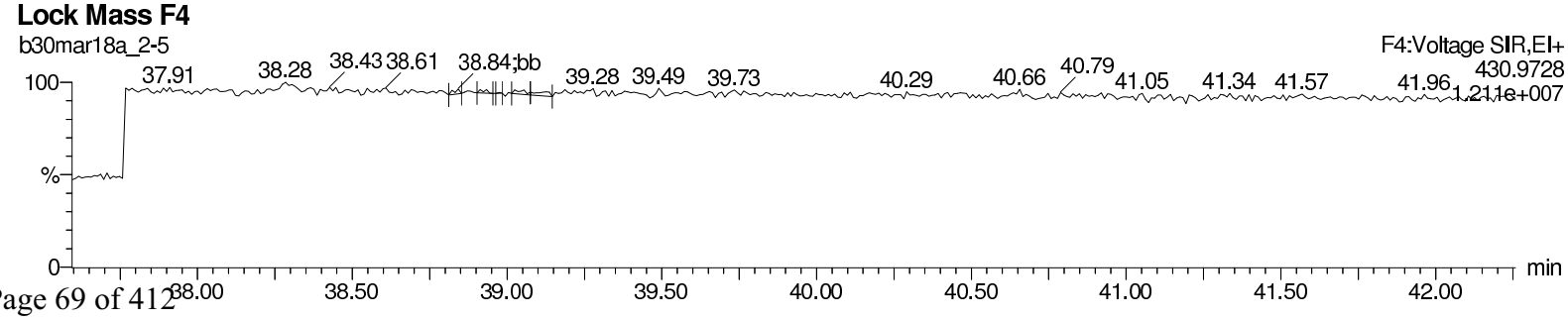


Lock Mass F4



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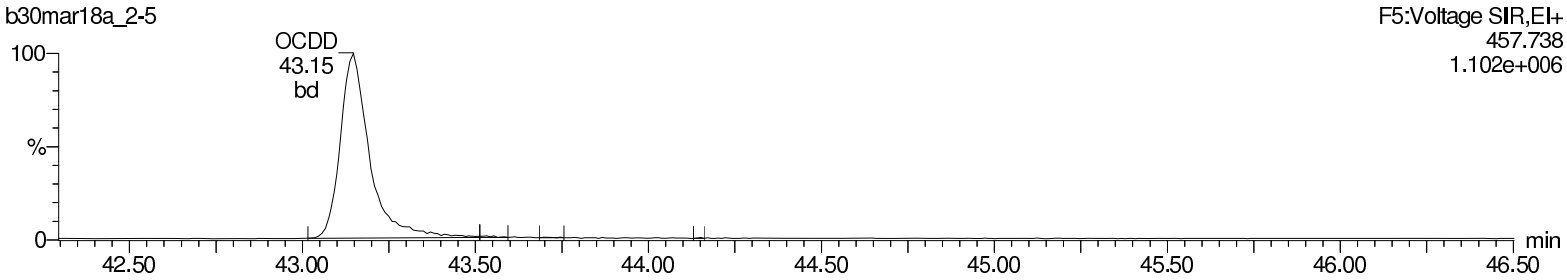
Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



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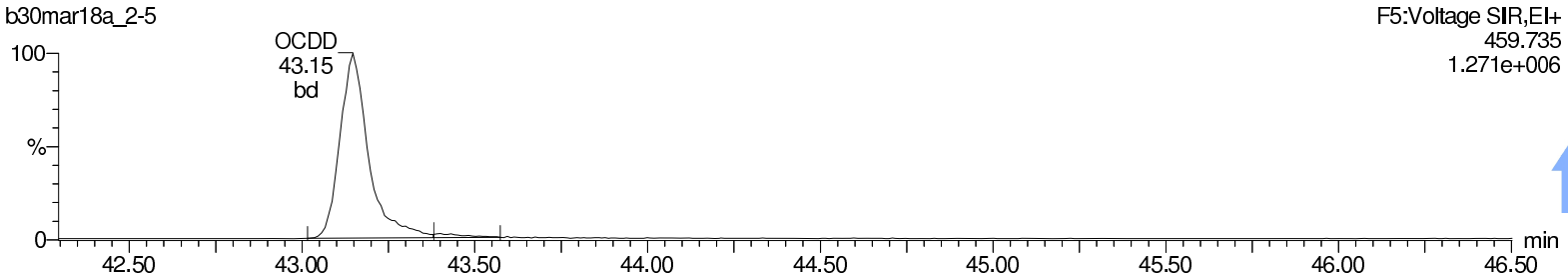

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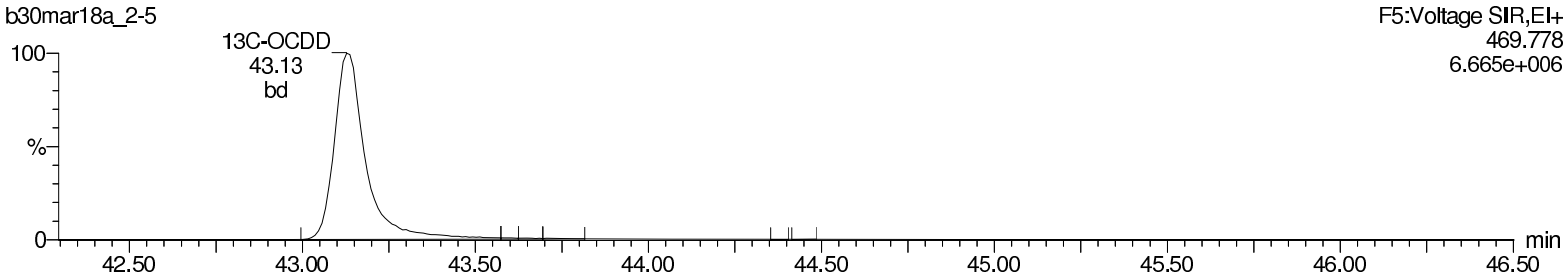

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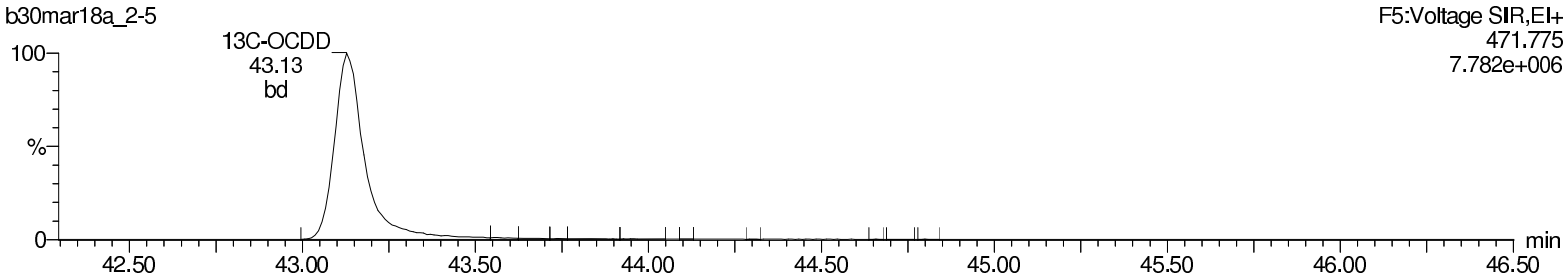

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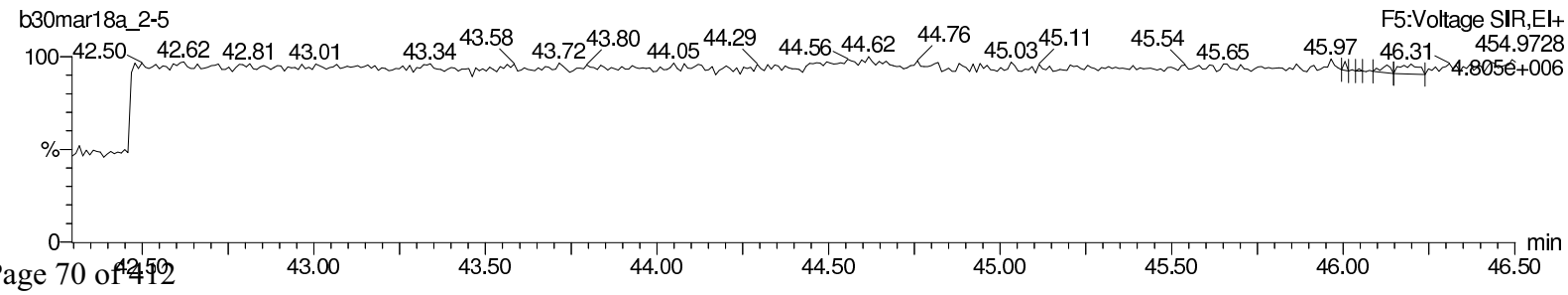

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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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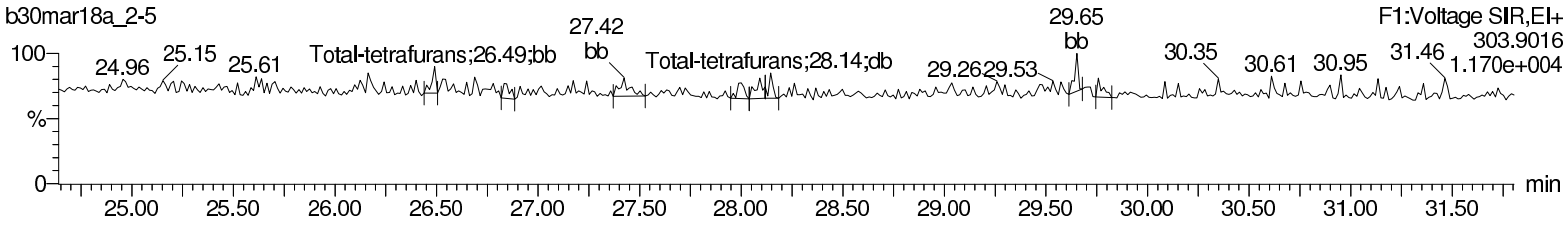
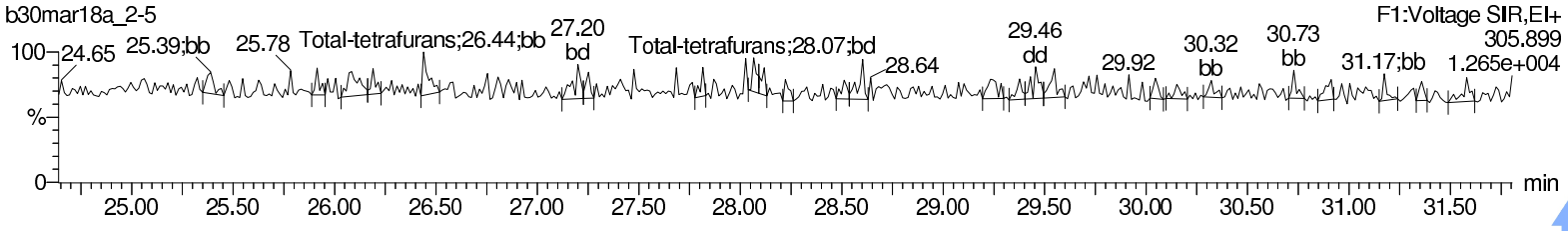
Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-tetrafurans



Total-tetrafurans



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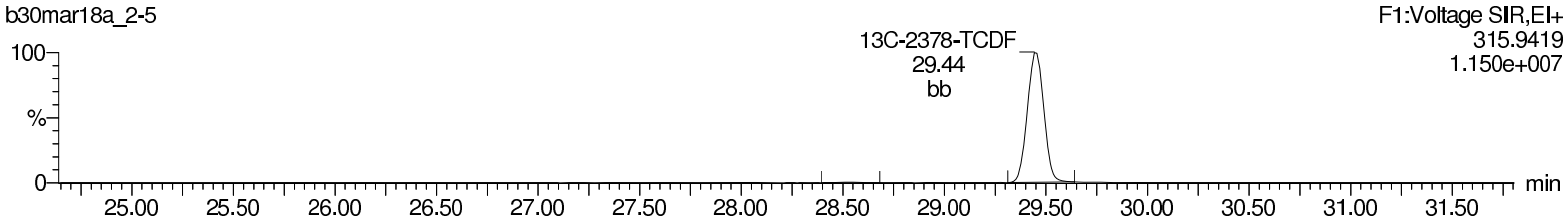

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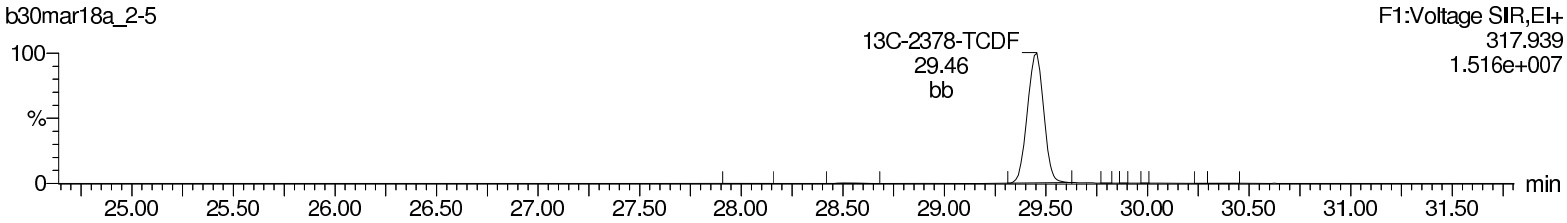
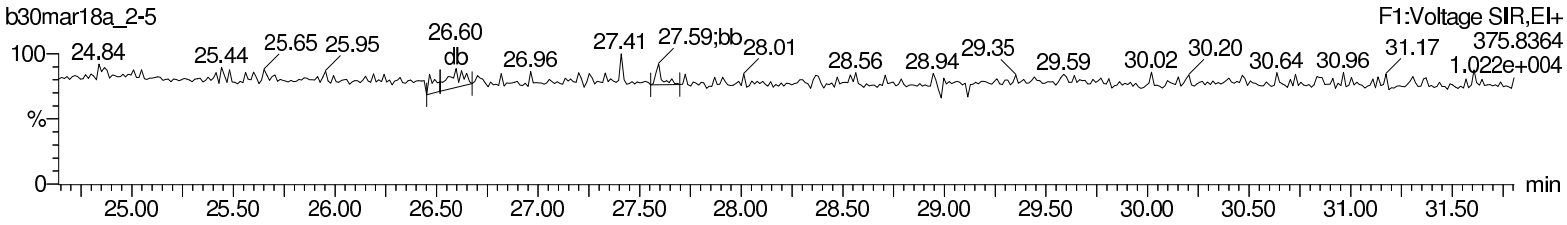
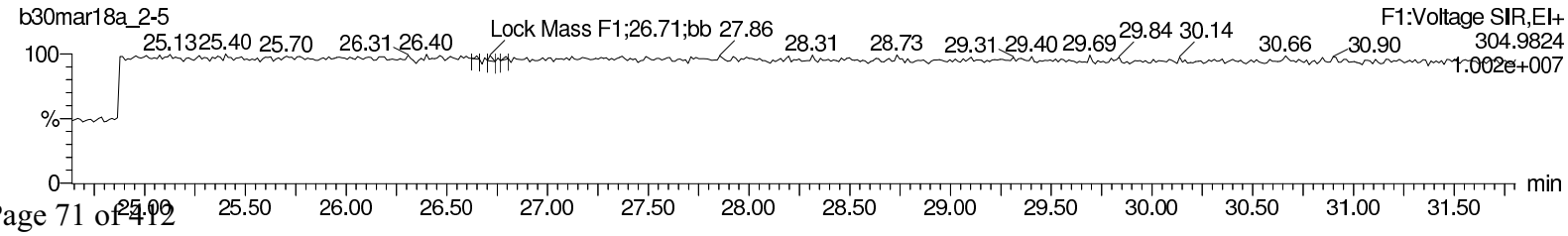


HxDPE



Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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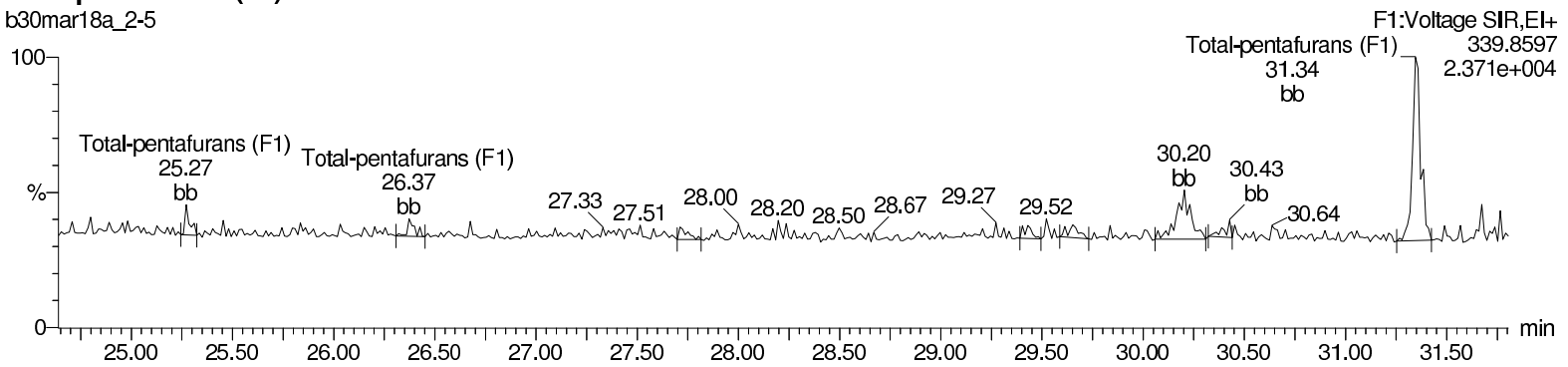
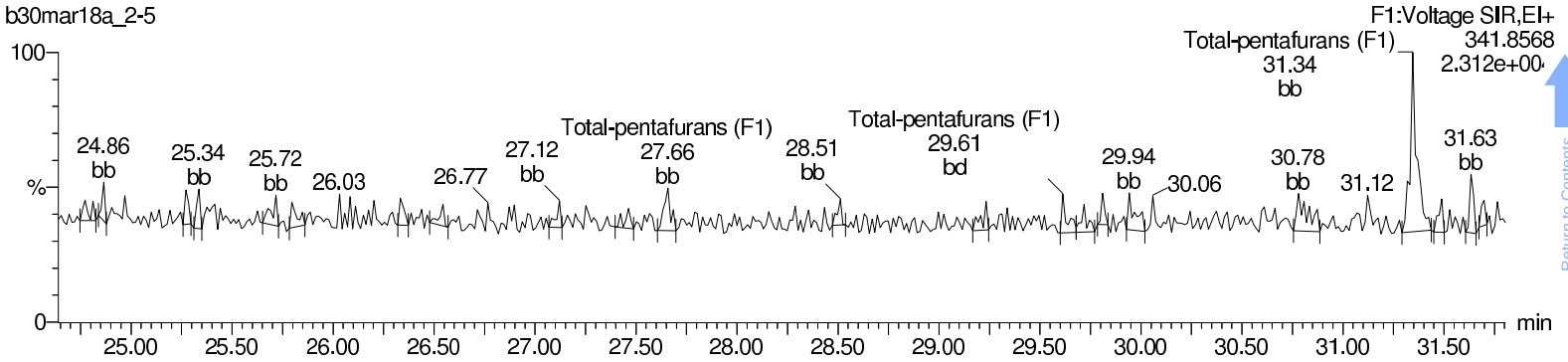
Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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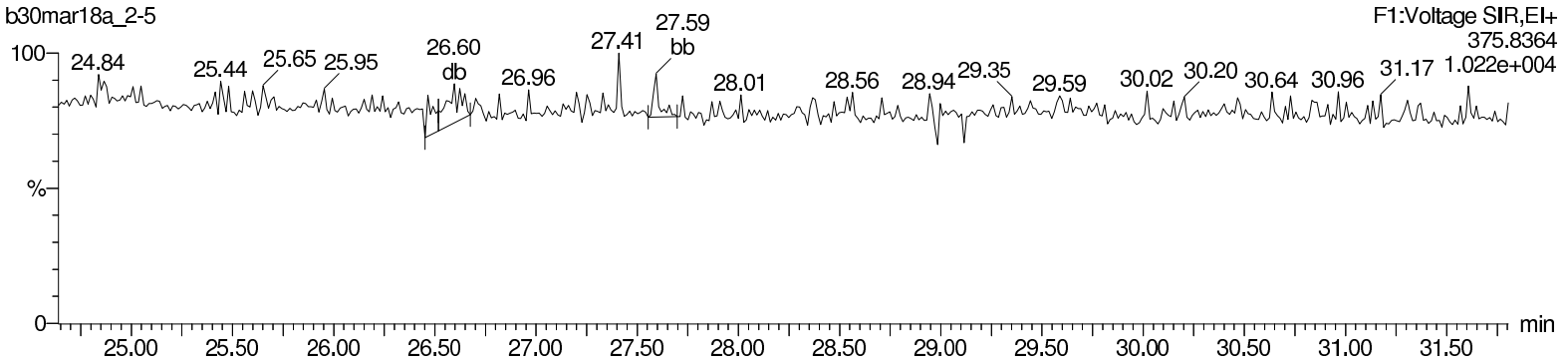
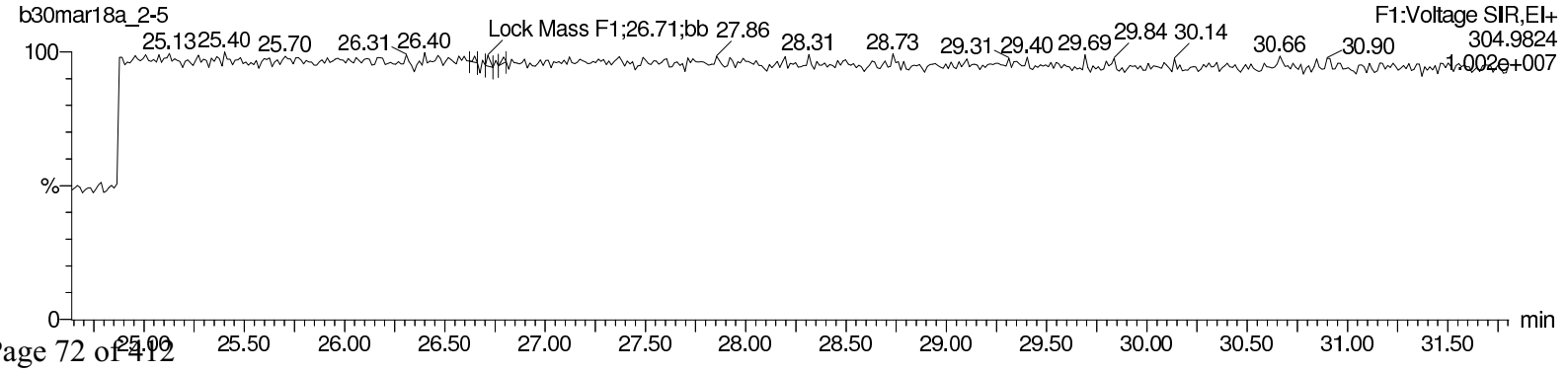


Lock Mass F1



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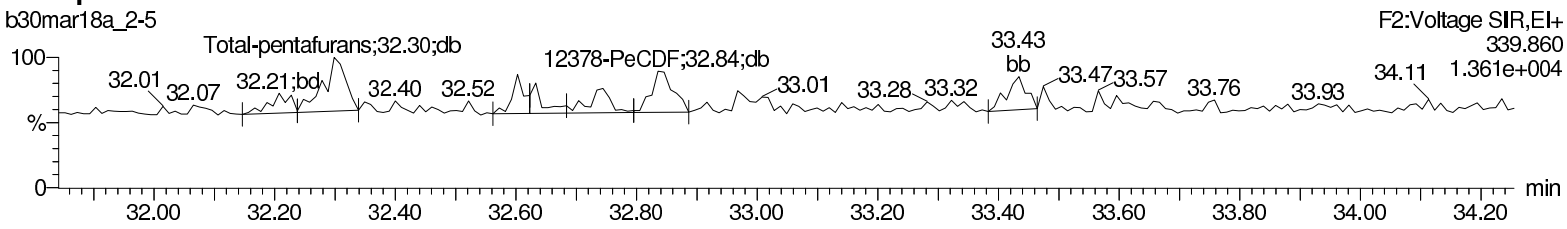
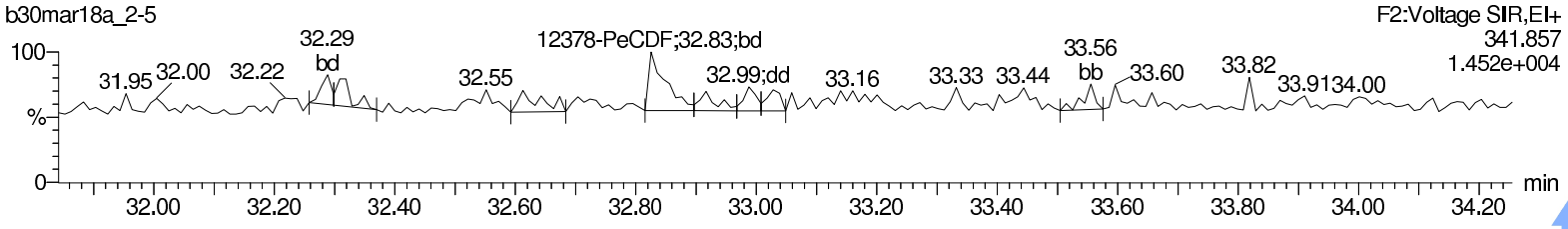
Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

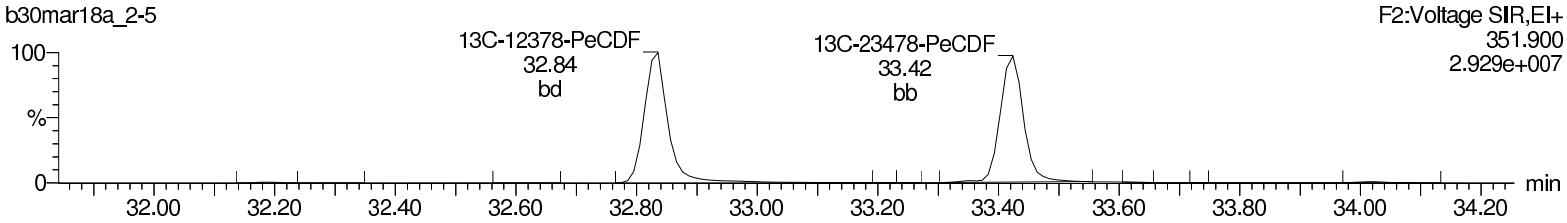
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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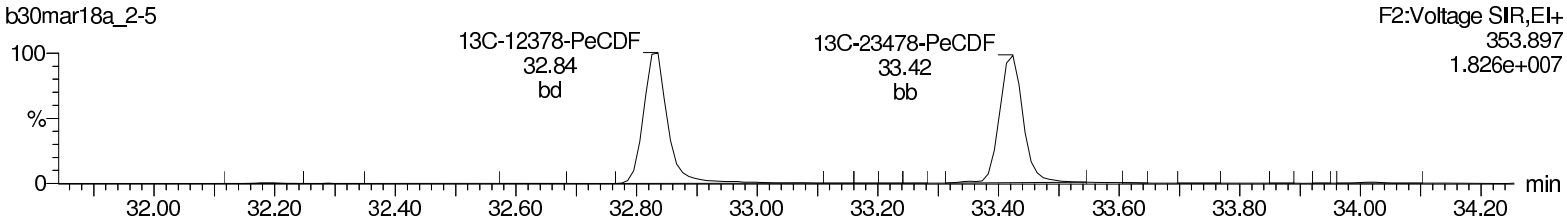
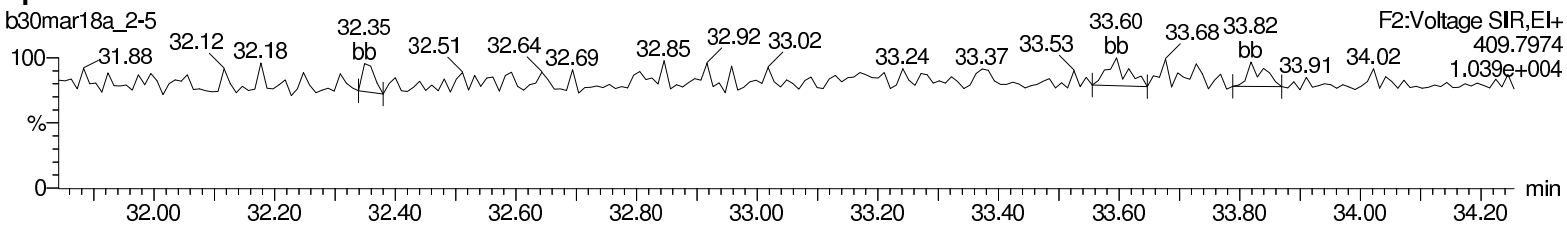
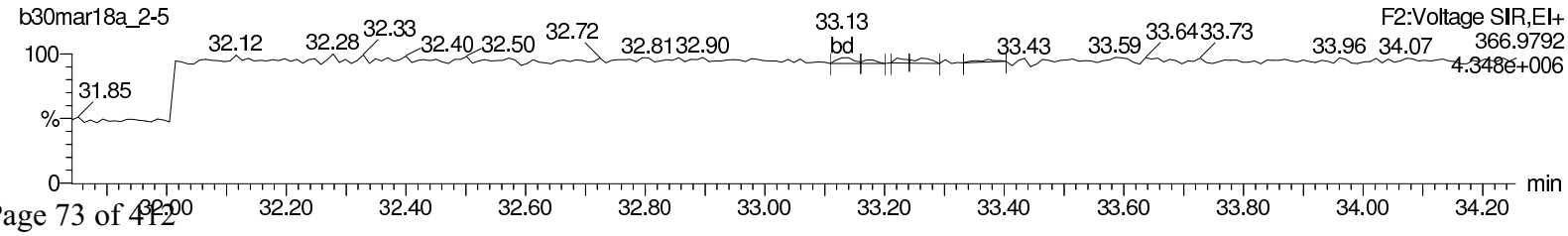


HpDPE



Lock Mass F2



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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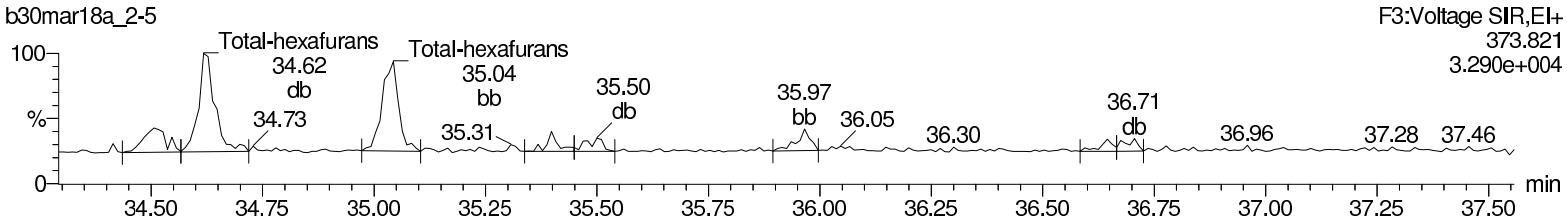
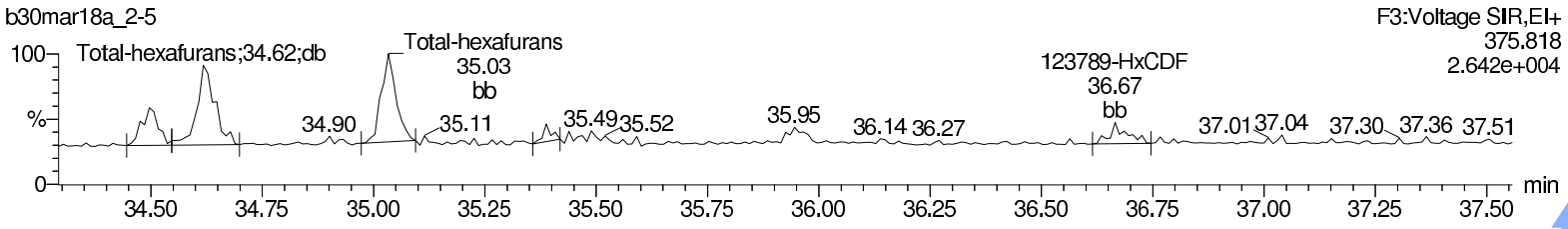
Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

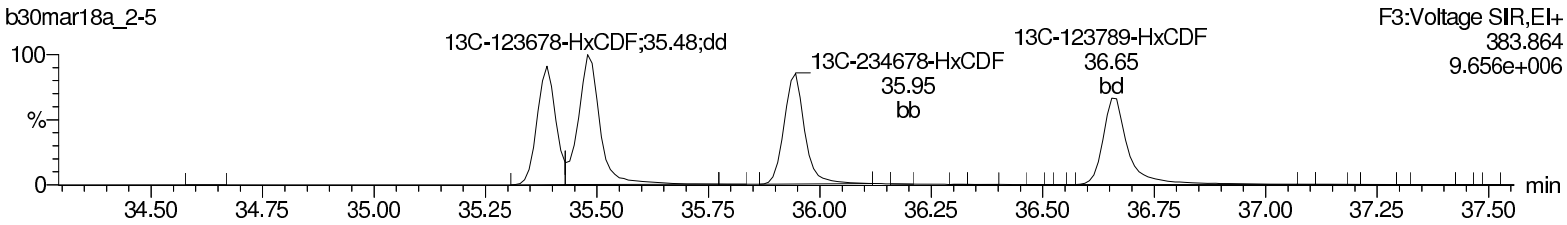
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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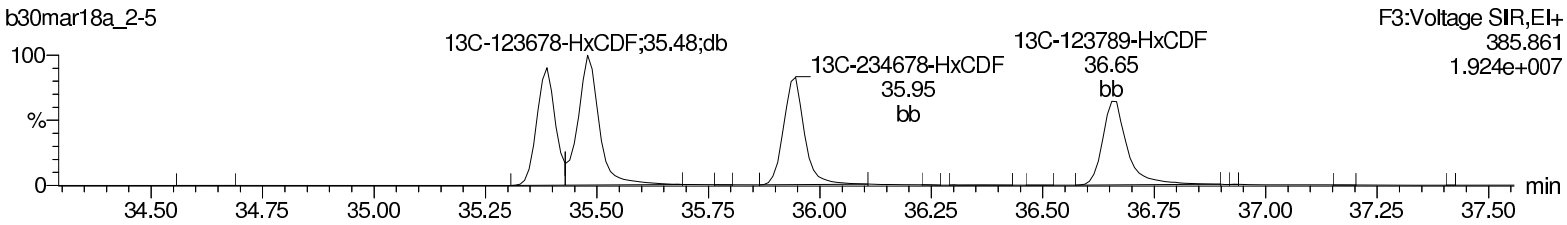

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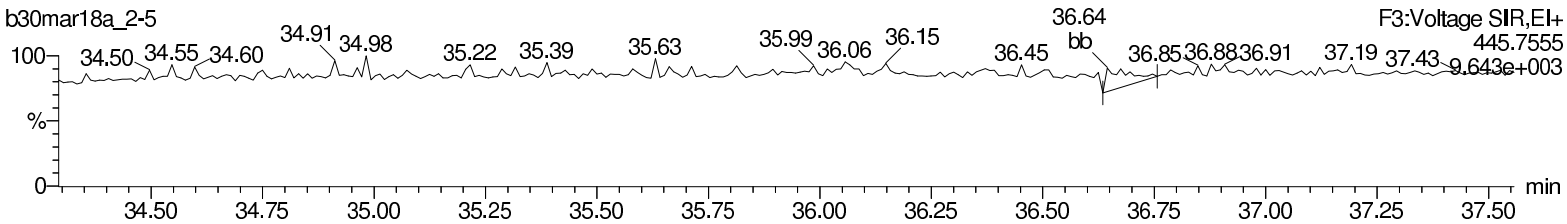
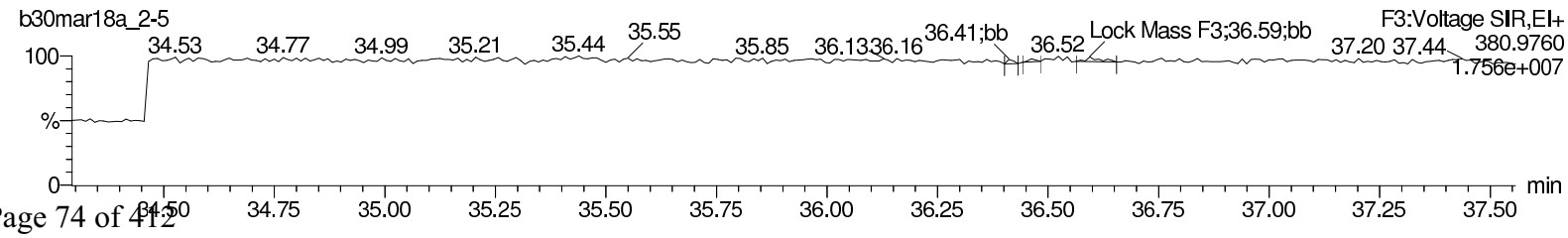


Lock Mass F3



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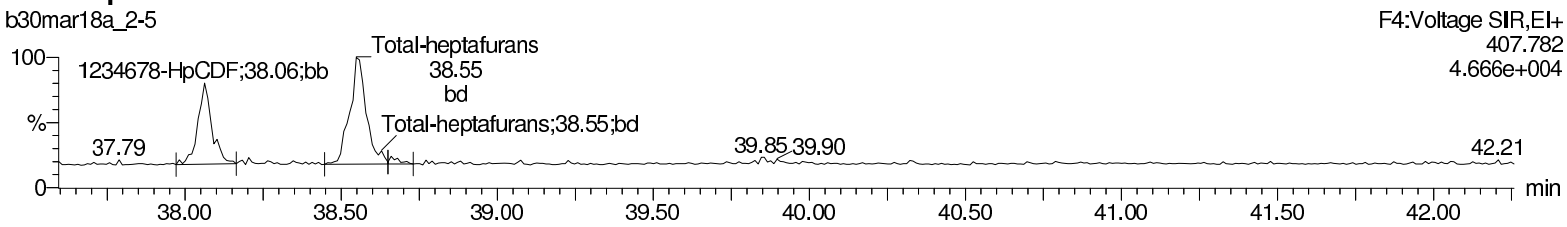
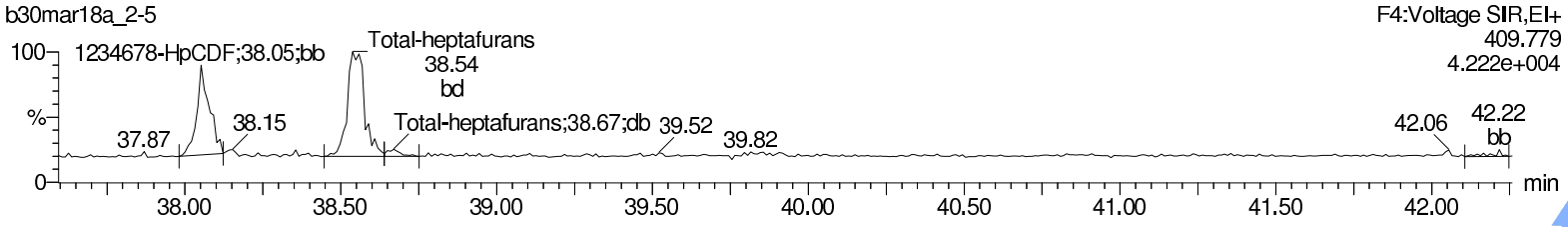
Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptafurans



Total-heptafurans



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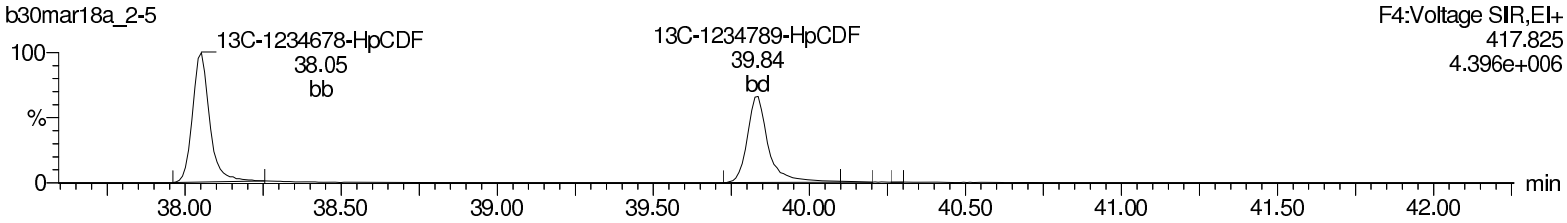

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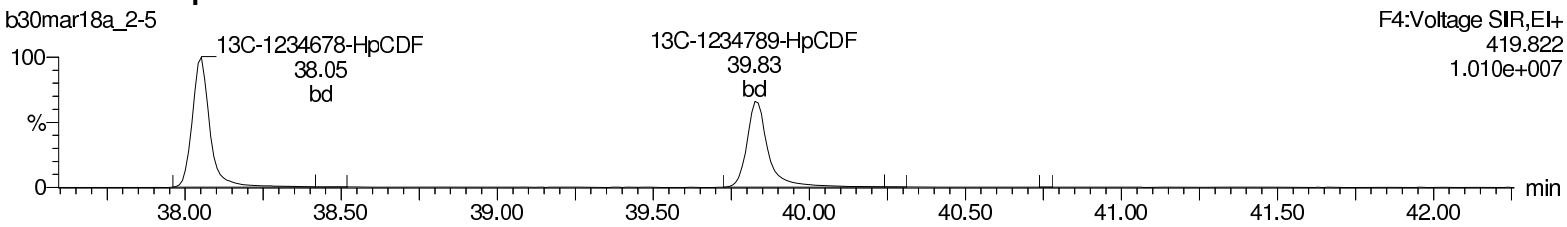
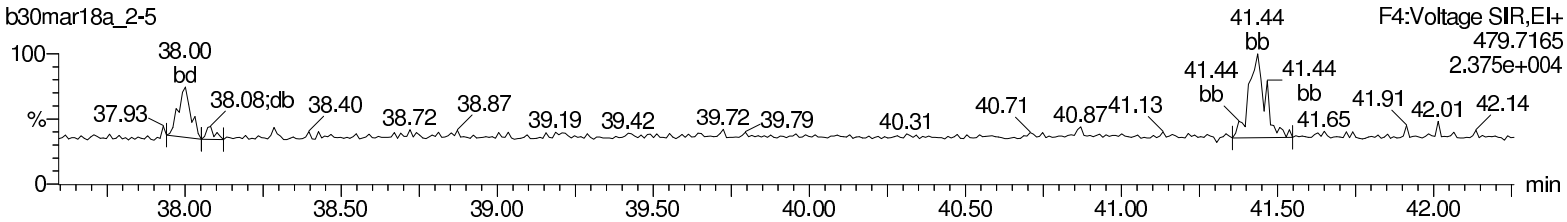
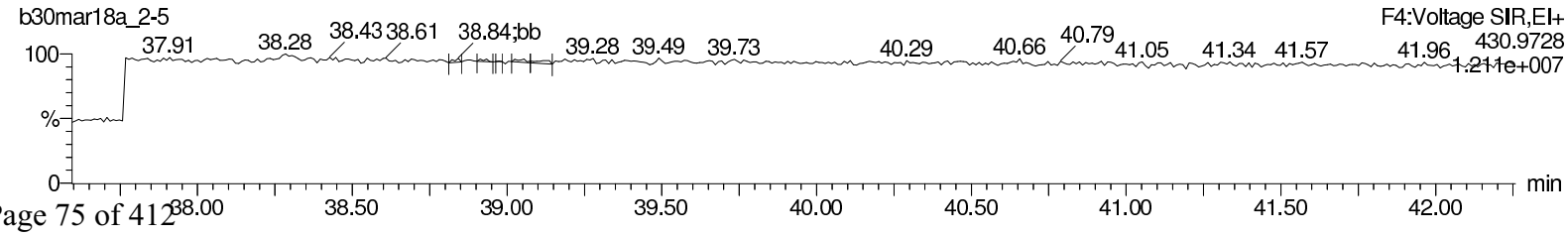


NoDPE



Lock Mass F4

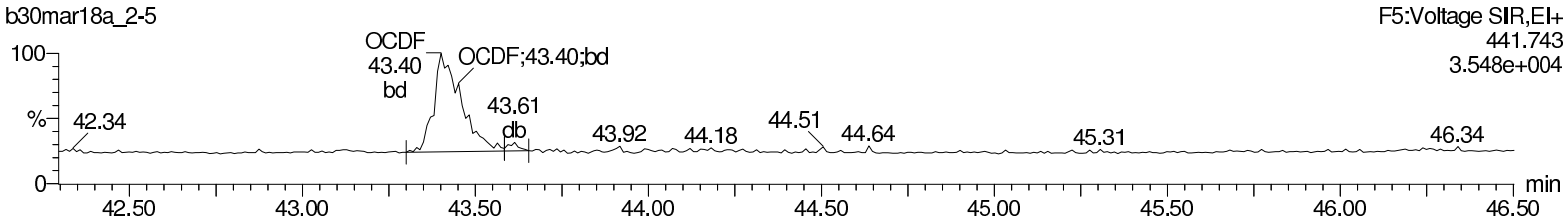


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

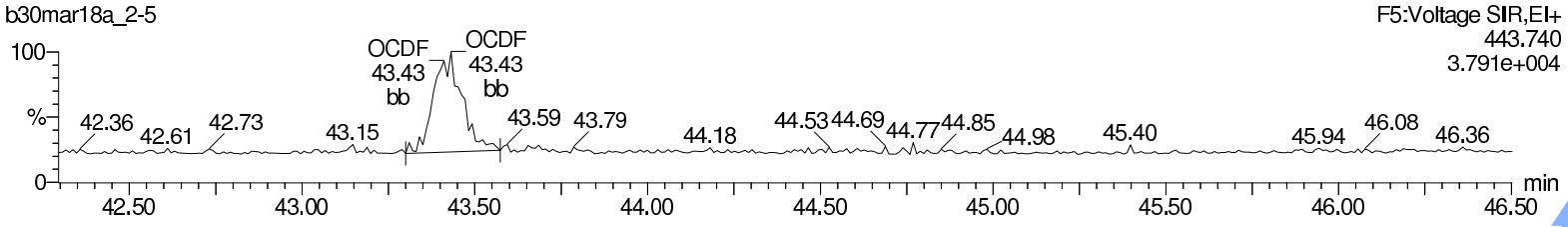
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-5, Date: 30-Mar-2018, Time: 21:49:34, ID: 13123002-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

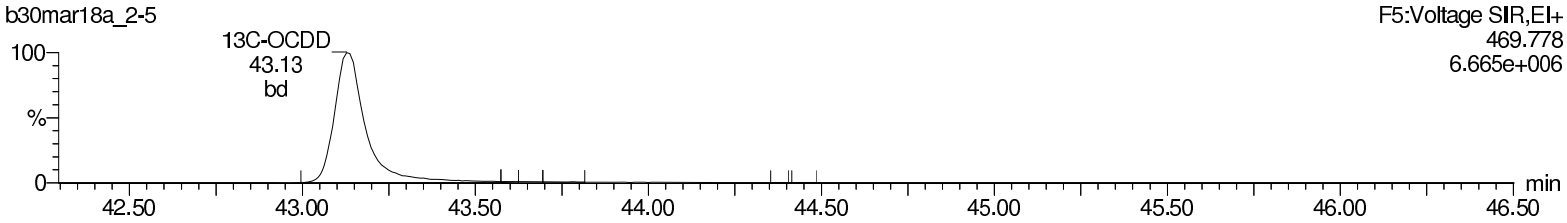
OCDF



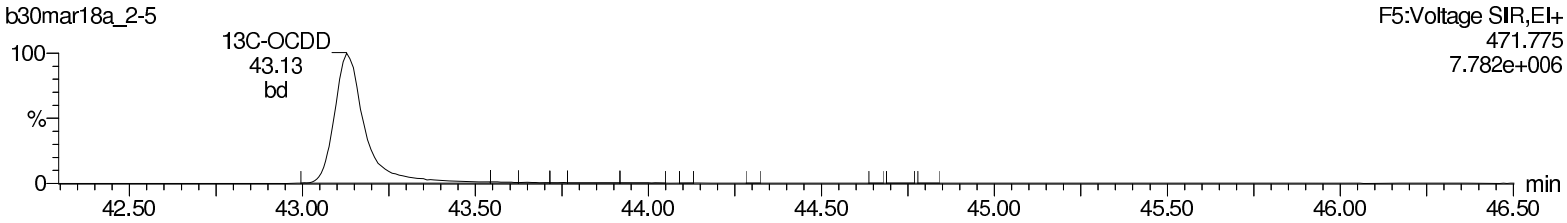
OCDF



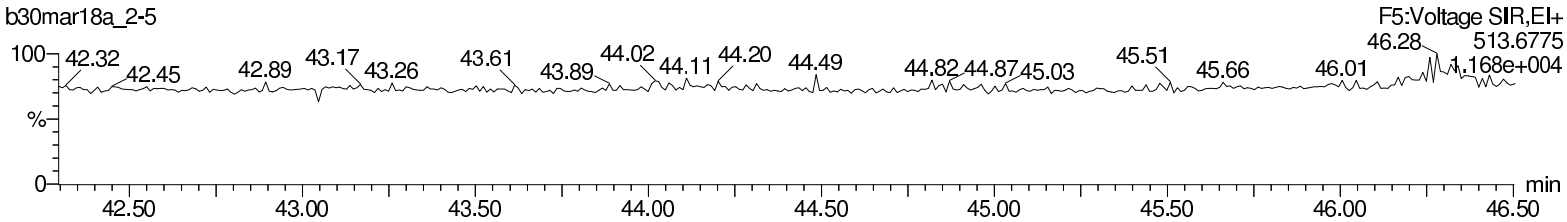
13C-OCDD



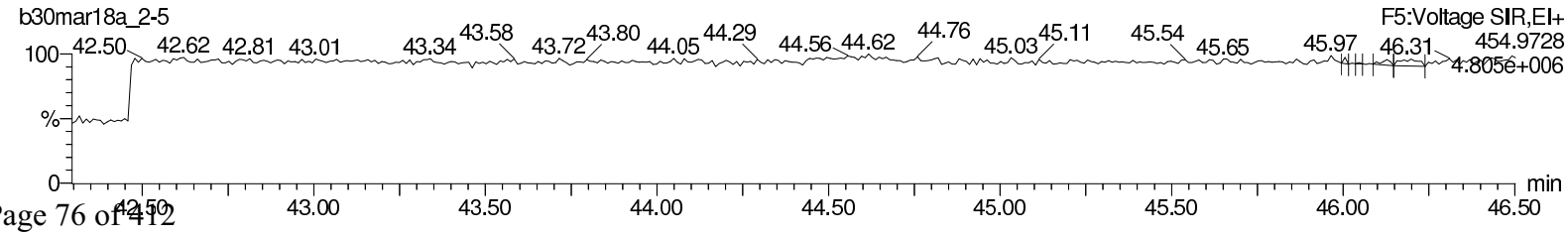
13C-OCDD



DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123003**	**Date Collected:**	**03/22/2018 07:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0002S022**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 22:38**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-6**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1016 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000563	ng/L	0.000563	0.00984
40321-76-4	1,2,3,7,8-PeCDD	JK	0.000846	ng/L	0.0005	0.0492
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.00183	ng/L	0.00131	0.0492
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.0037	ng/L	0.00125	0.0492
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.00283	ng/L	0.00131	0.0492
35822-46-9	1,2,3,4,6,7,8-HpCDD		0.0792	ng/L	0.00205	0.0492
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1.08	ng/L	0.00502	0.0984
51207-31-9	2,3,7,8-TCDF	U	0.000486	ng/L	0.000486	0.00984
57117-41-6	1,2,3,7,8-PeCDF	JK	0.000433	ng/L	0.000319	0.0492
57117-31-4	2,3,4,7,8-PeCDF	JK	0.00065	ng/L	0.000301	0.0492
70648-26-9	1,2,3,4,7,8-HxCDF	JK	0.000709	ng/L	0.000463	0.0492
57117-44-9	1,2,3,6,7,8-HxCDF	JK	0.000531	ng/L	0.000465	0.0492
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.000866	ng/L	0.00049	0.0492
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.00063	ng/L	0.00063	0.0492
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.0157	ng/L	0.000754	0.0492
55673-89-7	1,2,3,4,7,8,9-HpCDF	JK	0.00132	ng/L	0.00107	0.0492
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0753	ng/L	0.00168	0.0984
41903-57-5	Total TeCDD	U	0.000563	ng/L	0.000563	0.00984
36088-22-9	Total PeCDD	JK	0.00185	ng/L	0.0005	0.0492
34465-46-8	Total HxCDD	JK	0.0241	ng/L	0.00125	0.0492
37871-00-4	Total HpCDD		0.202	ng/L	0.00205	0.0492
30402-14-3	Total TeCDF	JK	0.000571	ng/L	0.000486	0.00984
30402-15-4	Total PeCDF	JK	0.00886	ng/L	0.000293	0.0492
55684-94-1	Total HxCDF	JK	0.0145	ng/L	0.000463	0.0492
38998-75-3	Total HpCDF	K	0.0524	ng/L	0.000754	0.0492
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00341	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00375	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.69	1.97	ng/L	85.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.43	1.97	ng/L	72.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.54	1.97	ng/L	78.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.63	1.97	ng/L	82.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.68	1.97	ng/L	85.3	(23%-140%)
13C-OCDD		2.94	3.94	ng/L	74.6	(17%-157%)
13C-2,3,7,8-TCDF		1.73	1.97	ng/L	87.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.66	1.97	ng/L	84.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.59	1.97	ng/L	80.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.56	1.97	ng/L	79.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.59	1.97	ng/L	80.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.61	1.97	ng/L	81.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.71	1.97	ng/L	86.9	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123003**	**Date Collected:**	**03/22/2018 07:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0002S022**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 22:38**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-6**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1016 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.51	1.97	ng/L	76.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.57	1.97	ng/L	79.8	(26%-138%)
37Cl-2,3,7,8-TCDD		0.175	0.197	ng/L	88.6	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:07:55 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:08:18 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD							NO		0.0286		1316			1161			
2	12378-PeCDD	3.50e2	1.82e2	5.32e2	33.60	1.000	1.93	YES	0.043	0.0254	9.82e3	1587	6.2	4.46e3	1175	3.8	MM	bb
3	123478-HxCDD	5.57e2	4.26e2	9.83e2	36.08	1.001	1.31	NO	0.093	0.0663	1.40e4	2520	5.6	9.72e3	3155	3.1	bd	bd
4	123678-HxCDD	1.17e3	1.14e3	2.31e3	36.15	1.000	1.03	YES	0.188	0.0635	2.13e4	2520	8.4	2.00e4	3155	6.3	dd	dd
5	123789-HxCDD	8.60e2	7.34e2	1.59e3	36.37	1.006	1.17	NO	0.144	0.0667	1.68e4	2520	6.7	1.20e4	3155	3.8	MM	db
6	1234678-HpCDD	2.08e4	2.00e4	4.07e4	39.23	1.001	1.04	NO	4.023	0.104	2.98e5	2698	110.5	2.85e5	2959	96.2	bd	bb
7	OCDD	1.97e5	2.29e5	4.27e5	43.14	1.000	0.86	NO	55.031	0.255	2.02e6	5183	389.3	2.37e6	2859	830.6	bd	bd
8	2378-TCDF	1.76e2	1.54e2	3.31e2	29.47	1.001	1.14	YES	0.014	0.0247	2.11e3	954	2.2	2.22e3	1781	1.2	bb	bb
9	12378-PeCDF	2.15e2	2.09e2	4.24e2	32.85	1.001	1.03	YES	0.022	0.0162	5.25e3	1211	4.3	6.53e3	1760	3.7	bb	bd
10	23478-PeCDF	3.68e2	3.21e2	6.89e2	33.43	1.001	1.15	YES	0.033	0.0153	1.03e4	1211	8.5	9.73e3	1760	5.5	bb	db
11	123478-HxCDF	2.92e2	1.98e2	4.90e2	35.39	1.000	1.48	YES	0.036	0.0235	8.64e3	1587	5.4	4.76e3	1067	4.5	dd	bb
12	123678-HxCDF	2.51e2	1.61e2	4.12e2	35.51	1.001	1.56	YES	0.027	0.0236	6.32e3	1587	4.0	3.99e3	1067	3.7	db	bb
13	234678-HxCDF	3.81e2	2.47e2	6.28e2	35.94	1.000	1.54	YES	0.044	0.0249	9.31e3	1587	5.9	4.94e3	1067	4.6	bb	bb
14	123789-HxCDF							NO		0.0320		1587			1067			
15	1234678-HpCDF	4.31e3	4.63e3	8.94e3	38.06	1.001	0.93	NO	0.798	0.0383	6.89e4	1169	58.9	8.40e4	1491	56.4	bb	bd
16	1234789-HpCDF	3.50e2	2.80e2	6.30e2	39.82	1.000	1.25	YES	0.067	0.0543	6.48e3	1169	5.5	4.96e3	1491	3.3	MM	MM
17	OCDF	1.42e4	1.58e4	3.00e4	43.40	1.006	0.89	NO	3.824	0.0853	1.54e5	1481	103.8	1.69e5	1240	136.6	bd	bd
18	13C-2378-TCDD	9.68e5	1.24e6	2.21e6	30.39	1.024	0.78	NO	85.609	0.0738	1.06e7	4660	2284.2	1.39e7	4103	3389.6	bb	bb
19	13C-12378-PeCDD	9.66e5	6.16e5	1.58e6	33.60	1.132	1.57	NO	72.785	0.0939	2.10e7	7282	2884.8	1.37e7	2105	6509.5	bb	bb
20	13C-123478-HxCDD	7.03e5	5.62e5	1.26e6	36.06	0.992	1.25	NO	78.336	0.154	1.42e7	9357	1516.5	1.13e7	7630	1487.3	bd	bd
21	13C-123678-HxCDD	8.20e5	6.42e5	1.46e6	36.14	0.994	1.28	NO	82.786	0.141	1.49e7	9357	1594.2	1.20e7	7630	1567.0	dd	db
22	13C-1234678-HpCDD	5.16e5	4.94e5	1.01e6	39.21	1.078	1.05	NO	85.262	0.147	6.91e6	6063	1139.4	6.63e6	5815	1140.5	bd	bd
23	13C-OCDD	8.12e5	8.91e5	1.70e6	43.13	1.186	0.91	NO	149.292	0.139	8.25e6	4885	1688.8	9.29e6	5886	1577.8	bd	bb
24	13C-2378-TCDF	1.16e6	1.49e6	2.65e6	29.44	0.992	0.78	NO	87.730	0.0797	1.31e7	6845	1915.2	1.70e7	4223	4029.3	bb	bb
25	13C-12378-PeCDF	1.43e6	9.40e5	2.37e6	32.83	1.107	1.52	NO	84.372	0.142	3.36e7	9717	3454.9	2.15e7	8589	2500.3	bb	bd
26	13C-23478-PeCDF	1.36e6	8.86e5	2.25e6	33.41	1.126	1.54	NO	80.659	0.143	3.17e7	9717	3261.3	2.06e7	8589	2399.1	db	bb
27	13C-123478-HxCDF	4.61e5	9.08e5	1.37e6	35.38	0.973	0.51	NO	79.252	0.143	9.53e6	8046	1184.5	1.90e7	8799	2154.5	bd	bd
28	13C-123678-HxCDF	5.45e5	1.07e6	1.62e6	35.48	0.976	0.51	NO	80.772	0.124	1.02e7	8046	1261.6	1.99e7	8799	2266.0	db	db
29	13C-234678-HxCDF	4.79e5	9.11e5	1.39e6	35.94	0.988	0.53	NO	81.919	0.146	8.91e6	8046	1107.3	1.71e7	8799	1942.4	bd	bb
30	13C-123789-HxCDF	4.57e5	8.92e5	1.35e6	36.65	1.008	0.51	NO	86.930	0.159	7.36e6	8046	914.4	1.40e7	8799	1588.9	bd	bd
31	13C-1234678-HpCDF	3.18e5	7.04e5	1.02e6	38.04	1.046	0.45	NO	76.514	0.110	4.93e6	3679	1339.5	1.11e7	6342	1757.5	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:07:55 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:08:18 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.58e5	5.89e5	8.47e5	39.83	1.095	0.44	NO	79.777	0.138	3.36e6	3679	914.2	7.39e6	6342	1165.0	bd	bd
33	13C-1234-TCDD	9.86e5	1.27e6	2.26e6	29.67	0.000	0.77	NO	100.000	0.0843	1.13e7	4660	2431.9	1.46e7	4103	3557.3	bb	bb
34	13C-123789-HxCDD	8.87e5	6.86e5	1.57e6	36.36	0.000	1.29	NO	100.000	0.159	1.51e7	9357	1614.4	1.23e7	7630	1606.1	db	bb
35	37Cl-2378-TCDD	2.33e5		2.33e5	30.40	1.025			8.865	0.0140	2.47e6	1689	1461.4				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:07:55 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:08:18 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetradioxins	1.91e2	1.23e2	3.14e2	29.47	1.55	YES	0.016	0.0286	3.66e3	1316	2.8	1.88e3	1161	1.6	db	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	3.50e2	1.82e2	5.32e2	33.60	1.93	YES	0.043	0.0254	9.82e3	1587	6.2	4.46e3	1175	3.8	MM	bb
2	Total-pentadioxins	1.64e2	6.67e1	2.31e2	33.41	2.46	YES	0.018	0.0254	5.26e3	1587	3.3	2.70e3	1175	2.3	bb	bb
3	Total-pentadioxins	5.57e1	6.41e1	1.20e2	33.14	0.87	YES	0.010	0.0254	1.67e3	1587	1.1	2.18e3	1175	1.9	bb	bb
4	Total-pentadioxins	3.46e2	2.96e2	6.42e2	32.99	1.17	YES	0.051	0.0254	5.32e3	1587	3.3	6.36e3	1175	5.4	MM	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-hexadioxins	2.52e2	1.02e2	3.54e2	36.63	2.47	YES	0.031	0.0654	5.24e3	2520	2.1	3.67e3	3155	1.2	bb	bb
2	123789-HxCDD	8.60e2	7.34e2	1.59e3	36.37	1.17	NO	0.144	0.0667	1.68e4	2520	6.7	1.20e4	3155	3.8	MM	db
3	123678-HxCDD	1.17e3	1.14e3	2.31e3	36.15	1.03	YES	0.188	0.0635	2.13e4	2520	8.4	2.00e4	3155	6.3	dd	dd
4	123478-HxCDD	5.57e2	4.26e2	9.83e2	36.08	1.31	NO	0.093	0.0663	1.40e4	2520	5.6	9.72e3	3155	3.1	bd	bd
5	Total-hexadioxins	3.39e3	2.33e3	5.73e3	35.53	1.45	YES	0.506	0.0654	4.48e4	2520	17.8	3.91e4	3155	12.4	db	MM
6	Total-hexadioxins	2.30e2	1.06e2	3.36e2	35.40	2.16	YES	0.030	0.0654	7.93e3	2520	3.1	3.67e3	3155	1.2	dd	db
7	Total-hexadioxins	3.09e2	2.47e2	5.55e2	35.34	1.25	NO	0.049	0.0654	8.47e3	2520	3.4	5.76e3	3155	1.8	bd	bd
8	Total-hexadioxins	1.83e3	1.50e3	3.33e3	34.90	1.22	NO	0.294	0.0654	4.03e4	2520	16.0	3.57e4	3155	11.3	bd	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptadioxins	3.25e4	3.05e4	6.30e4	38.37	1.06	NO	6.225	0.104	5.09e5	2698	188.7	4.74e5	2959	160.3	bd	bb
2	1234678-HpCDD	2.08e4	2.00e4	4.07e4	39.23	1.04	NO	4.023	0.104	2.98e5	2698	110.5	2.85e5	2959	96.2	bd	bb

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:07:55 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:08:18 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	2.47e2	4.60e2	7.07e2	26.15	0.54	YES	0.029	0.0247	8.39e3	954	8.8	6.28e3	1781	3.5	db	db
2	Total-tetrafurans	5.49e1	5.24e1	1.07e2	26.10	1.05	YES	0.004	0.0247	2.34e3	954	2.5	2.10e3	1781	1.2	bd	bd
3	Total-tetrafurans	6.55e1	6.90e1	1.34e2	31.49	0.95	YES	0.006	0.0247	2.11e3	954	2.2	2.01e3	1781	1.1	bb	bb
4	2378-TCDF	1.76e2	1.54e2	3.31e2	29.47	1.14	YES	0.014	0.0247	2.11e3	954	2.2	2.22e3	1781	1.2	bb	bb
5	Total-tetrafurans	6.48e1	8.16e1	1.46e2	28.51	0.79	NO	0.006	0.0247	2.15e3	954	2.2	2.11e3	1781	1.2	bb	bd
6	Total-tetrafurans	9.17e1	1.17e2	2.09e2	28.09	0.78	NO	0.009	0.0247	1.94e3	954	2.0	3.62e3	1781	2.0	db	bb
7	Total-tetrafurans	7.97e1	8.68e1	1.67e2	27.30	0.92	YES	0.007	0.0247	1.79e3	954	1.9	2.50e3	1781	1.4	db	bb
8	Total-tetrafurans	2.89e2	2.96e2	5.85e2	27.16	0.98	YES	0.024	0.0247	4.14e3	954	4.3	3.19e3	1781	1.8	MM	MM
9	Total-tetrafurans	1.25e2	1.78e2	3.03e2	26.83	0.70	NO	0.012	0.0247	3.37e3	954	3.5	3.30e3	1781	1.9	bb	bd

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	3.05e3	2.06e3	5.11e3	31.36	1.48	NO	0.253	0.0149	5.10e4	1221	41.8	3.64e4	1592	22.9	bb	bb
2	Total-pentafurans (F1)	6.56e2	1.01e2	7.57e2	30.16	6.50	YES	0.037	0.0149	7.69e3	1221	6.3	4.30e3	1592	2.7	bb	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	23478-PeCDF	3.68e2	3.21e2	6.89e2	33.43	1.15	YES	0.033	0.0153	1.03e4	1211	8.5	9.73e3	1760	5.5	bb	db
2	Total-pentafurans	2.03e2	1.58e2	3.61e2	33.00	1.28	YES	0.018	0.0157	4.84e3	1211	4.0	4.03e3	1760	2.3	bb	bb
3	12378-PeCDF	2.15e2	2.09e2	4.24e2	32.85	1.03	YES	0.022	0.0162	5.25e3	1211	4.3	6.53e3	1760	3.7	bb	bd
4	Total-pentafurans	2.93e2	2.00e2	4.93e2	32.62	1.46	NO	0.024	0.0157	1.13e4	1211	9.3	5.46e3	1760	3.1	bb	bb
5	Total-pentafurans	1.07e3	5.65e2	1.63e3	32.30	1.89	YES	0.081	0.0157	2.06e4	1211	17.0	1.19e4	1760	6.8	db	bb

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:07:55 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:08:18 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	234678-HxCDF	3.81e2	2.47e2	6.28e2	35.94	1.54	YES	0.044	0.0249	9.31e3	1587	5.9	4.94e3	1067	4.6	bb	bb
2	123678-HxCDF	2.51e2	1.61e2	4.12e2	35.51	1.56	YES	0.027	0.0236	6.32e3	1587	4.0	3.99e3	1067	3.7	db	bb
3	123478-HxCDF	2.92e2	1.98e2	4.90e2	35.39	1.48	YES	0.036	0.0235	8.64e3	1587	5.4	4.76e3	1067	4.5	dd	bb
4	Total-hexafurans	2.25e3	1.63e3	3.88e3	35.02	1.38	NO	0.277	0.0258	5.12e4	1587	32.2	3.39e4	1067	31.7	bb	bb
5	Total-hexafurans	2.02e3	1.82e3	3.83e3	34.62	1.11	NO	0.273	0.0258	4.71e4	1587	29.7	3.90e4	1067	36.5	db	bb
6	Total-hexafurans	5.60e2	5.57e2	1.12e3	34.50	1.01	YES	0.080	0.0258	1.26e4	1587	8.0	1.53e4	1067	14.3	bd	bb

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	9.06e3	9.44e3	1.85e4	38.54	0.96	NO	1.796	0.0456	1.46e5	1169	125.4	1.48e5	1491	99.2	bd	bd
2	Total-heptafurans	1.02e2	1.21e2	2.23e2	38.37	0.84	YES	0.022	0.0456	3.60e3	1169	3.1	3.73e3	1491	2.5	bb	bb
3	1234678-HpCDF	4.31e3	4.63e3	8.94e3	38.06	0.93	NO	0.798	0.0383	6.89e4	1169	58.9	8.40e4	1491	56.4	bb	bd
4	1234789-HpCDF	3.50e2	2.80e2	6.30e2	39.82	1.25	YES	0.067	0.0543	6.48e3	1169	5.5	4.96e3	1491	3.3	MM	MM
5	Total-heptafurans	1.15e2	1.45e2	2.61e2	38.67	0.79	YES	0.025	0.0456	5.91e3	1169	5.1	6.72e3	1491	4.5	db	dd

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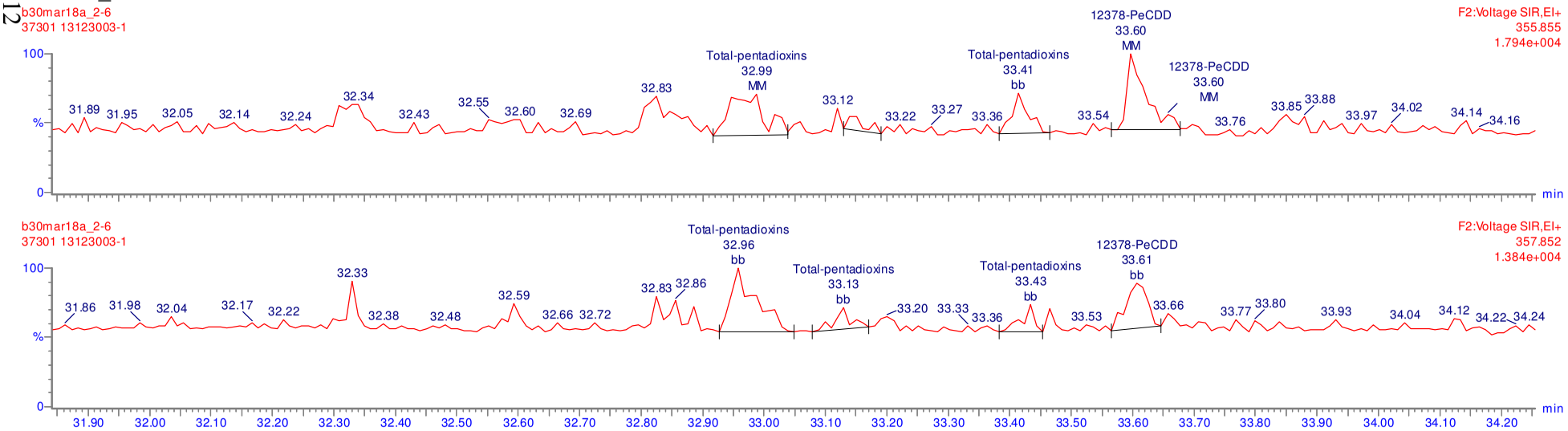
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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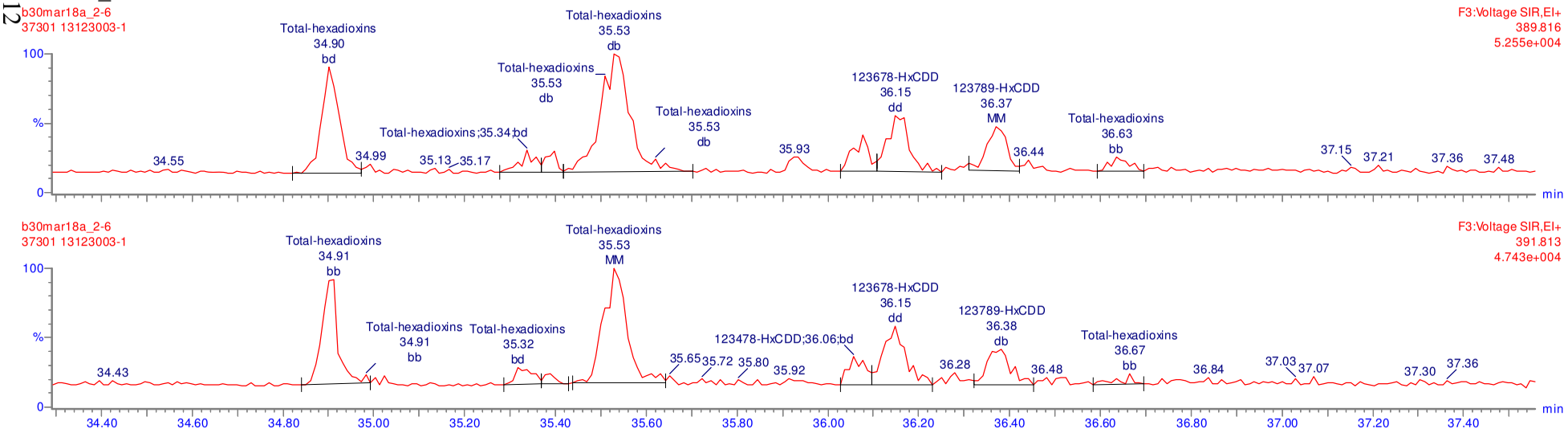
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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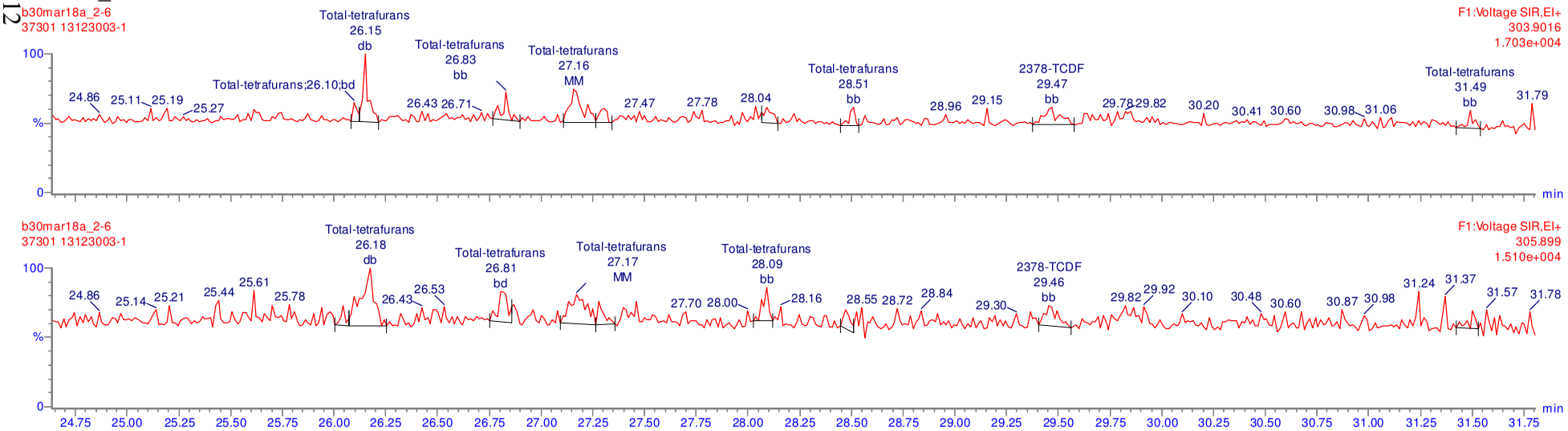
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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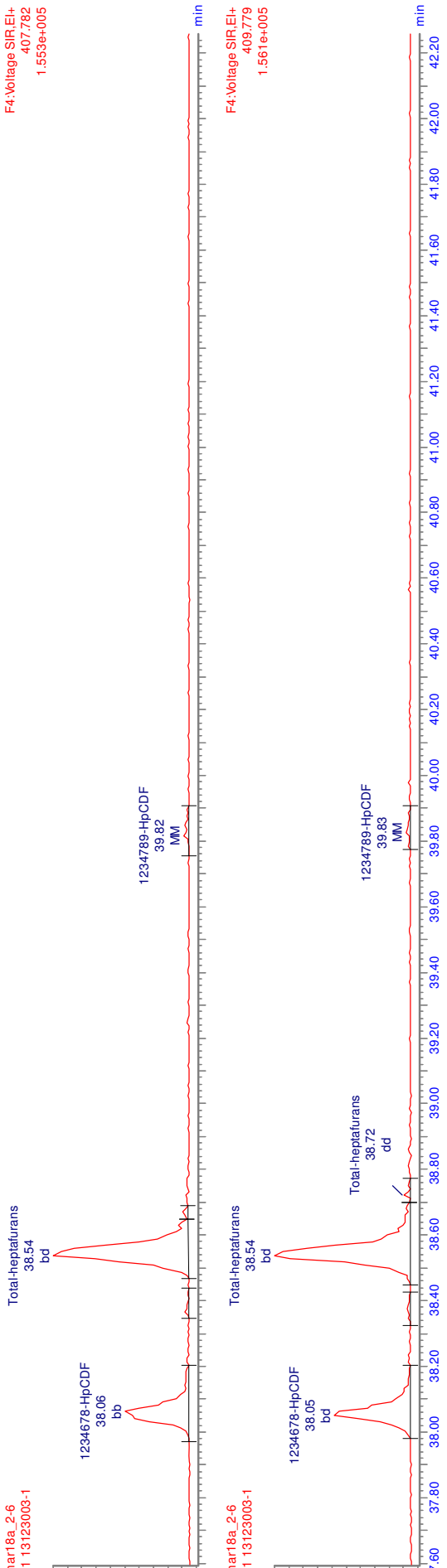

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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

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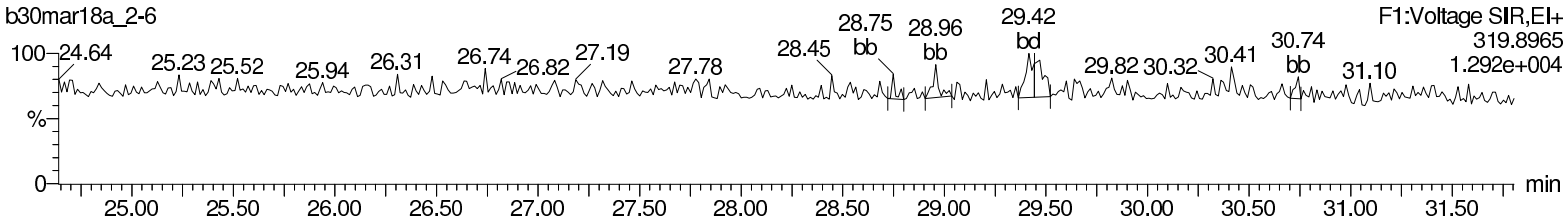

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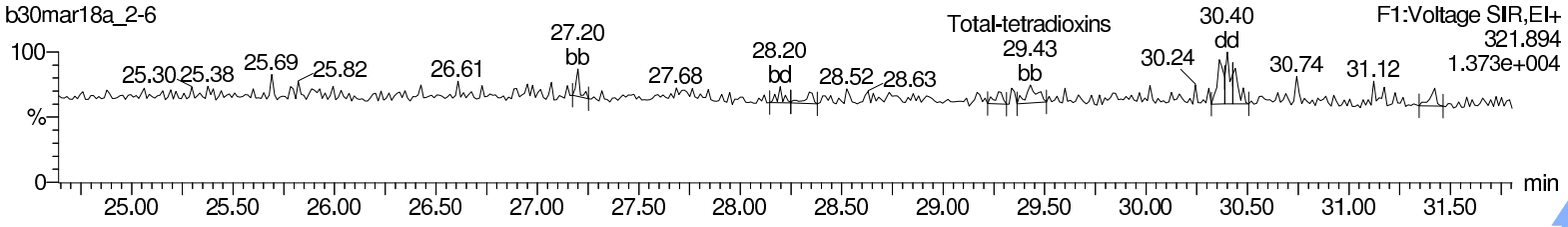

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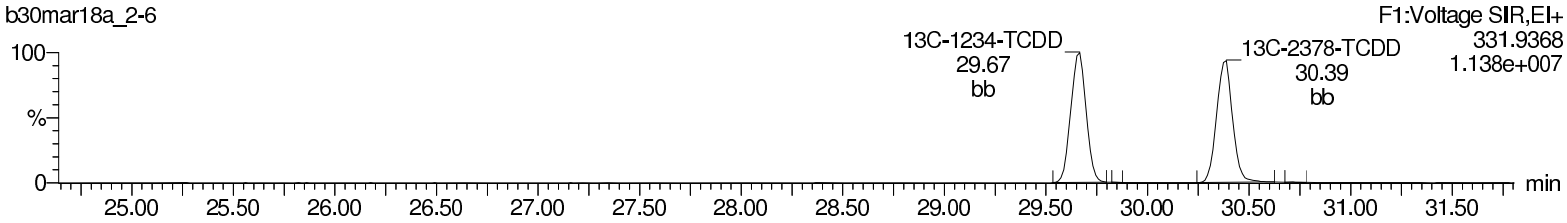

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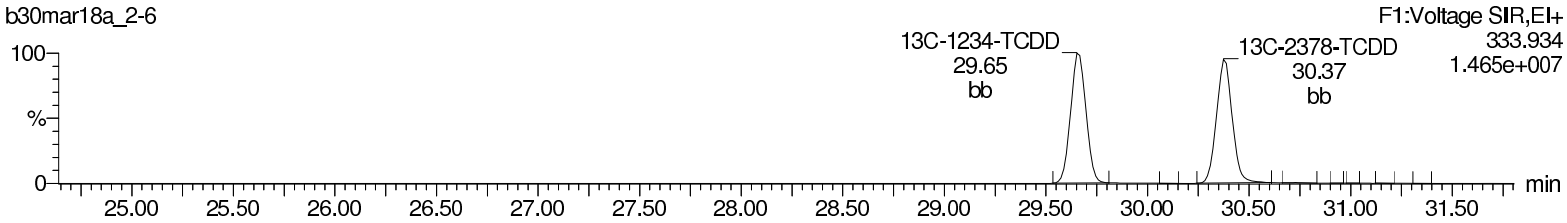

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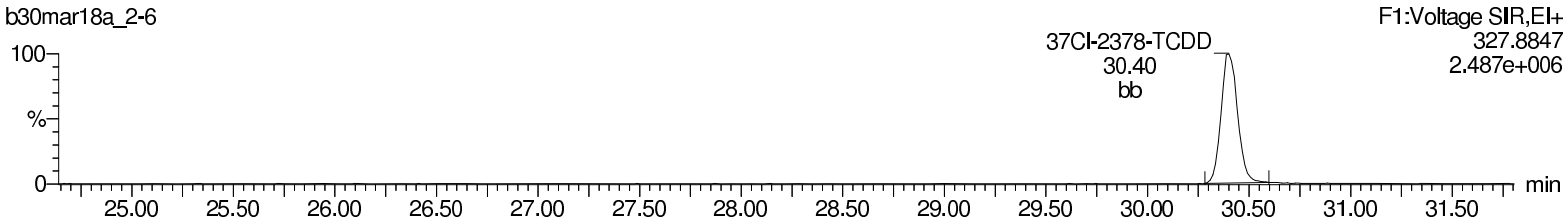

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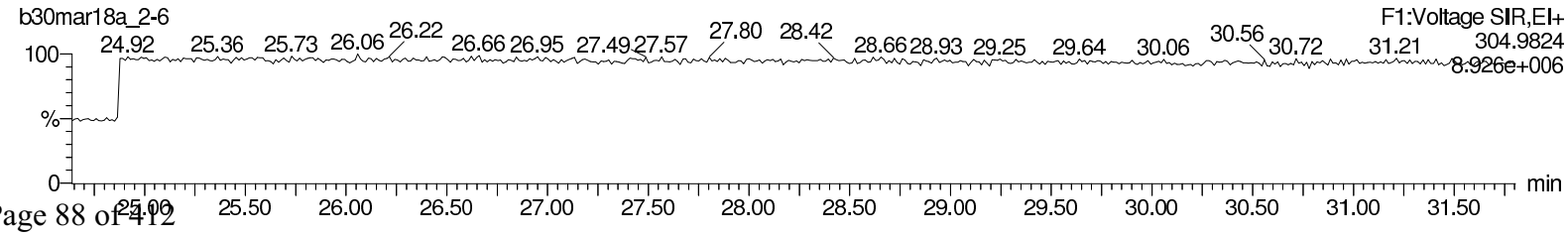

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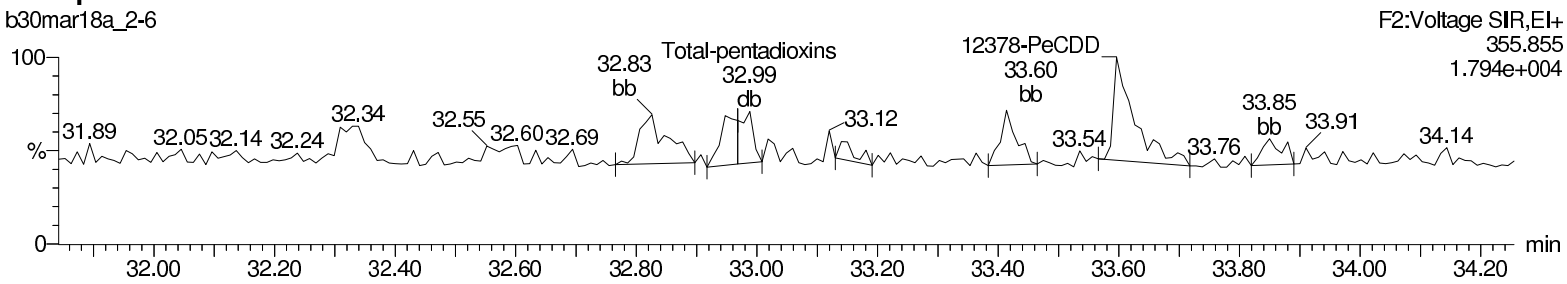
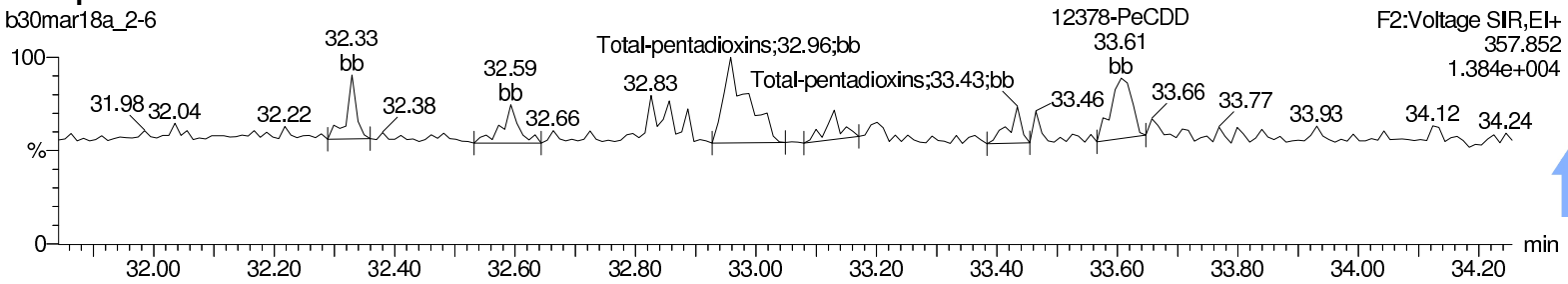
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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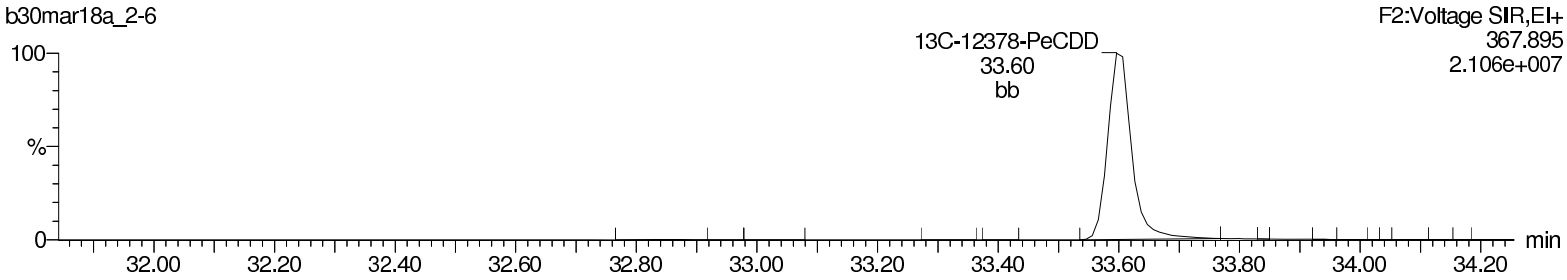

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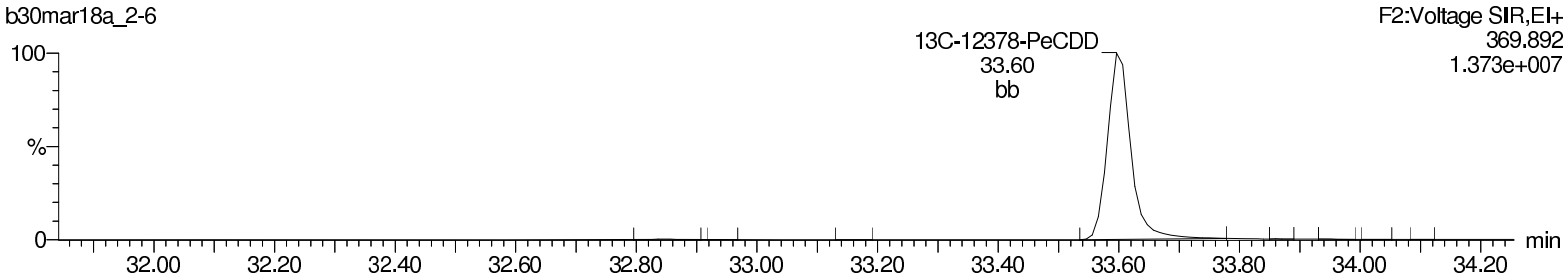

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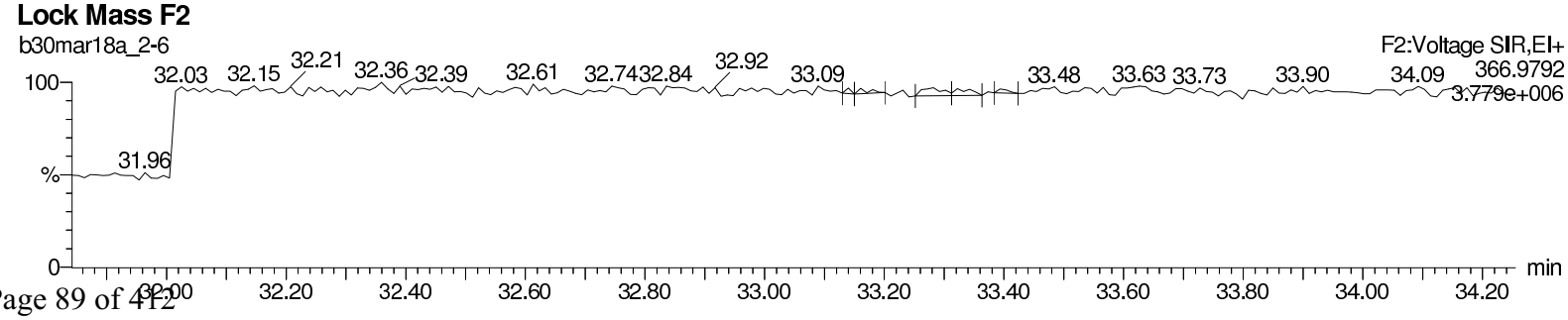

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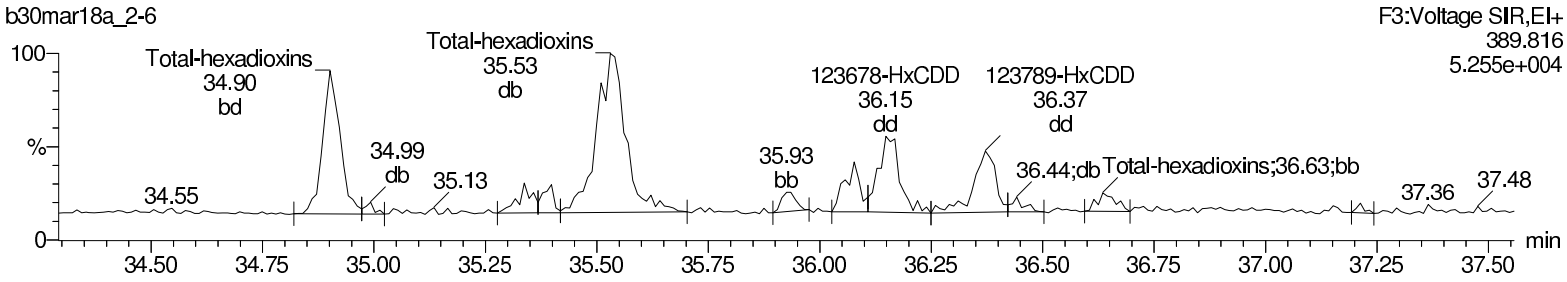
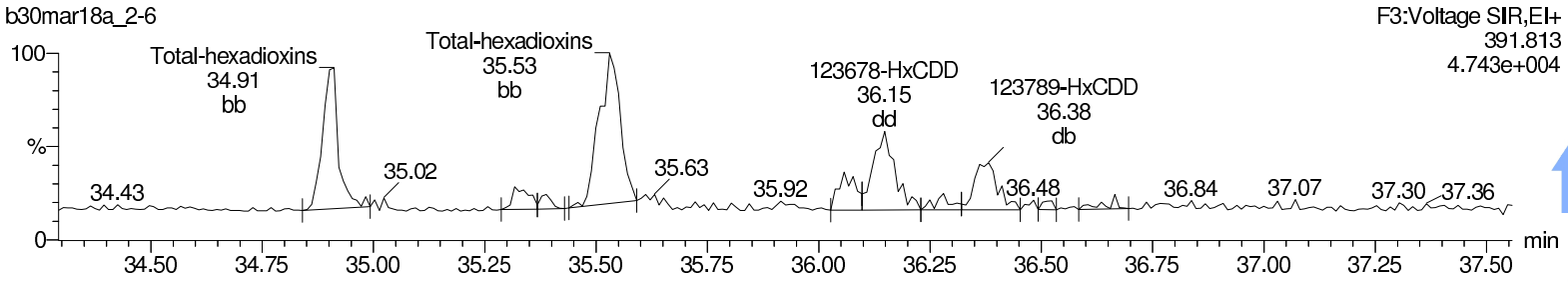
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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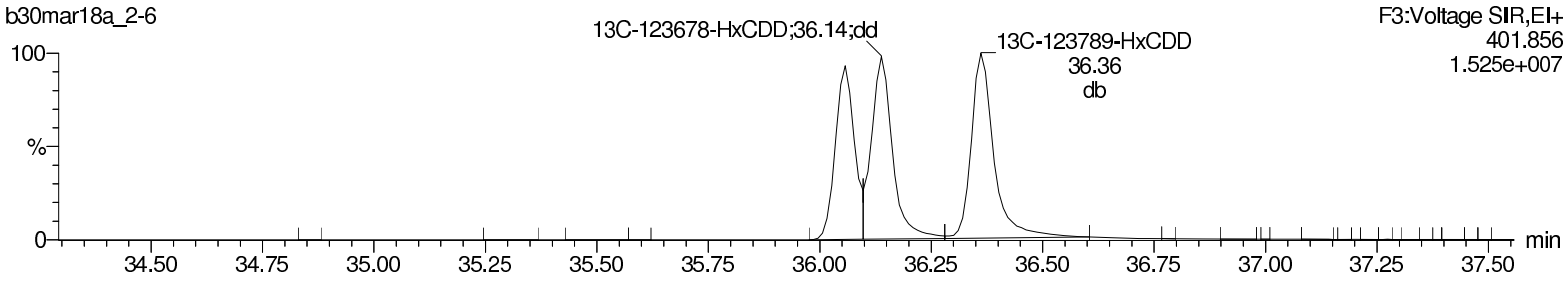

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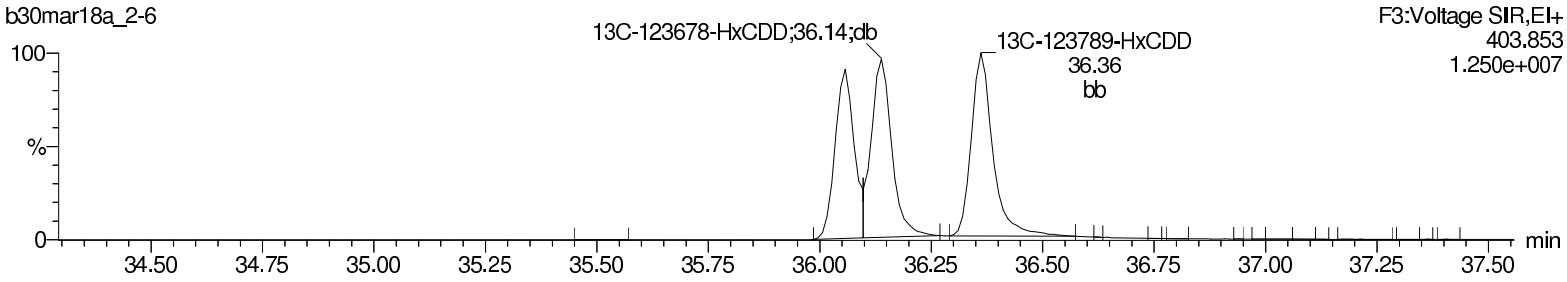

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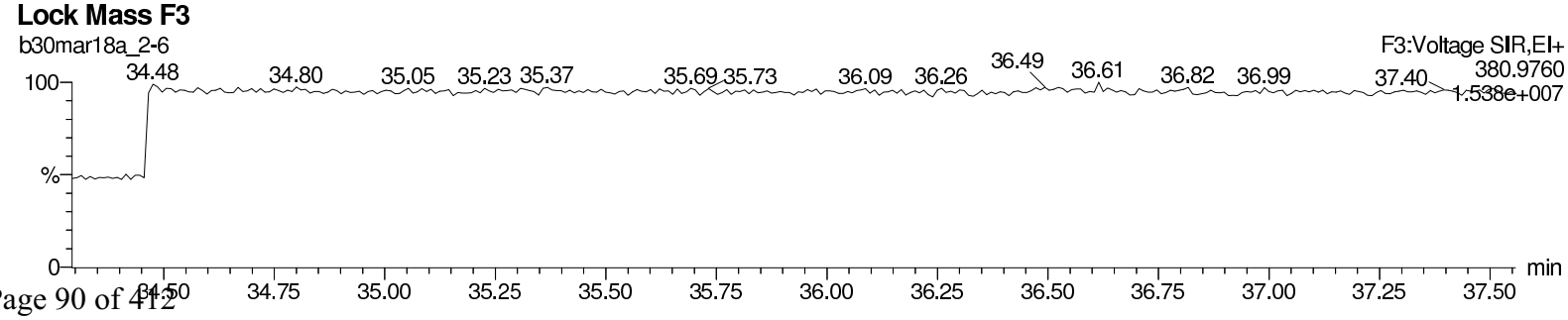

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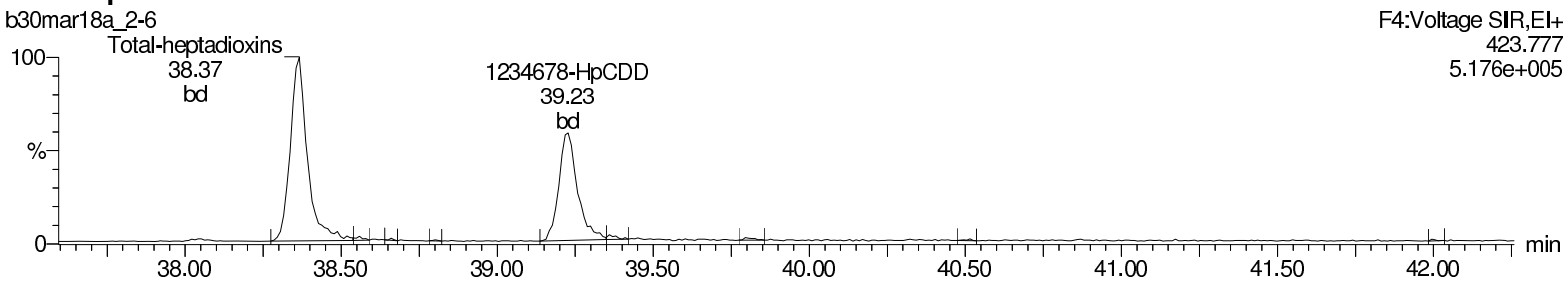
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



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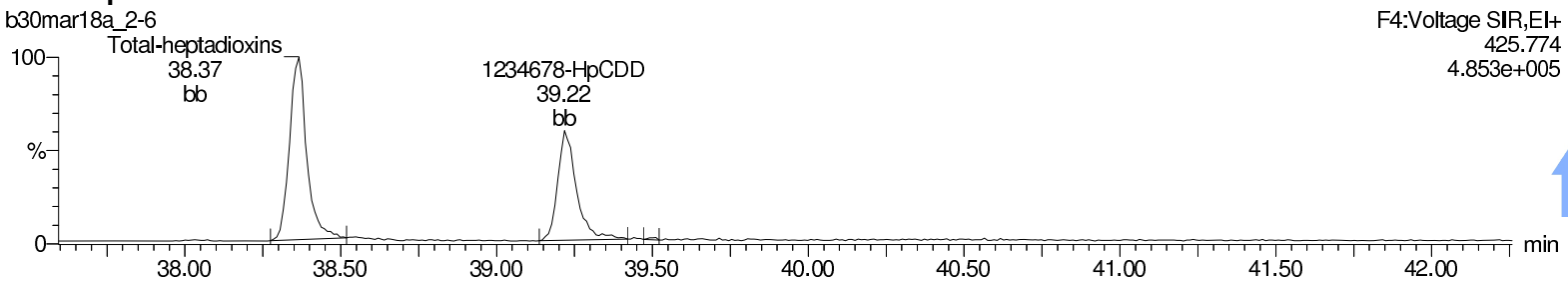

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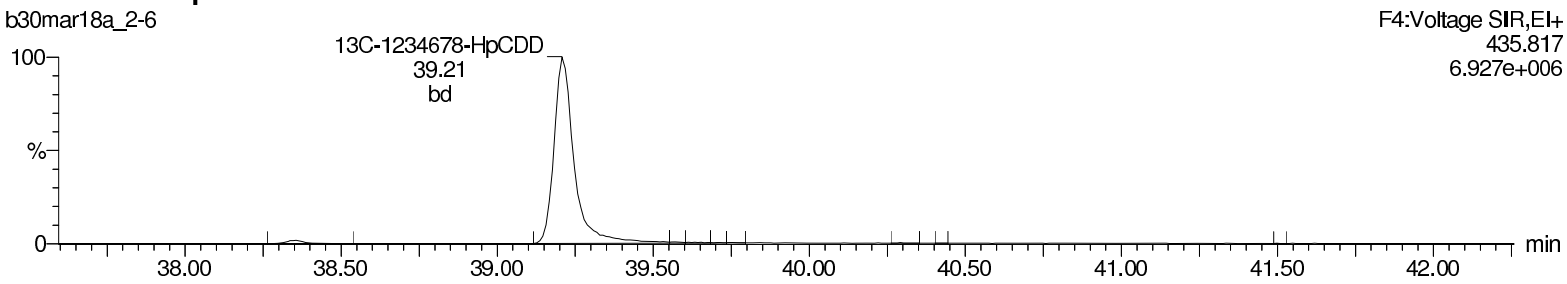

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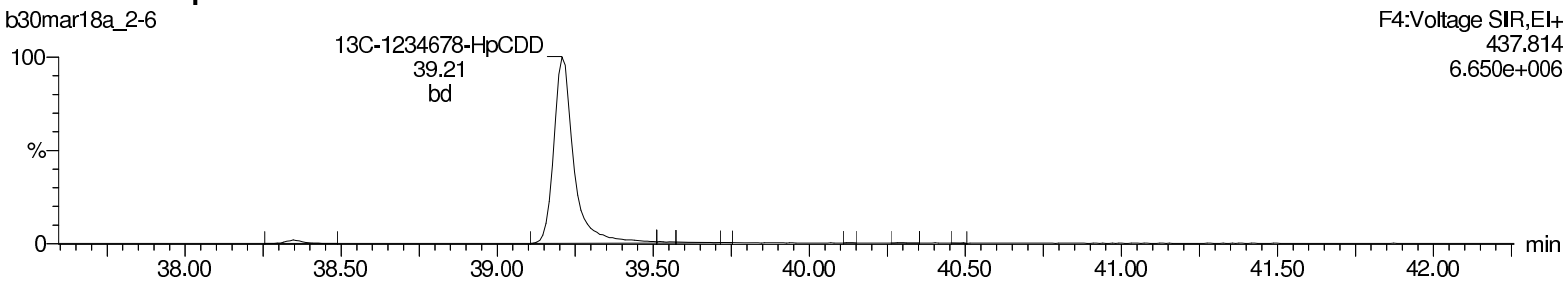

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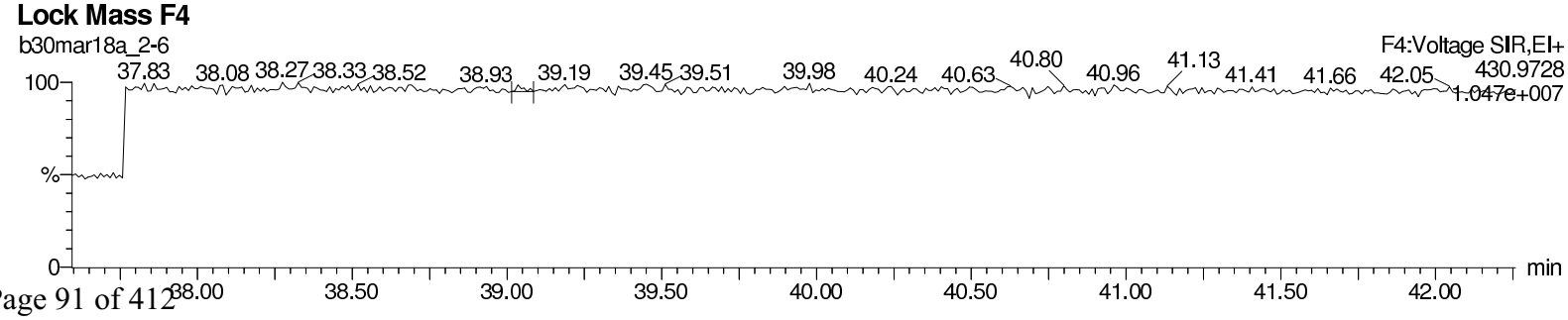

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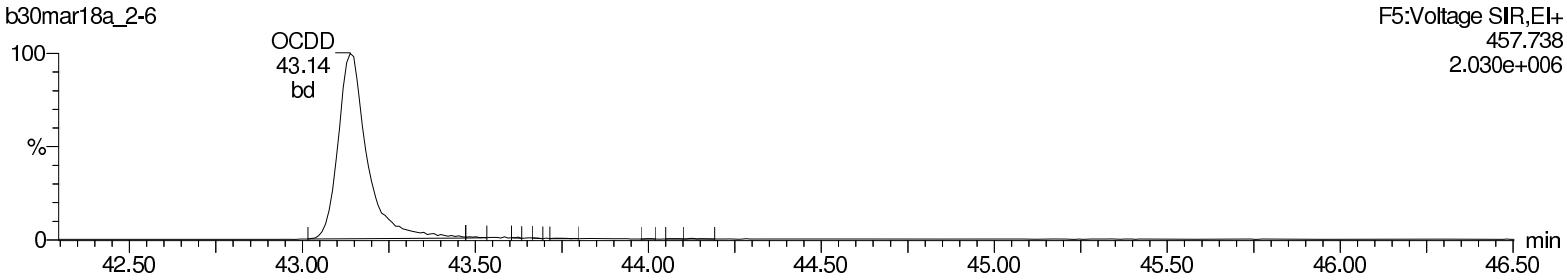
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



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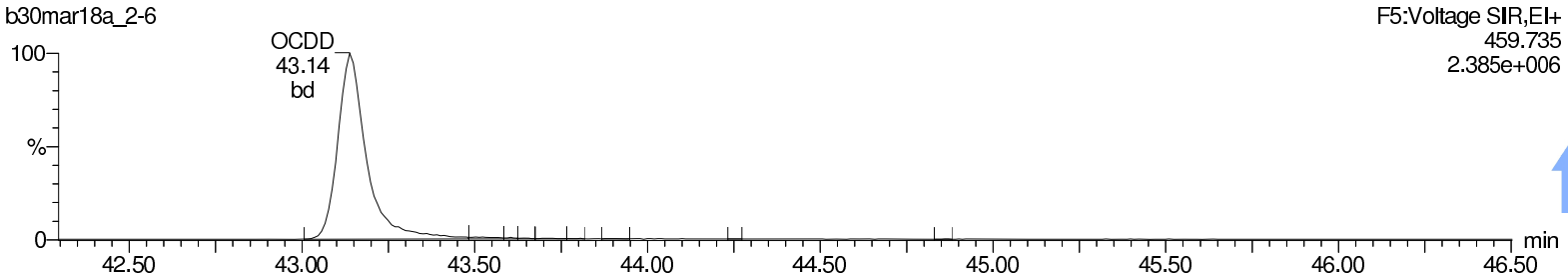
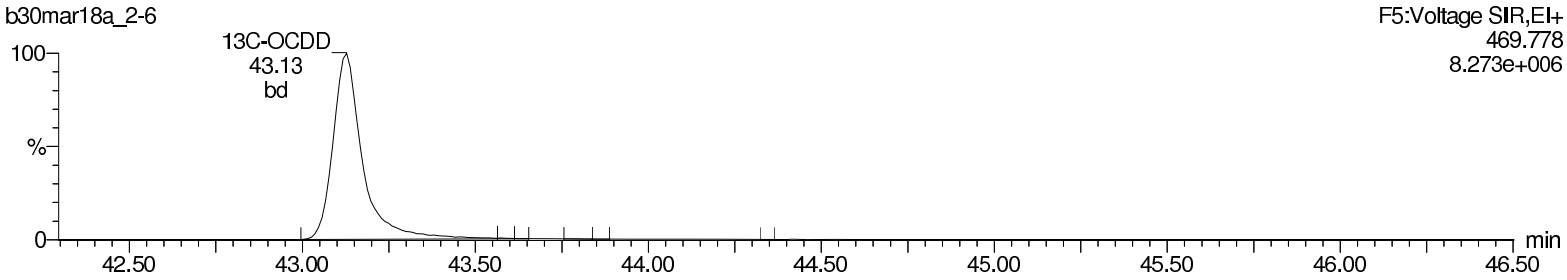
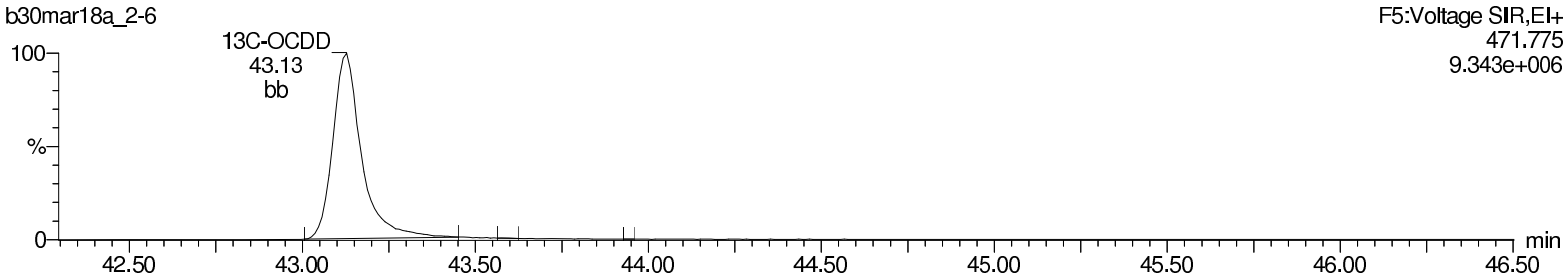


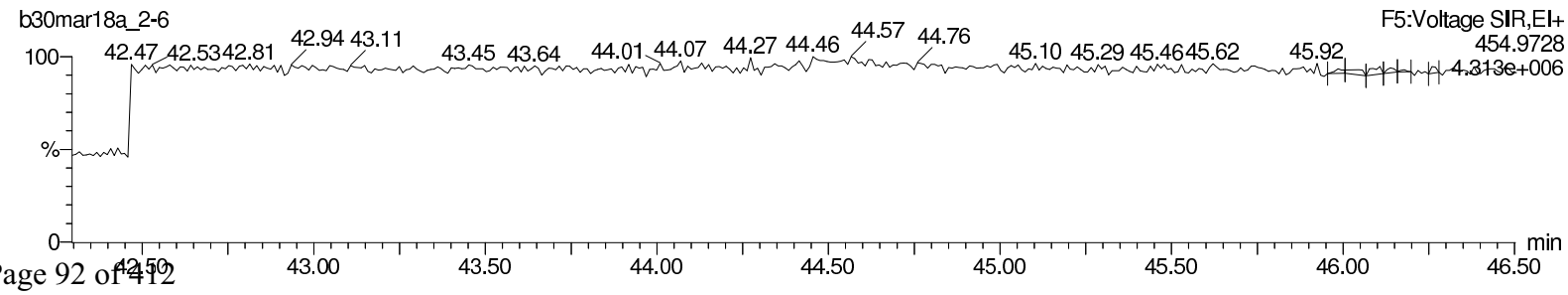
13C-OCDD



13C-OCDD



Lock Mass F5

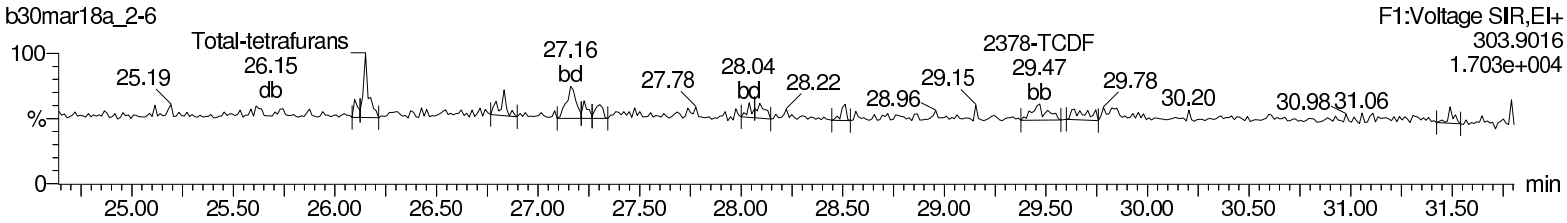


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

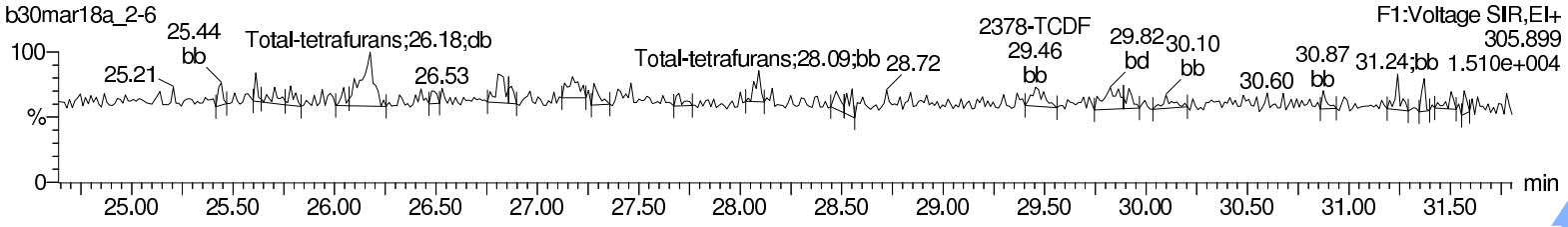
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

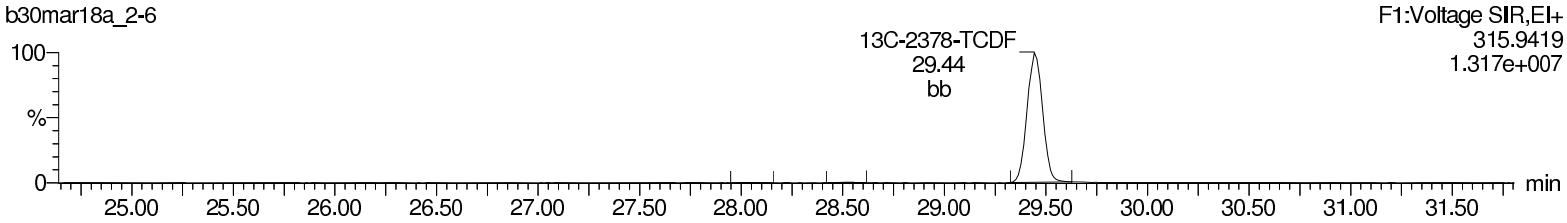
Total-tetrafurans



Total-tetrafurans



13C-2378-TCDF



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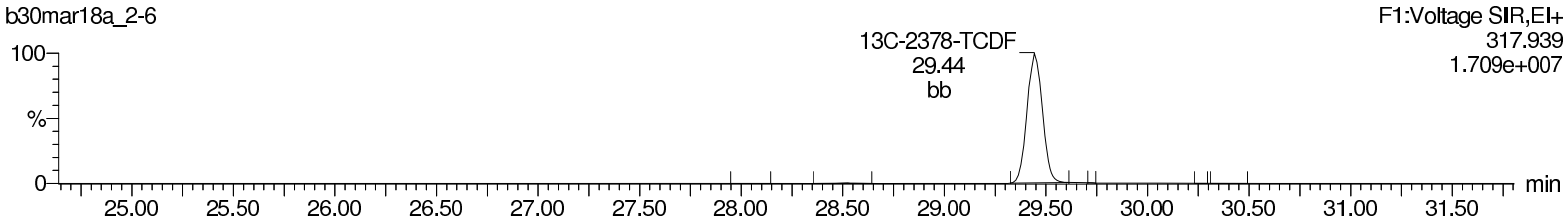
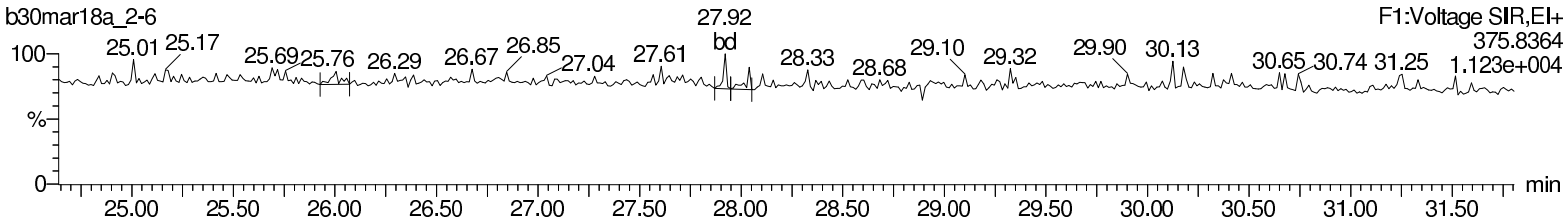
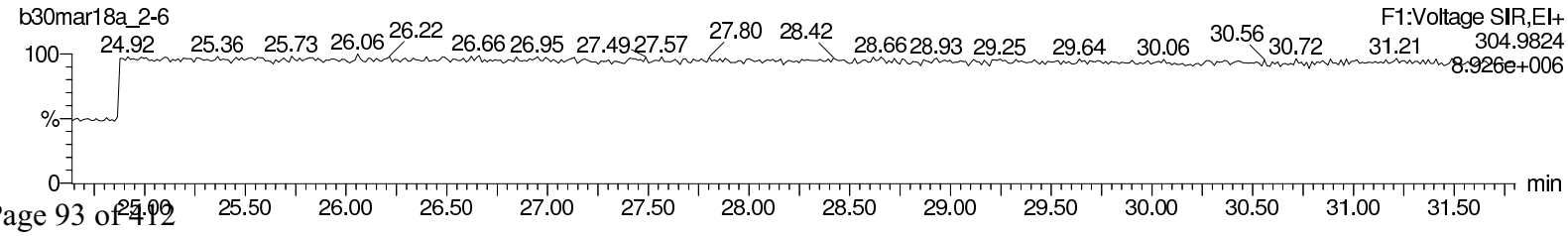


HxDPE



Lock Mass F1



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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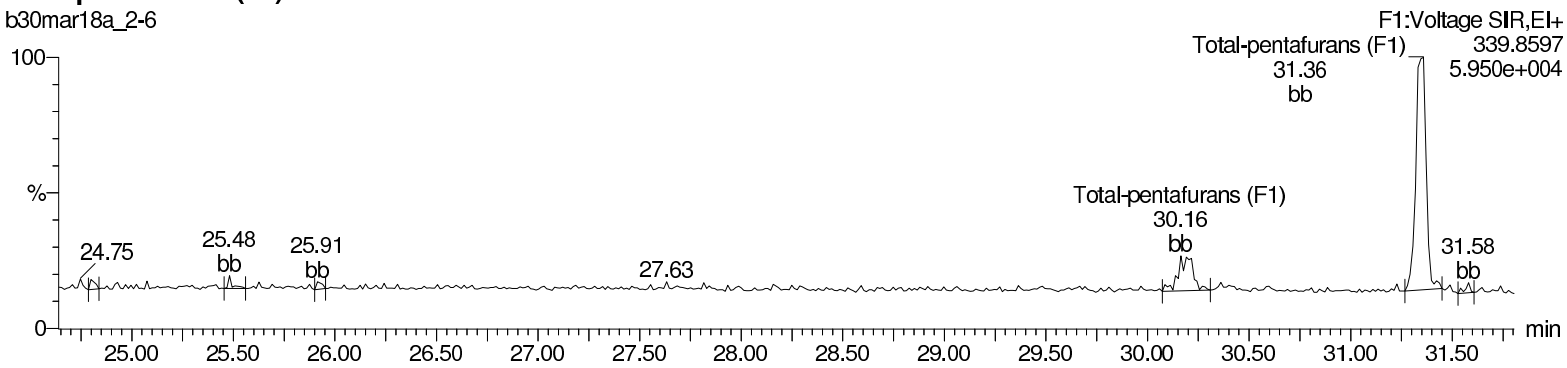
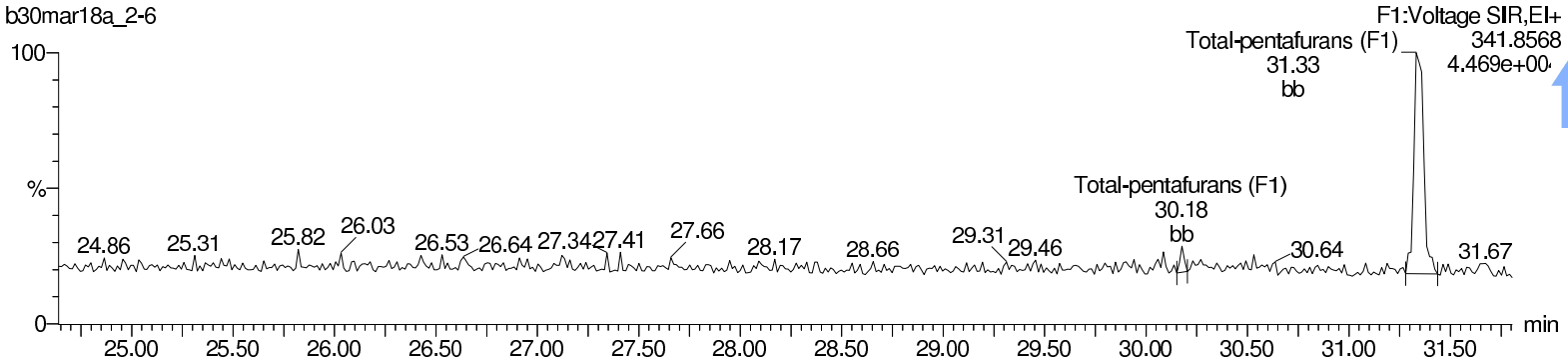
Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

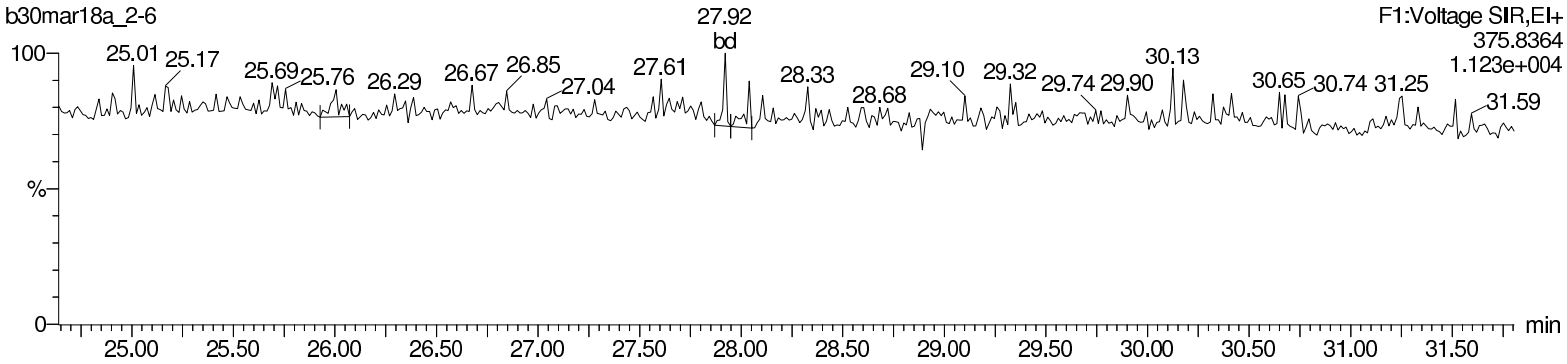
Total-pentafurans (F1)



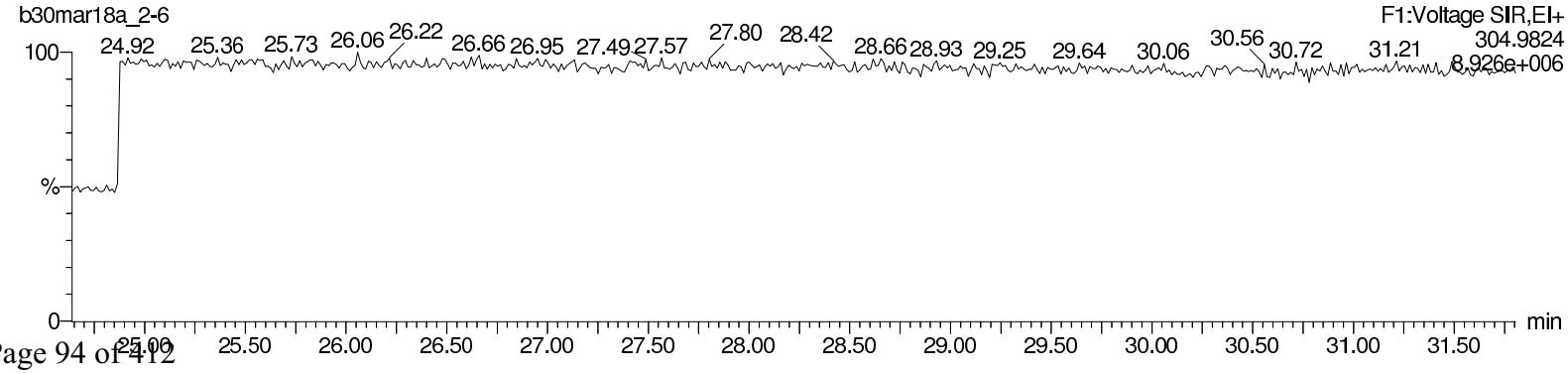
Total-pentafurans (F1)



HxDPE



Lock Mass F1



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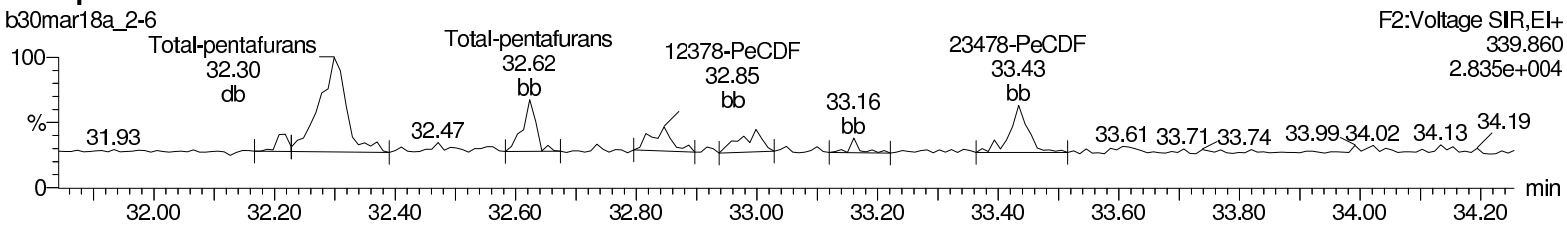
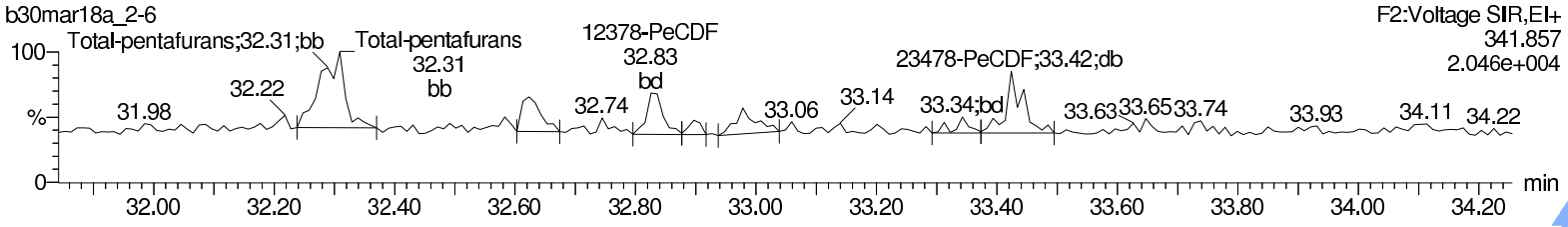
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

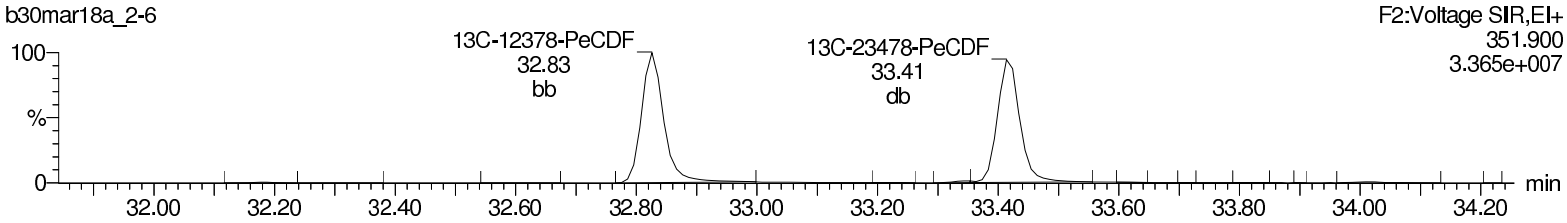
Total-pentafurans



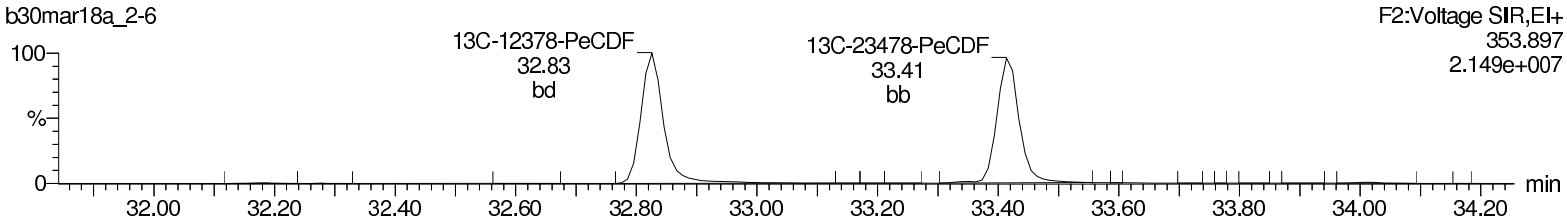
Total-pentafurans



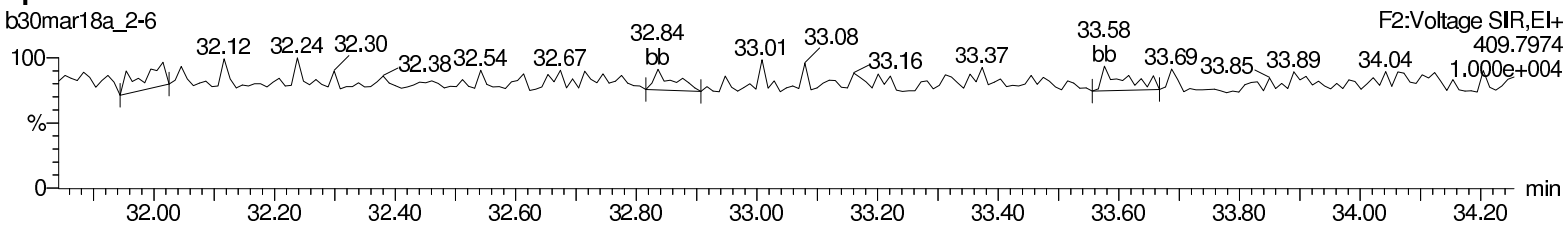
13C-12378-PeCDF



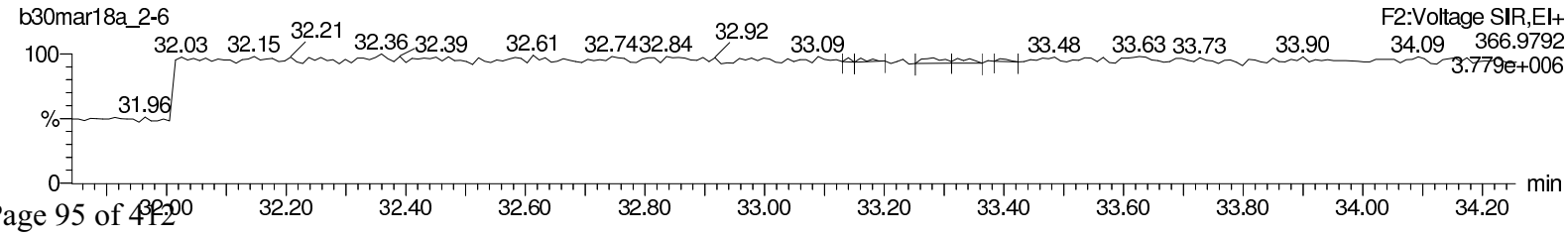
13C-12378-PeCDF



HpDPE



Lock Mass F2

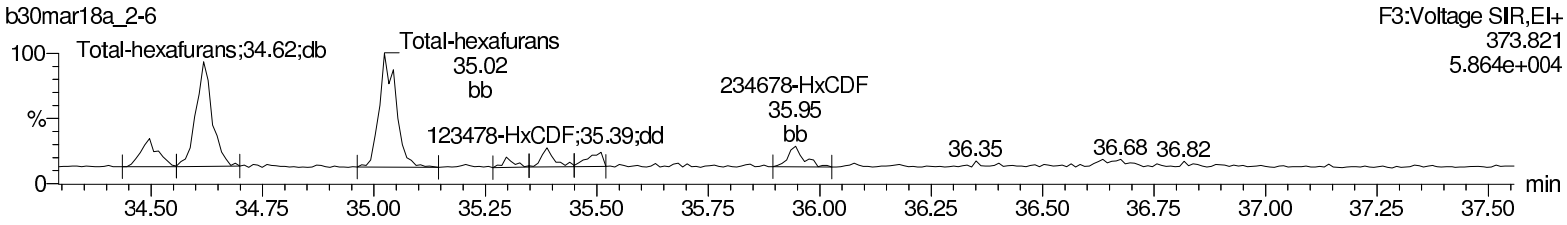


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

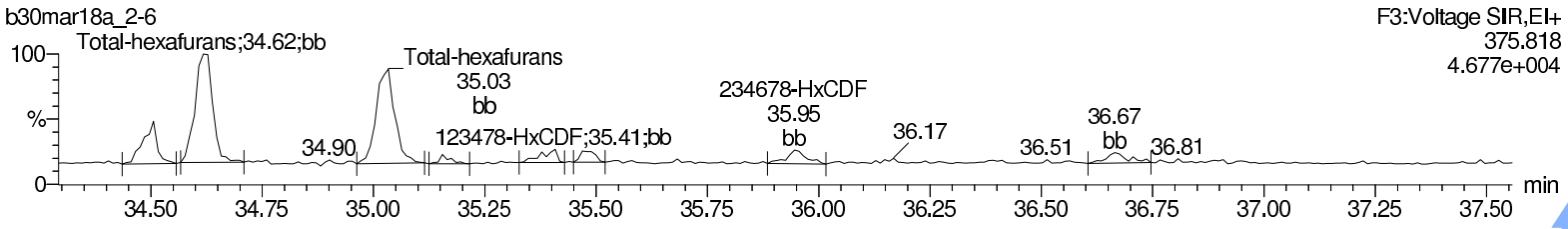
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

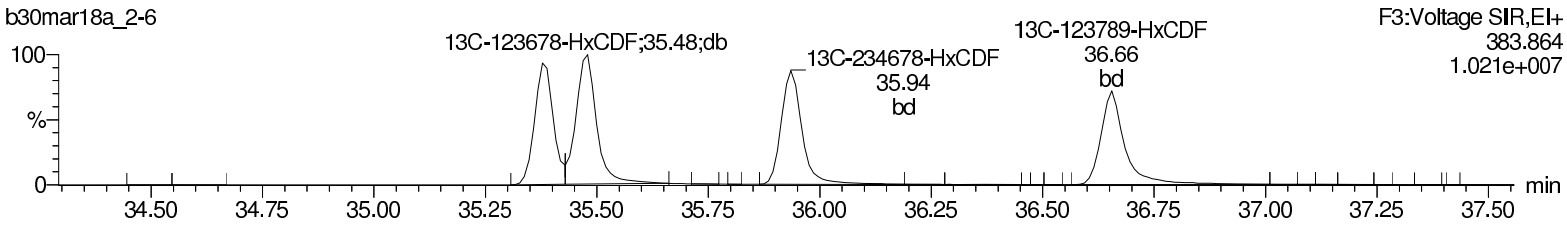
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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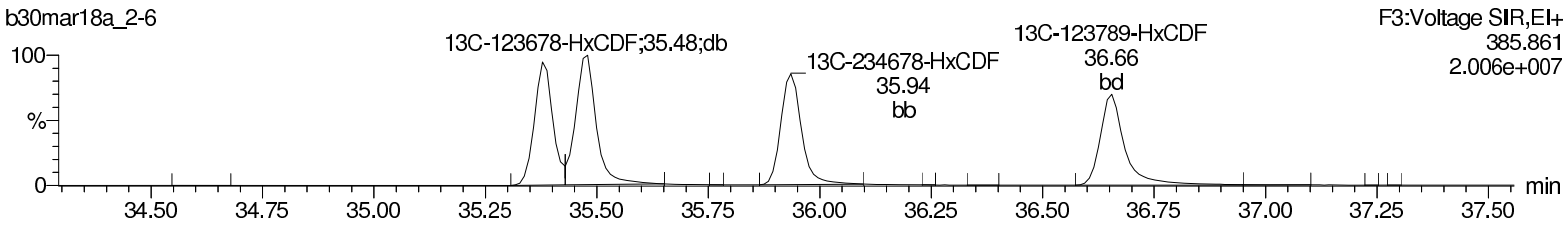
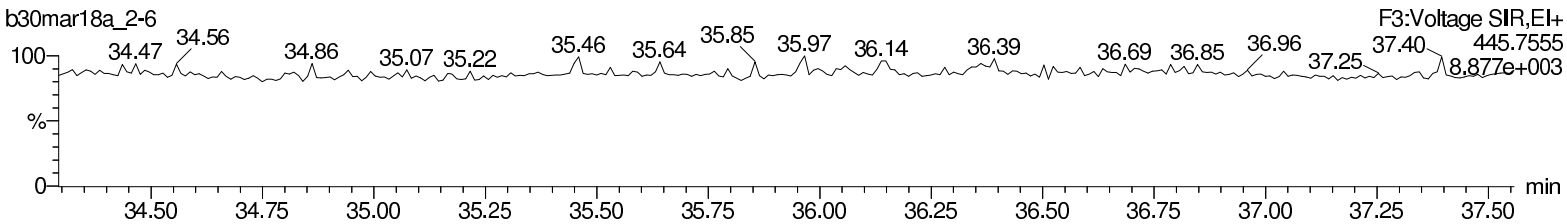
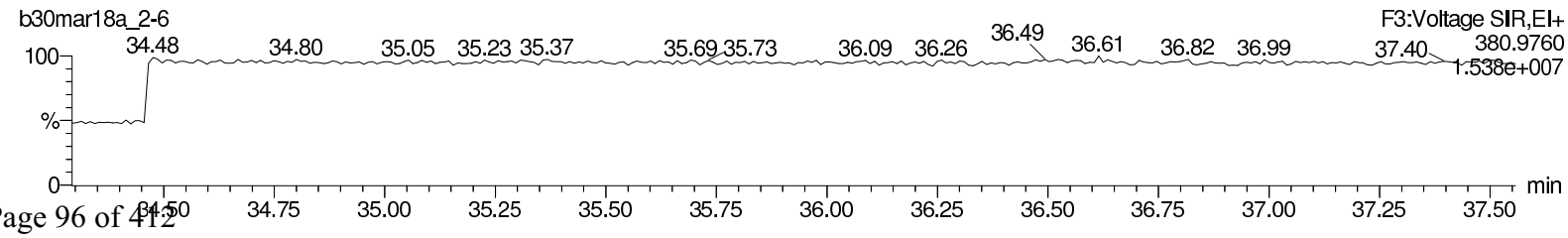


OcDPE



Lock Mass F3

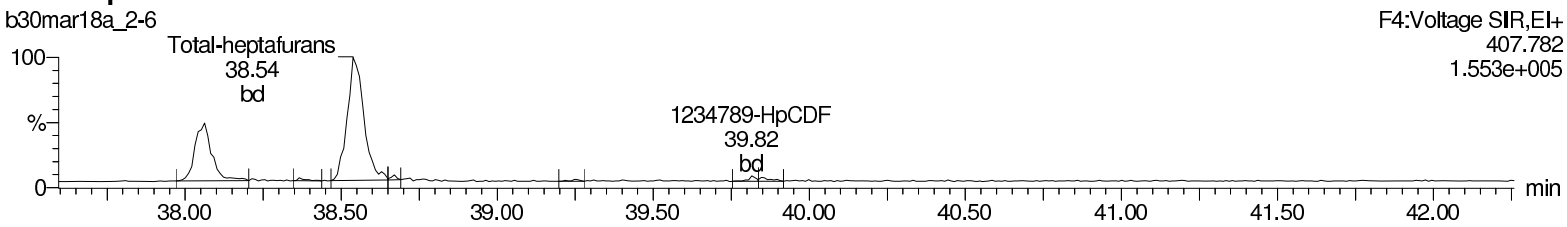


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

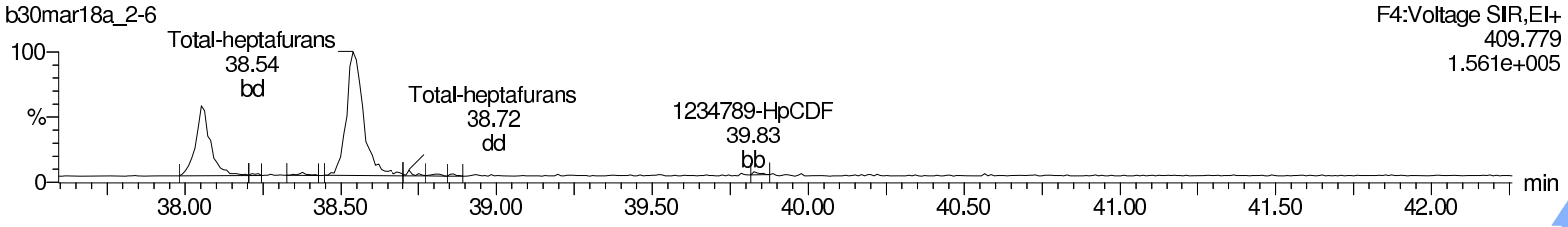
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptafurans



Total-heptafurans



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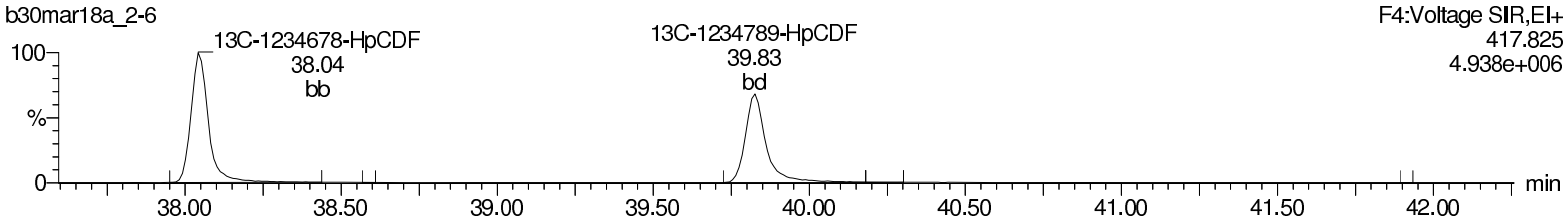

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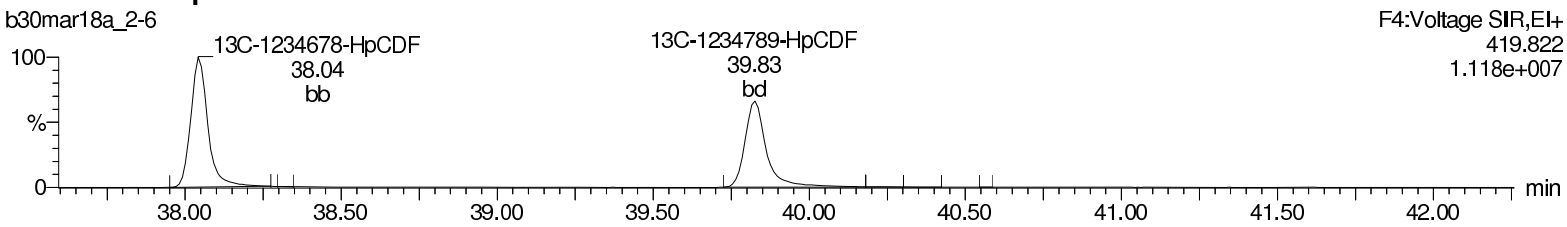
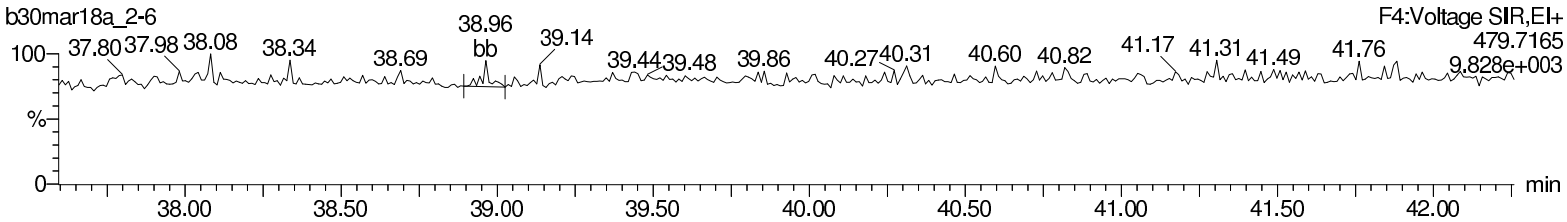
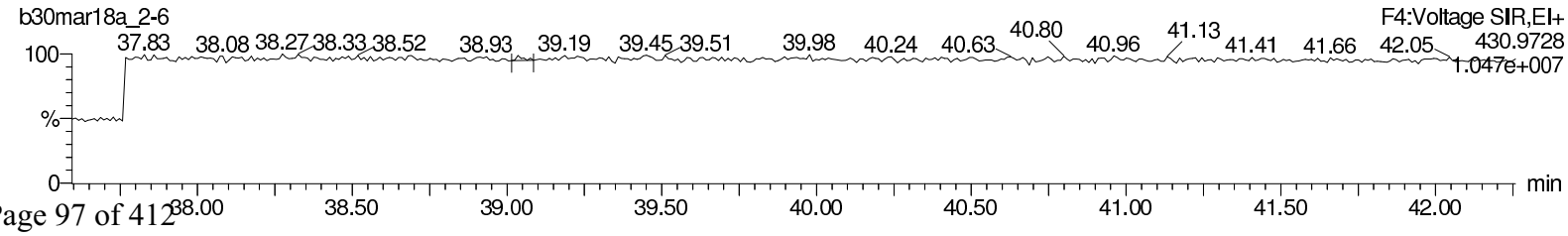


NoDPE



Lock Mass F4

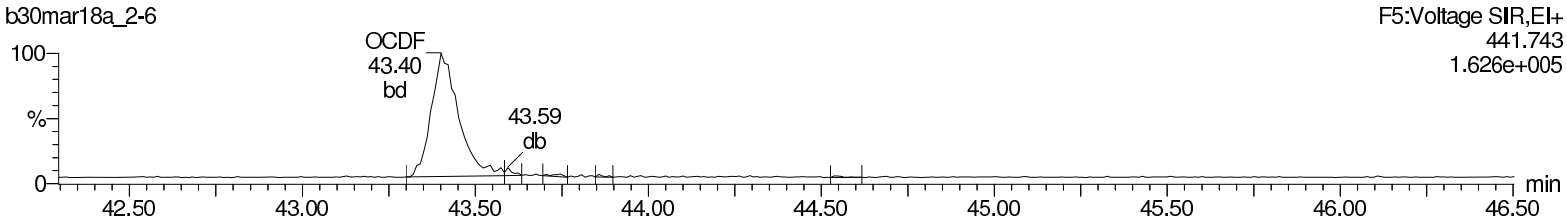


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

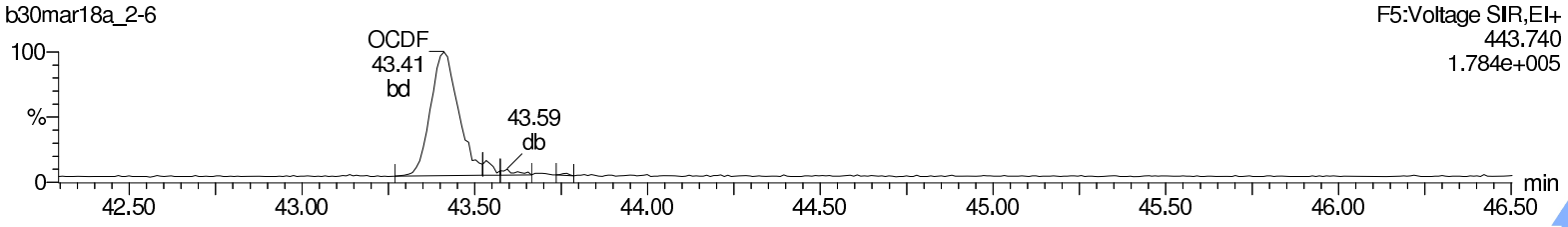
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-6, Date: 30-Mar-2018, Time: 22:38:08, ID: 13123003-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

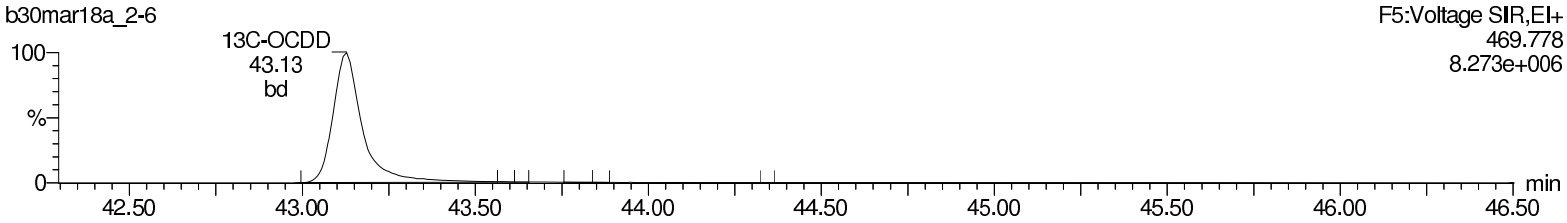
OCDF



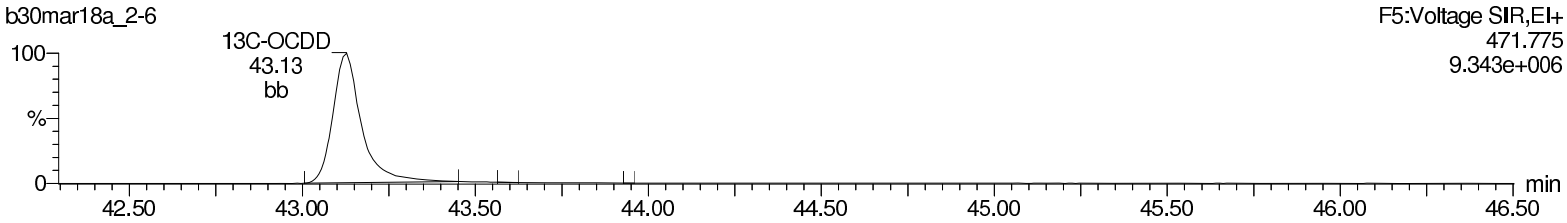
OCDF



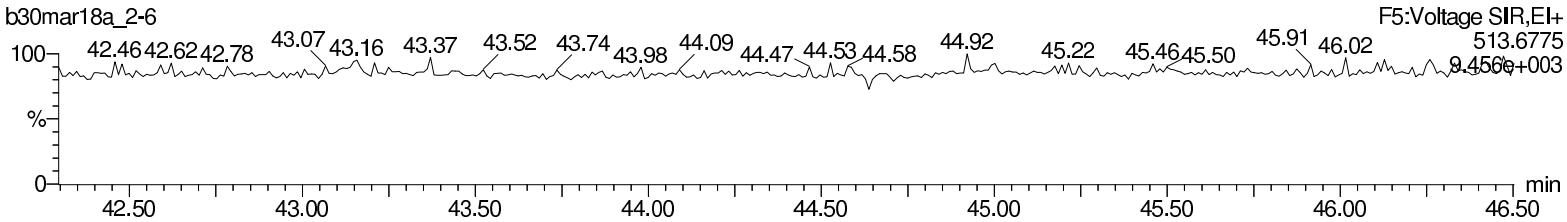
13C-OCDD



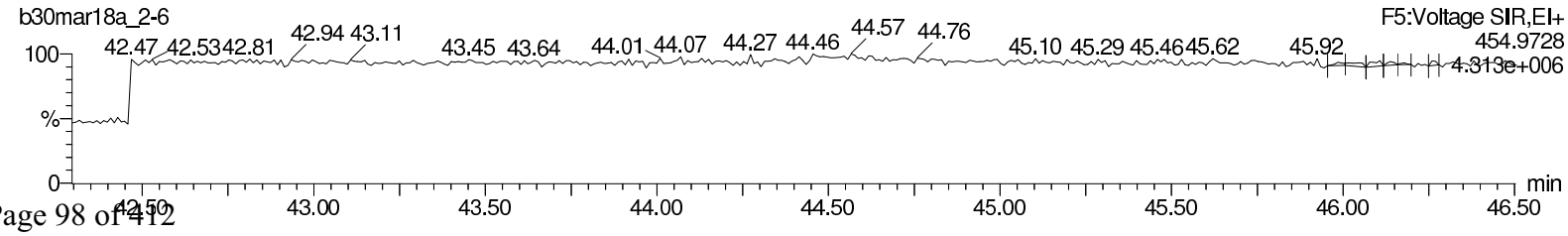
13C-OCDD



DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123004**	**Date Collected:**	**03/22/2018 09:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0007S010**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 23:26**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-7**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1029.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000616	ng/L	0.000616	0.00972
40321-76-4	1,2,3,7,8-PeCDD	U	0.000478	ng/L	0.000478	0.0486
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000764	ng/L	0.000764	0.0486
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000738	ng/L	0.000738	0.0486
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000773	ng/L	0.000773	0.0486
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.0187	ng/L	0.00133	0.0486
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.251	ng/L	0.00274	0.0972
51207-31-9	2,3,7,8-TCDF	U	0.000447	ng/L	0.000447	0.00972
57117-41-6	1,2,3,7,8-PeCDF	U	0.000424	ng/L	0.000424	0.0486
57117-31-4	2,3,4,7,8-PeCDF	U	0.000367	ng/L	0.000367	0.0486
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000455	ng/L	0.000455	0.0486
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000441	ng/L	0.000441	0.0486
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000466	ng/L	0.000466	0.0486
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.000622	ng/L	0.000622	0.0486
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00394	ng/L	0.000484	0.0486
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000698	ng/L	0.000698	0.0486
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0145	ng/L	0.00168	0.0972
41903-57-5	Total TeCDD	U	0.000616	ng/L	0.000616	0.00972
36088-22-9	Total PeCDD	U	0.000478	ng/L	0.000478	0.0486
34465-46-8	Total HxCDD	JK	0.00455	ng/L	0.000738	0.0486
37871-00-4	Total HpCDD		0.052	ng/L	0.00133	0.0486
30402-14-3	Total TeCDF	U	0.000447	ng/L	0.000447	0.00972
30402-15-4	Total PeCDF	JK	0.00101	ng/L	0.000293	0.0486
55684-94-1	Total HxCDF	JK	0.00243	ng/L	0.000441	0.0486
38998-75-3	Total HpCDF	J	0.0118	ng/L	0.000484	0.0486
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000306	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00115	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.81	1.94	ng/L	93.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.52	1.94	ng/L	78.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.63	1.94	ng/L	83.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.70	1.94	ng/L	87.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.74	1.94	ng/L	89.5	(23%-140%)
13C-OCDD		2.93	3.89	ng/L	75.4	(17%-157%)
13C-2,3,7,8-TCDF		1.89	1.94	ng/L	97.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.75	1.94	ng/L	89.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.71	1.94	ng/L	87.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.65	1.94	ng/L	85.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.69	1.94	ng/L	87.2	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.71	1.94	ng/L	87.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.77	1.94	ng/L	91.1	(29%-147%)

Return to Contents

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123004**	**Date Collected:**	**03/22/2018 09:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0007S010**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/30/2018 23:26**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-7**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1029.2 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.57	1.94	ng/L	80.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.60	1.94	ng/L	82.1	(26%-138%)
37Cl-2,3,7,8-TCDD		0.179	0.194	ng/L	92.2	(35%-197%)

Comments:

J Value is estimated

K Estimated Maximum Possible Concentration

U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:10:49 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:11:09 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	8.13e1	1.19e2	2.00e2	30.45	1.003	0.69	NO	0.011	0.0317	2.03e3	1176	1.7	2.65e3	1109	2.4	bd	db
2	12378-PeCDD	6.43e1	6.83e1	1.33e2	33.60	1.000	0.94	YES	0.012	0.0246	1.89e3	1508	1.3	1.29e3	778	1.7	bb	bb
3	123478-HxCDD							NO		0.0393		1325			1485			
4	123678-HxCDD							NO		0.0380		1325			1485			
5	123789-HxCDD							NO		0.0398		1325			1485			
6	1234678-HpCDD	4.41e3	4.14e3	8.55e3	39.22	1.000	1.07	NO	0.963	0.0682	6.46e4	1354	47.7	5.77e4	1772	32.5	bd	bb
7	OCDD	3.89e4	4.55e4	8.43e4	43.14	1.000	0.86	NO	12.891	0.141	4.04e5	1271	318.2	4.22e5	2363	178.6	bd	bd
8	2378-TCDF							NO		0.0230		853			1259			
9	12378-PeCDF	1.38e2	1.62e2	3.00e2	32.82	1.000	0.85	YES	0.017	0.0218	3.36e3	1566	2.1	4.03e3	1605	2.5	bb	bb
10	23478-PeCDF	9.93e1	1.08e2	2.08e2	33.42	1.000	0.92	YES	0.011	0.0189	2.10e3	1566	1.3	2.75e3	1605	1.7	bb	bd
11	123478-HxCDF							NO		0.0234		1220			971			
12	123678-HxCDF							NO		0.0227		1220			971			
13	234678-HxCDF	1.52e2	1.02e2	2.54e2	35.93	1.000	1.49	YES	0.020	0.0240	2.04e3	1220	1.7	2.54e3	971	2.6	MM	MM
14	123789-HxCDF	1.72e2	8.95e1	2.61e2	36.65	1.000	1.92	YES	0.023	0.0320	3.48e3	1220	2.8	2.30e3	971	2.4	bb	bb
15	1234678-HpCDF	9.84e2	1.02e3	2.00e3	38.06	1.001	0.97	NO	0.203	0.0249	1.26e4	745	16.9	1.45e4	680	21.3	bb	bb
16	1234789-HpCDF							NO		0.0359		745			680			
17	OCDF	2.24e3	2.70e3	4.94e3	43.41	1.007	0.83	NO	0.746	0.0867	2.21e4	1322	16.7	3.40e4	947	35.9	bd	bb
18	13C-2378-TCDD	8.71e5	1.14e6	2.01e6	30.38	1.024	0.76	NO	93.037	0.0771	8.76e6	4061	2156.5	1.16e7	2718	4260.9	bb	bb
19	13C-12378-PeCDD	8.71e5	5.55e5	1.43e6	33.60	1.133	1.57	NO	78.249	0.0932	1.79e7	3769	4761.5	1.13e7	3129	3616.8	bb	bb
20	13C-123478-HxCDD	6.25e5	5.05e5	1.13e6	36.05	0.992	1.24	NO	83.692	0.151	1.18e7	8451	1396.1	9.55e6	4552	2097.9	bd	bd
21	13C-123678-HxCDD	7.14e5	5.80e5	1.29e6	36.13	0.994	1.23	NO	87.657	0.138	1.22e7	8451	1438.1	1.00e7	4552	2206.7	db	db
22	13C-1234678-HpCDD	4.53e5	4.33e5	8.86e5	39.21	1.079	1.05	NO	89.515	0.170	5.84e6	5156	1133.1	5.60e6	5604	1000.1	bd	bd
23	13C-OCDD	6.71e5	7.66e5	1.44e6	43.12	1.186	0.88	NO	150.724	0.151	6.63e6	4778	1386.7	7.43e6	4406	1686.7	bd	bd
24	13C-2378-TCDF	1.08e6	1.39e6	2.47e6	29.43	0.992	0.78	NO	97.351	0.110	1.09e7	5977	1817.6	1.42e7	5367	2653.4	bb	bb
25	13C-12378-PeCDF	1.28e6	8.34e5	2.11e6	32.82	1.107	1.53	NO	89.813	0.179	2.68e7	11526	2328.4	1.72e7	5578	3076.3	bb	bd
26	13C-23478-PeCDF	1.25e6	8.01e5	2.05e6	33.41	1.127	1.56	NO	87.782	0.180	2.76e7	11526	2396.2	1.73e7	5578	3108.1	bb	bb
27	13C-123478-HxCDF	4.13e5	8.16e5	1.23e6	35.38	0.973	0.51	NO	85.152	0.128	7.89e6	5265	1499.3	1.54e7	6553	2343.1	bd	bd
28	13C-123678-HxCDF	4.95e5	9.63e5	1.46e6	35.47	0.976	0.51	NO	87.172	0.111	8.78e6	5265	1667.4	1.75e7	6553	2666.1	db	db
29	13C-234678-HxCDF	4.25e5	8.21e5	1.25e6	35.93	0.988	0.52	NO	87.886	0.130	7.54e6	5265	1432.1	1.46e7	6553	2225.7	bb	bb
30	13C-123789-HxCDF	3.96e5	7.86e5	1.18e6	36.65	1.008	0.50	NO	91.103	0.143	6.02e6	5265	1142.8	1.20e7	6553	1825.4	bb	bb
31	13C-1234678-HpCDF	2.78e5	6.24e5	9.01e5	38.03	1.046	0.44	NO	80.734	0.134	4.02e6	4174	963.9	9.30e6	5362	1735.0	bd	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:10:49 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:11:09 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.21e5	5.08e5	7.29e5	39.82	1.095	0.44	NO	82.114	0.168	2.71e6	4174	649.9	6.09e6	5362	1136.0	bd	bd
33	13C-1234-TCDD	8.18e5	1.08e6	1.89e6	29.65	0.000	0.76	NO	100.000	0.0881	8.31e6	4061	2046.1	1.09e7	2718	3995.5	bb	bb
34	13C-123789-HxCDD	7.25e5	5.89e5	1.31e6	36.35	0.000	1.23	NO	100.000	0.155	1.16e7	8451	1369.9	9.48e6	4552	2081.9	bd	bd
35	37Cl-2378-TCDD	2.03e5		2.03e5	30.39	1.025			9.216	0.0126	2.11e6	1123	1879.3				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:10:49 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:11:09 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	8.13e1	1.19e2	2.00e2	30.45	0.69	NO	0.011	0.0317	2.03e3	1176	1.7	2.65e3	1109	2.4	bd	db
2	Total-tetradioxins	1.45e2	1.01e2	2.46e2	29.46	1.44	YES	0.014	0.0317	2.85e3	1176	2.4	1.27e3	1109	1.1	db	bb
3	Total-tetradioxins	6.74e1	1.14e2	1.82e2	26.25	0.59	YES	0.010	0.0317	2.28e3	1176	1.9	2.05e3	1109	1.8	bb	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	6.43e1	6.83e1	1.33e2	33.60	0.94	YES	0.012	0.0246	1.89e3	1508	1.3	1.29e3	778	1.7	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-hexadioxins	5.63e2	4.81e2	1.04e3	34.89	1.17	NO	0.104	0.0390	1.21e4	1325	9.1	8.25e3	1485	5.6	bb	bb
2	Total-hexadioxins	2.71e2	8.05e1	3.52e2	35.93	3.37	YES	0.035	0.0390	8.19e3	1325	6.2	3.33e3	1485	2.2	bb	bb
3	Total-hexadioxins	7.82e2	5.23e2	1.31e3	35.51	1.50	YES	0.130	0.0390	1.09e4	1325	8.2	1.06e4	1485	7.2	MM	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	1234678-HpCDD	4.41e3	4.14e3	8.55e3	39.22	1.07	NO	0.963	0.0682	6.46e4	1354	47.7	5.77e4	1772	32.5	bd	bb
2	Total-heptadioxins	7.73e3	7.49e3	1.52e4	38.37	1.03	NO	1.713	0.0682	1.15e5	1354	85.0	1.15e5	1772	64.8	bb	bb
3	Total-heptadioxins	4.76e2	2.54e2	7.30e2	38.03	1.87	YES	0.082	0.0682	9.79e3	1354	7.2	6.66e3	1772	3.8	bb	bb

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	7.33e1	7.62e1	1.50e2	29.64	0.96	YES	0.007	0.0230	2.77e3	853	3.2	2.42e3	1259	1.9	bb	dd

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:10:49 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:11:09 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	4.31e2	5.07e2	9.38e2	31.32	0.85	YES	0.052	0.0151	9.26e3	839	11.0	6.06e3	1529	4.0	bb	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	23478-PeCDF	9.93e1	1.08e2	2.08e2	33.42	0.92	YES	0.011	0.0189	2.10e3	1566	1.3	2.75e3	1605	1.7	bb	bd
2	12378-PeCDF	1.38e2	1.62e2	3.00e2	32.82	0.85	YES	0.017	0.0218	3.36e3	1566	2.1	4.03e3	1605	2.5	bb	bb
3	Total-pentafurans	6.40e1	8.75e1	1.51e2	32.61	0.73	YES	0.008	0.0202	2.10e3	1566	1.3	1.89e3	1605	1.2	db	bb
4	Total-pentafurans	2.51e2	1.39e2	3.89e2	32.28	1.81	YES	0.021	0.0202	4.46e3	1566	2.8	3.89e3	1605	2.4	bb	db

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDF	1.72e2	8.95e1	2.61e2	36.65	1.92	YES	0.023	0.0320	3.48e3	1220	2.8	2.30e3	971	2.4	bb	bb
2	234678-HxCDF	1.52e2	1.02e2	2.54e2	35.93	1.49	YES	0.020	0.0240	2.04e3	1220	1.7	2.54e3	971	2.6	MM	MM
3	Total-hexafurans	3.78e2	3.81e2	7.59e2	35.02	0.99	YES	0.061	0.0252	8.49e3	1220	7.0	7.61e3	971	7.8	bb	bb
4	Total-hexafurans	4.31e2	3.70e2	8.01e2	34.62	1.17	NO	0.064	0.0252	9.75e3	1220	8.0	7.41e3	971	7.6	bb	bb
5	Total-hexafurans	7.18e1	5.70e1	1.29e2	34.51	1.26	NO	0.010	0.0252	2.91e3	1220	2.4	3.67e3	971	3.8	db	db
6	Total-hexafurans	5.26e1	6.50e1	1.18e2	34.47	0.81	YES	0.009	0.0252	2.03e3	1220	1.7	2.06e3	971	2.1	bd	bd

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	1.86e3	1.76e3	3.62e3	38.54	1.06	NO	0.403	0.0298	2.67e4	745	35.8	2.56e4	680	37.7	bb	bb
2	1234678-HpCDF	9.84e2	1.02e3	2.00e3	38.06	0.97	NO	0.203	0.0249	1.26e4	745	16.9	1.45e4	680	21.3	bb	bb

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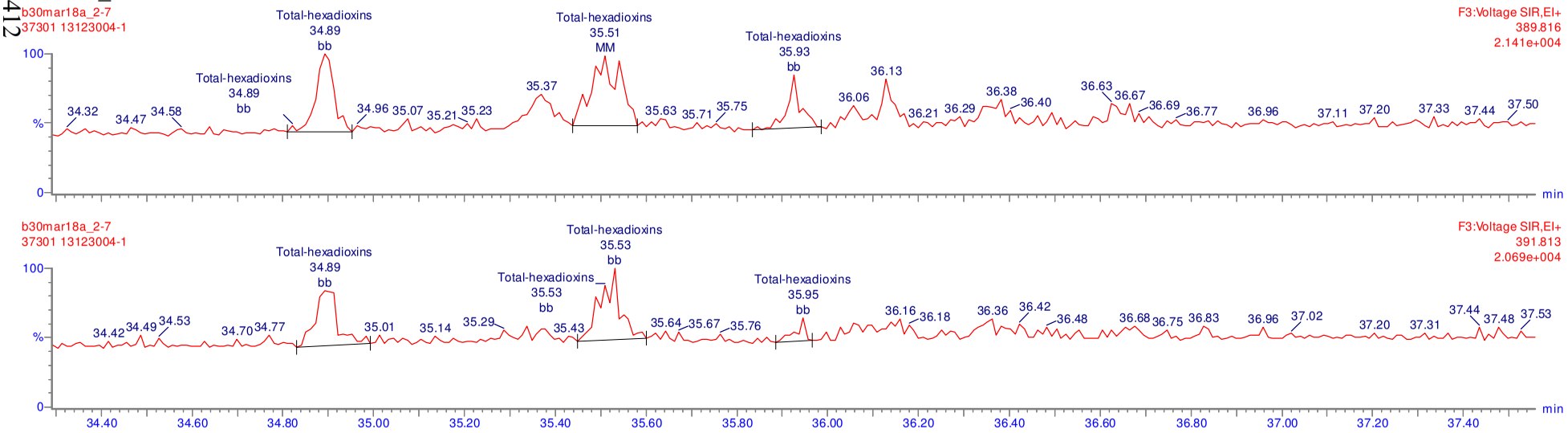
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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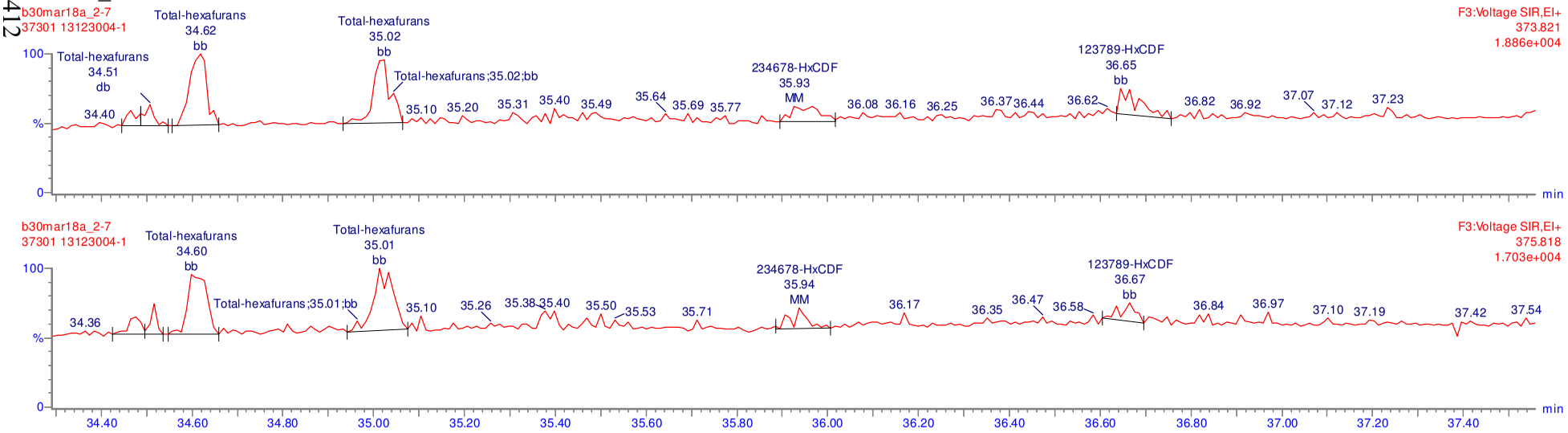
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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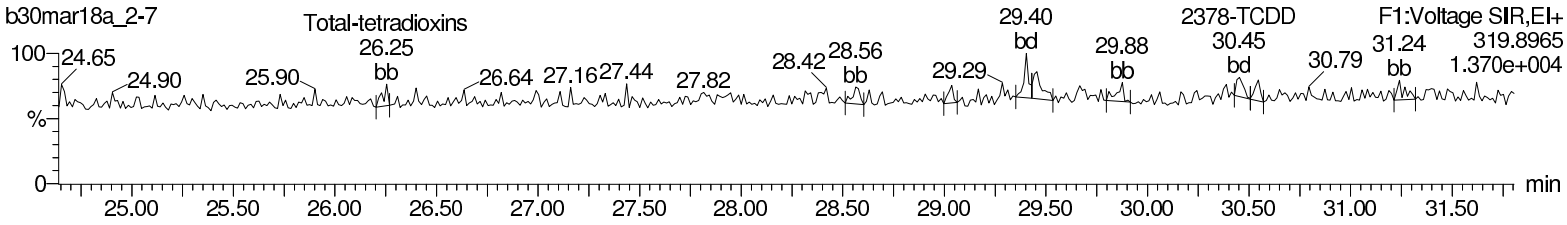
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-tetradioxins



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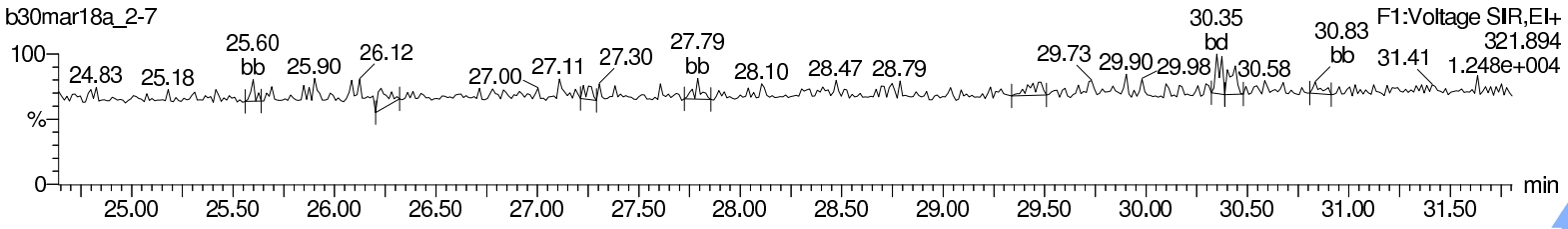

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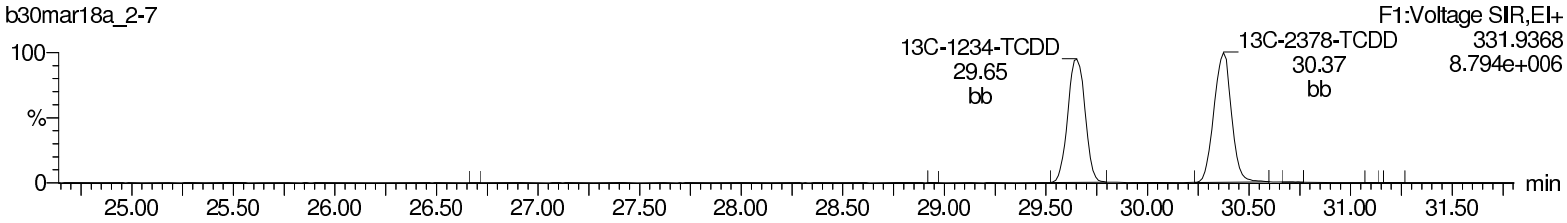

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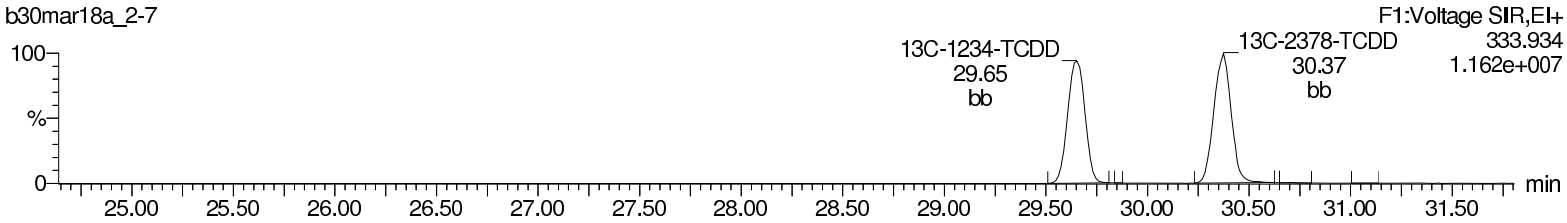
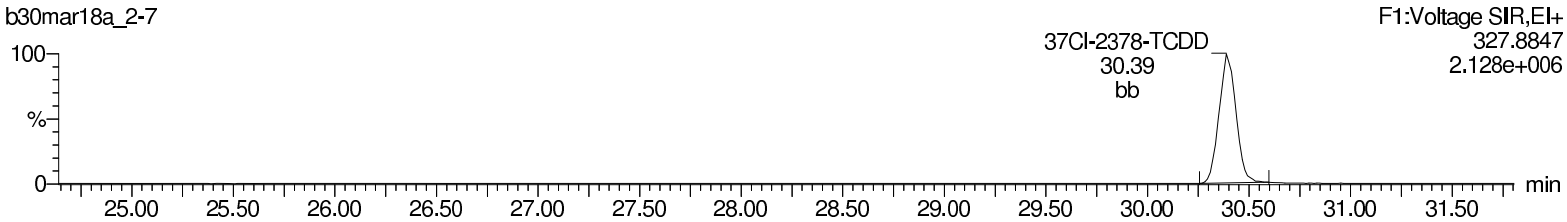
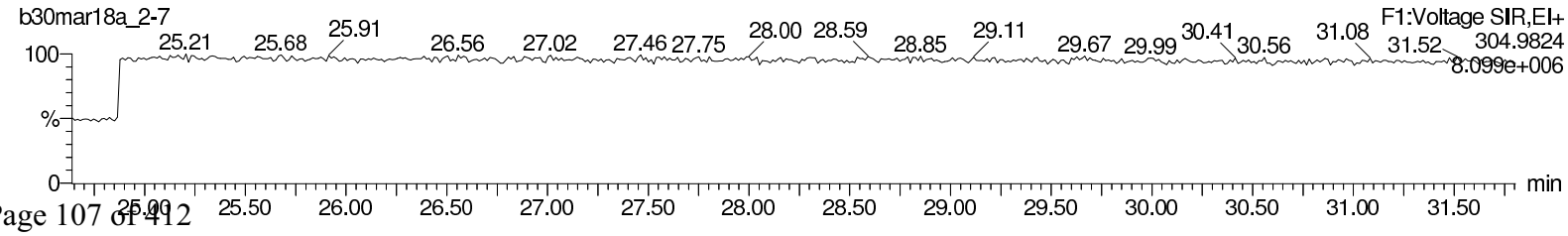


37Cl-2378-TCDD



Lock Mass F1



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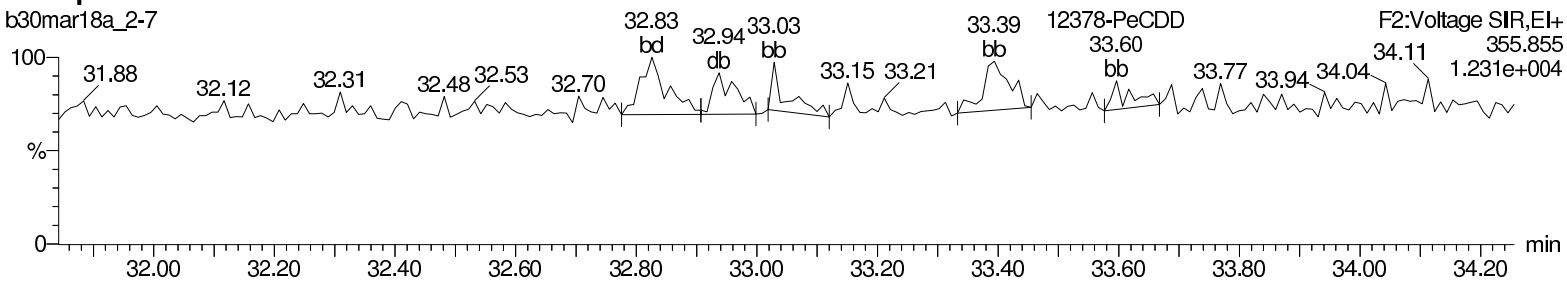
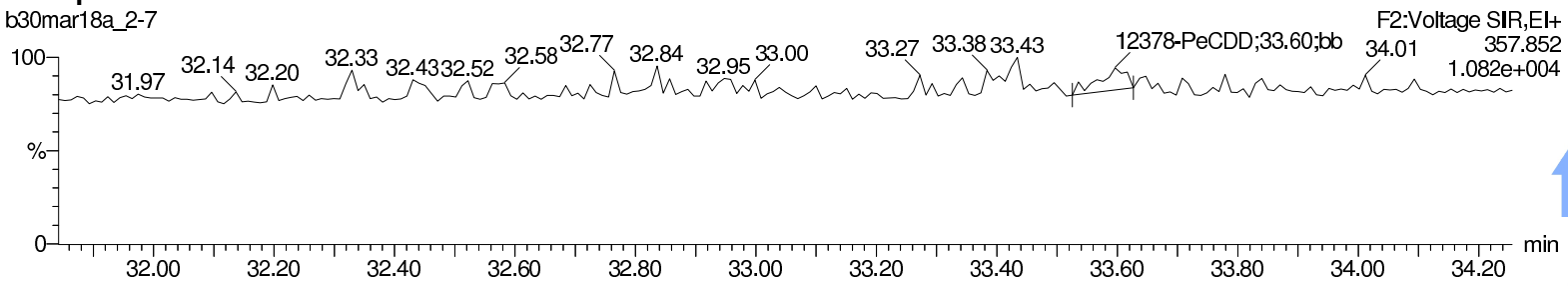
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

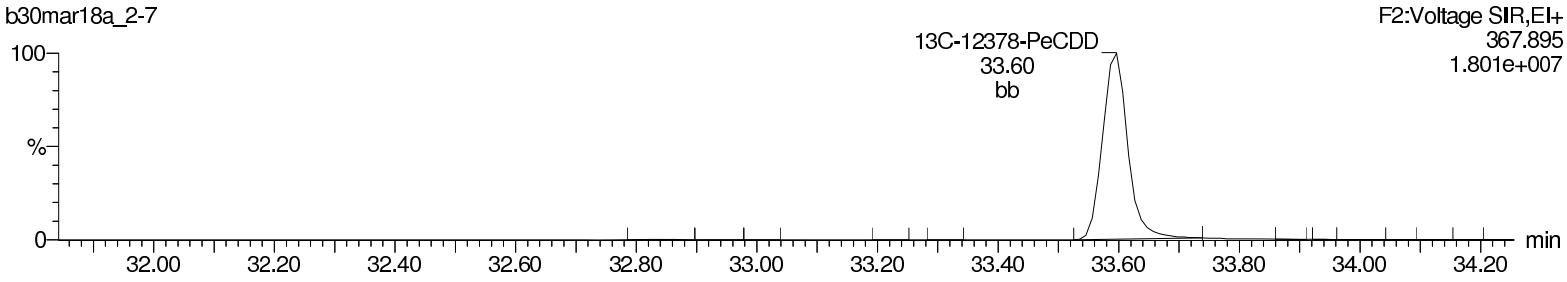
Total-pentadioxins



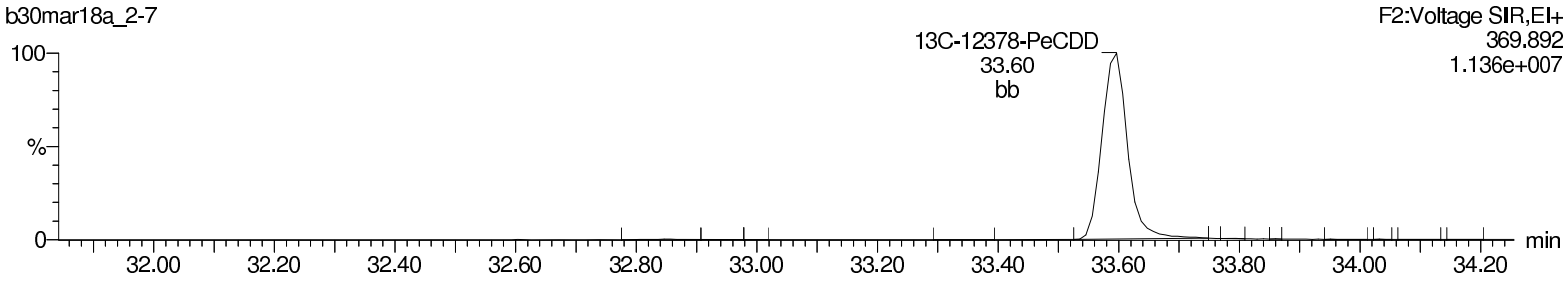
Total-pentadioxins



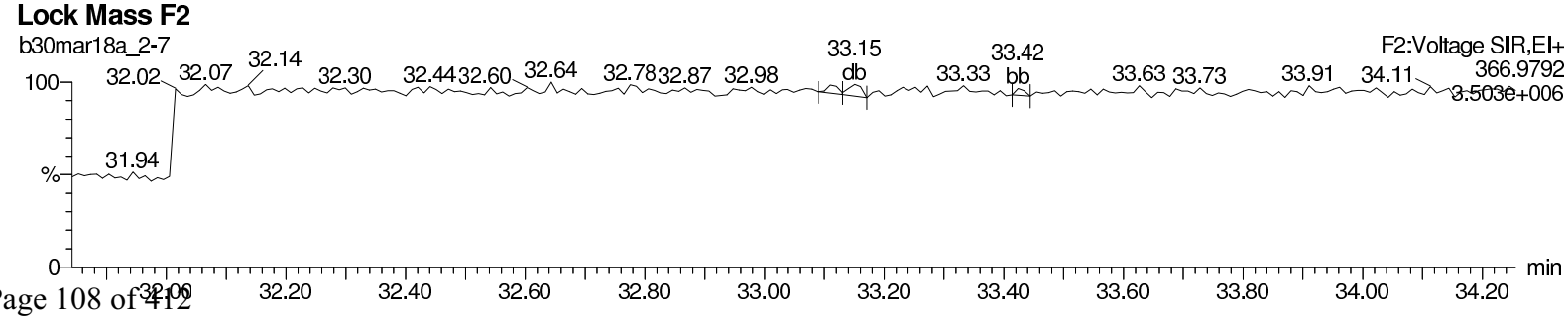
13C-12378-PeCDD



13C-12378-PeCDD



Lock Mass F2

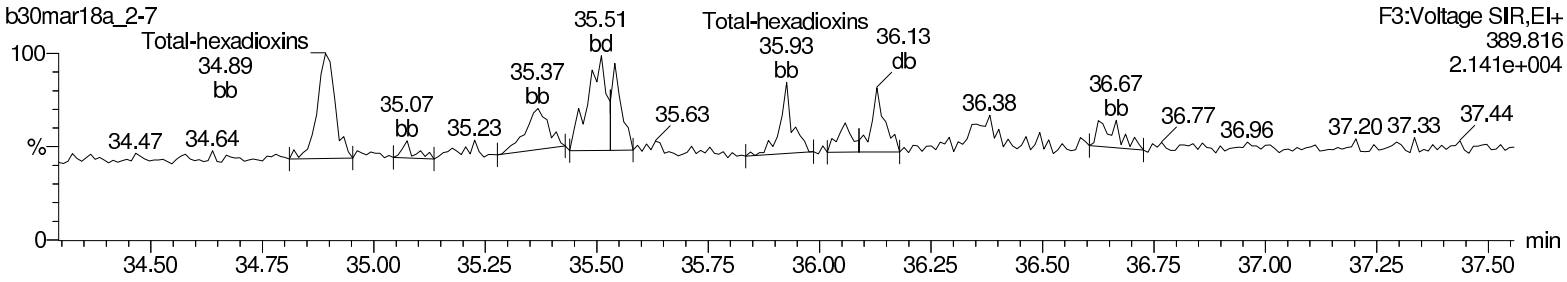


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

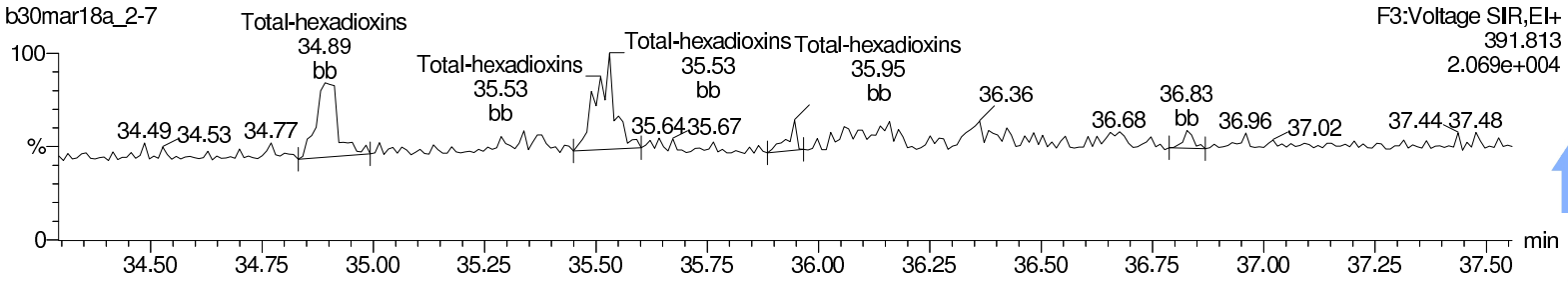
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

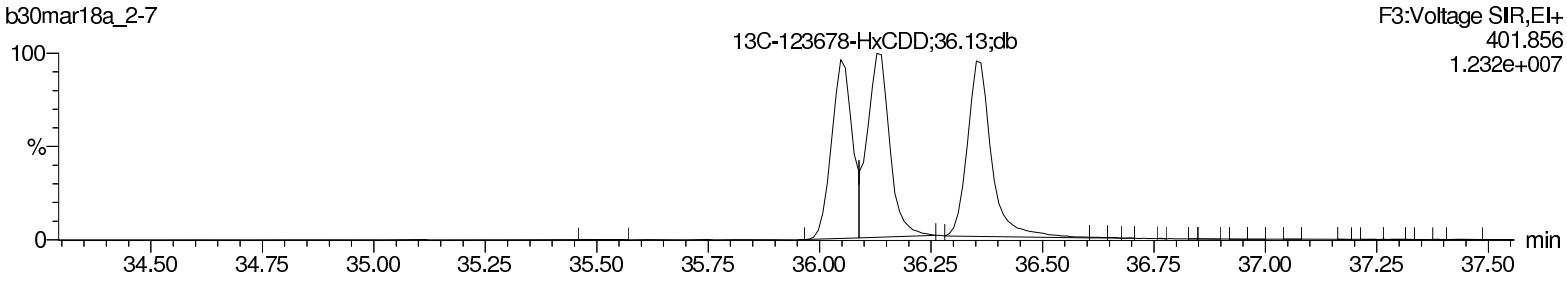
Total-hexadioxins



Total-hexadioxins



13C-123478-HxCDD



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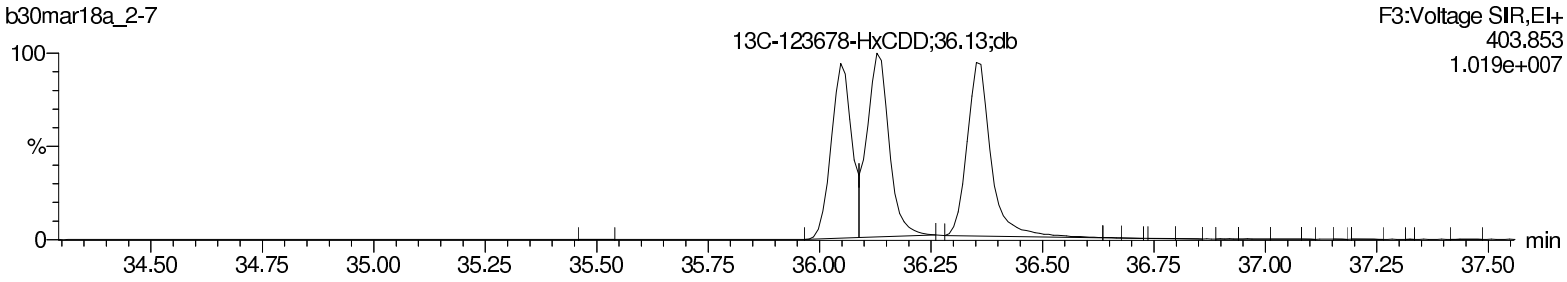
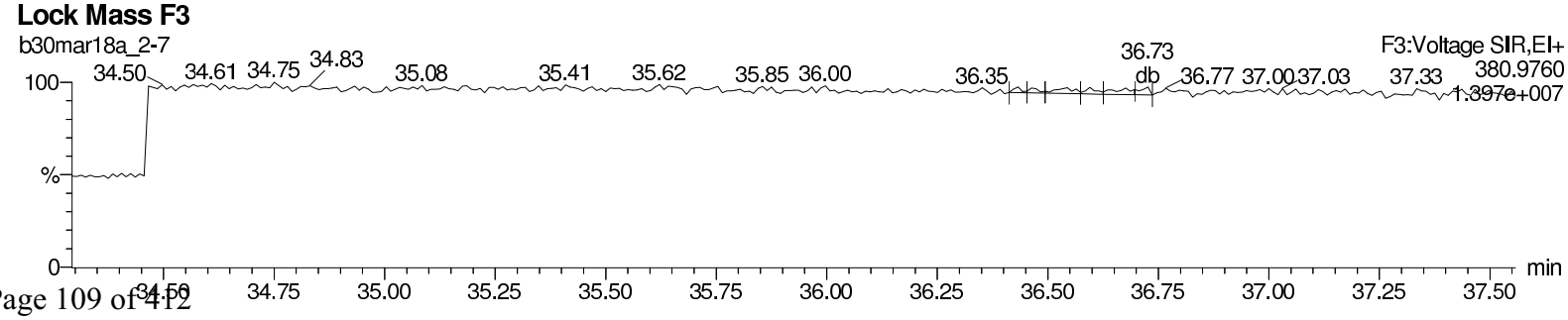


Lock Mass F3



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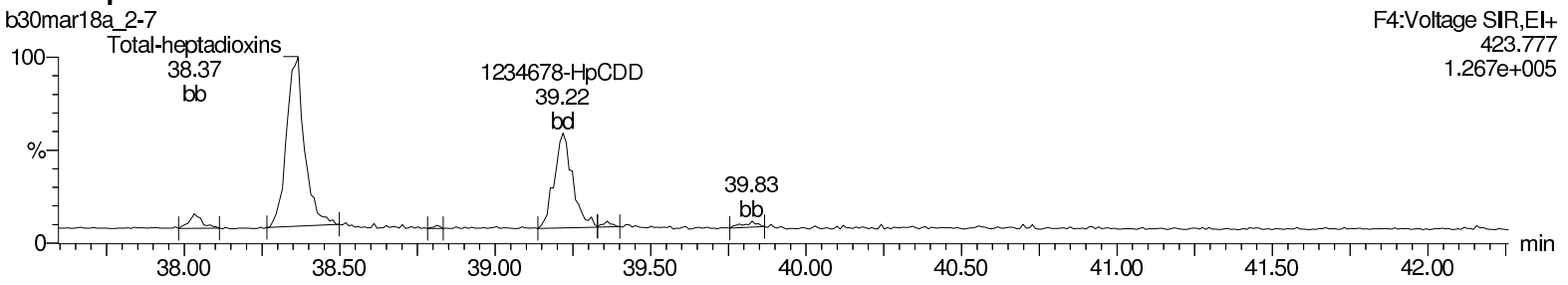
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

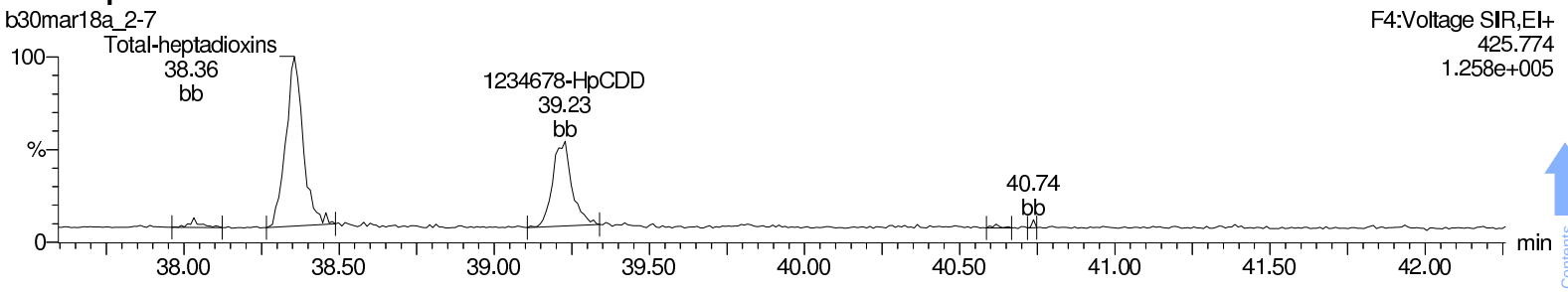
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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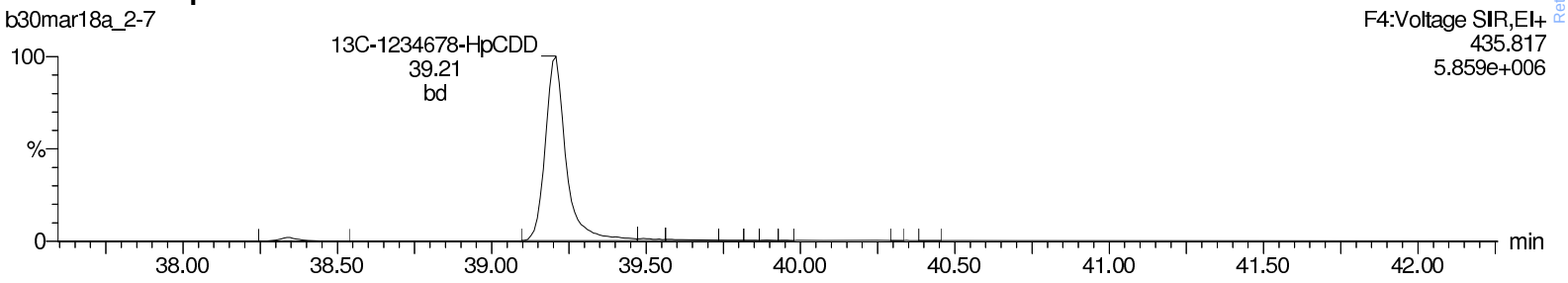

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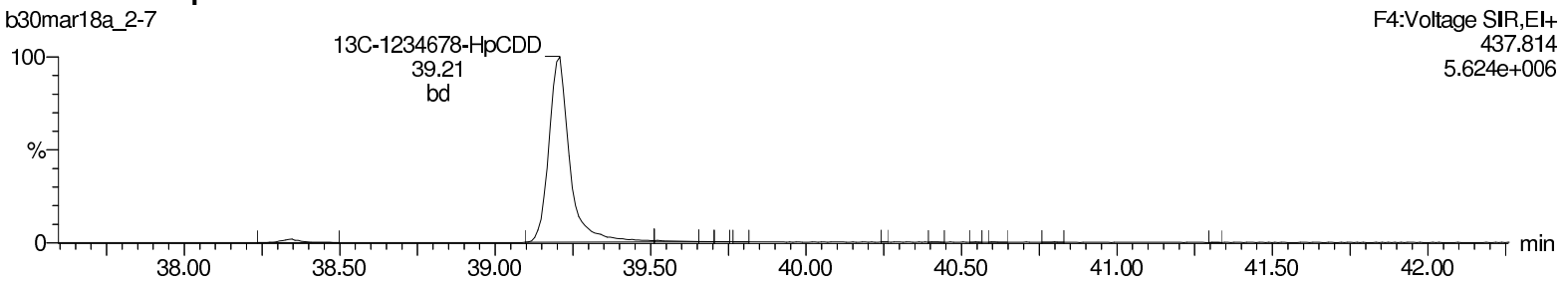
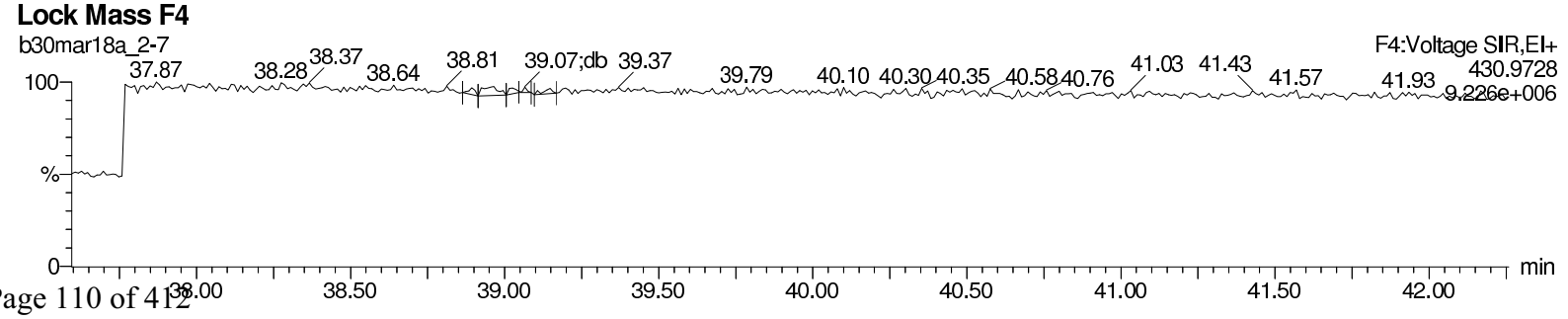


Lock Mass F4



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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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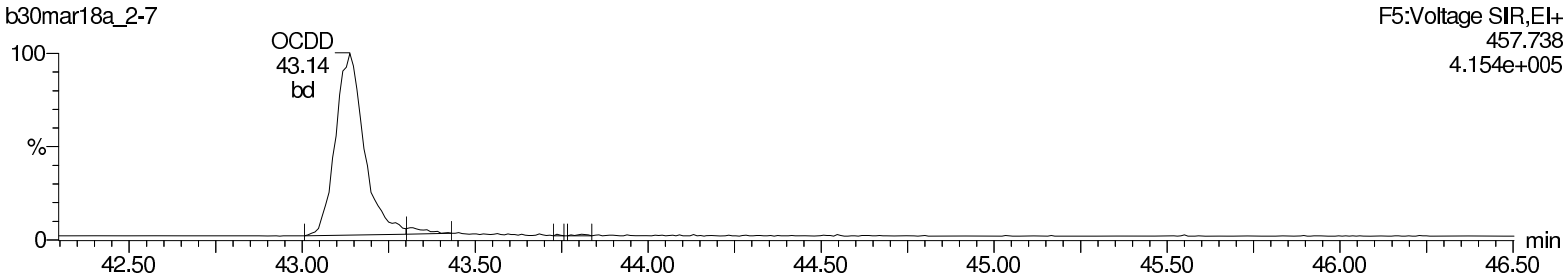
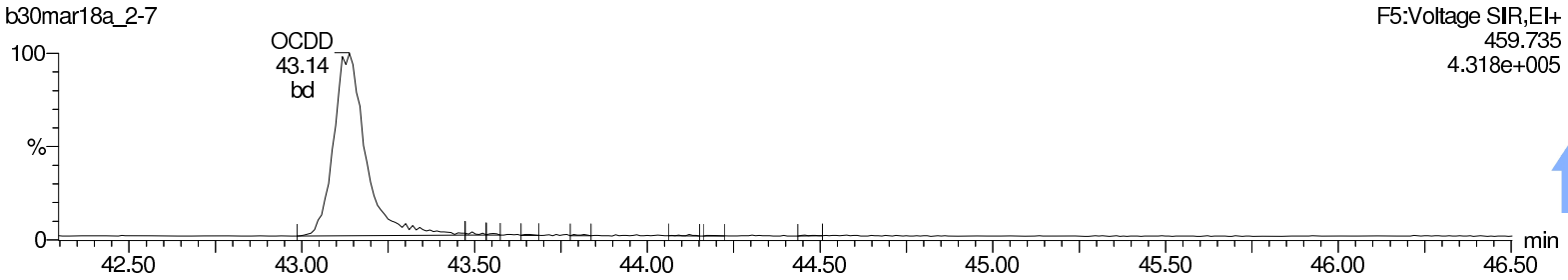
Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



OCDD



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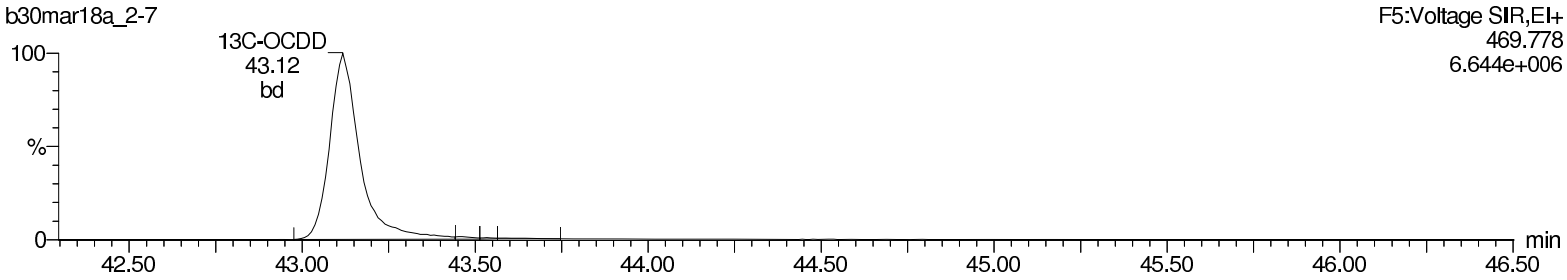

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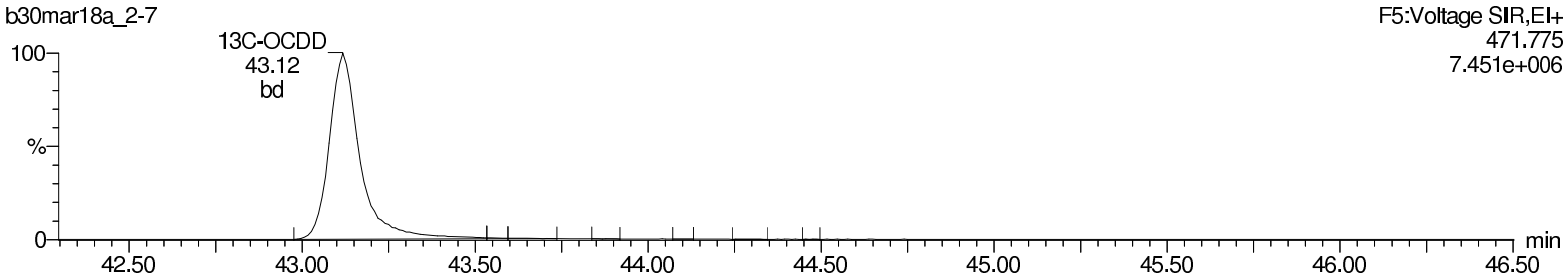
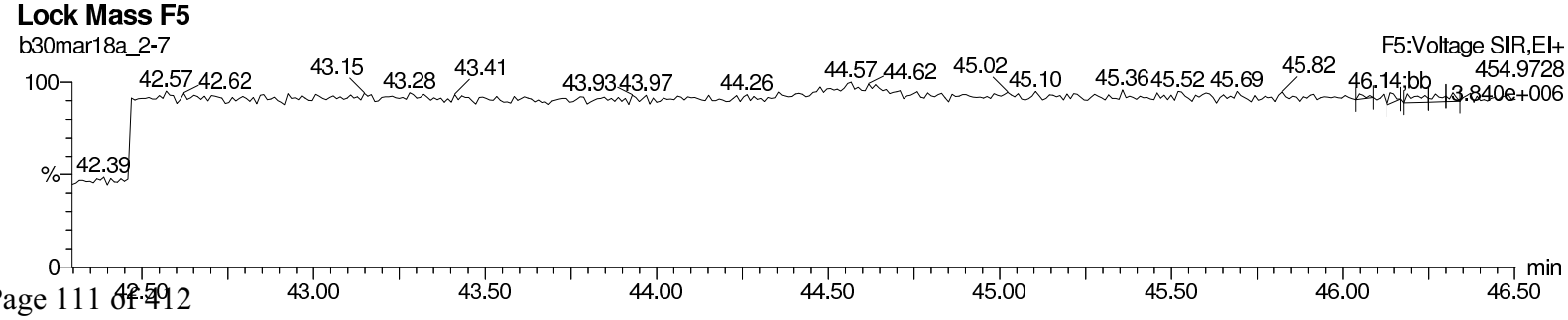


Lock Mass F5



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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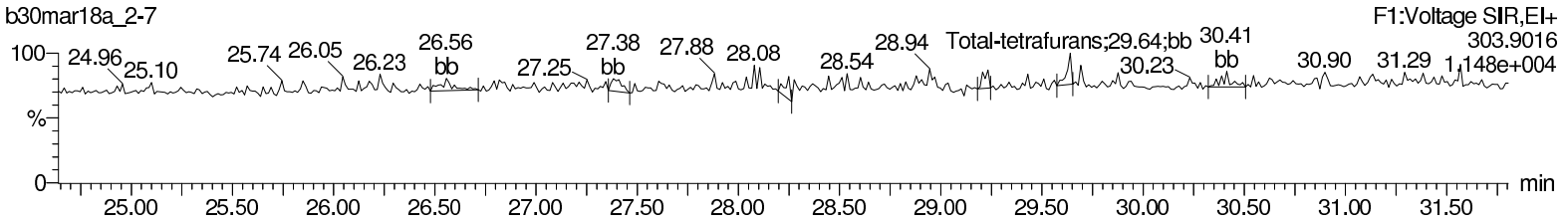
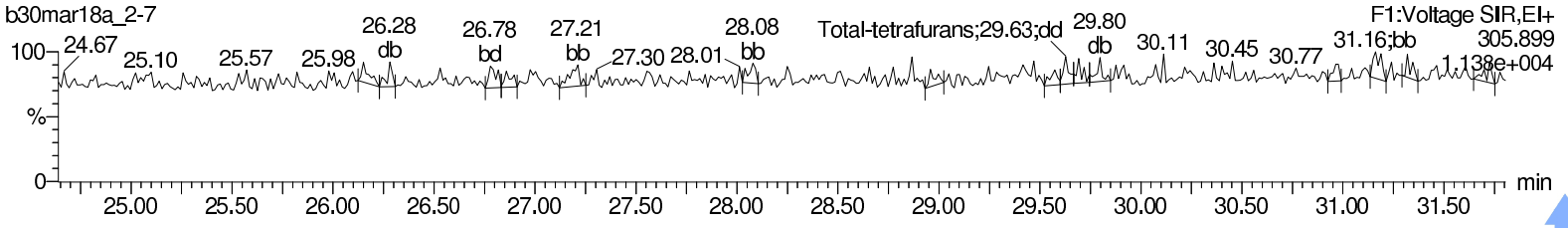
Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

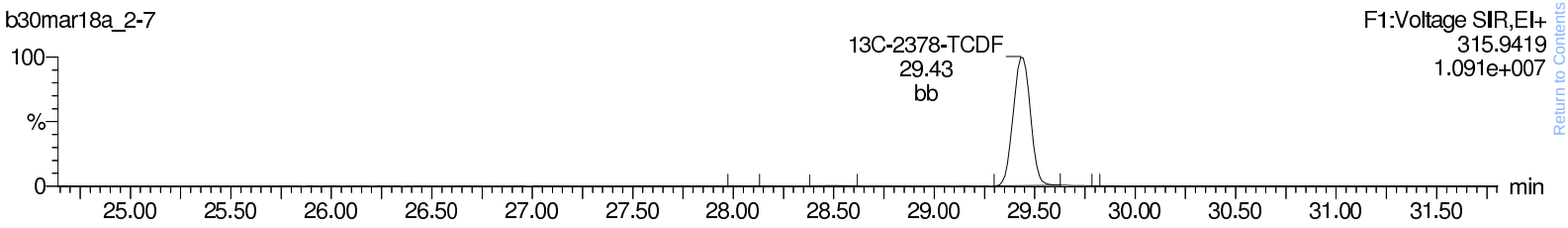
Total-tetrafurans



Total-tetrafurans



13C-2378-TCDF



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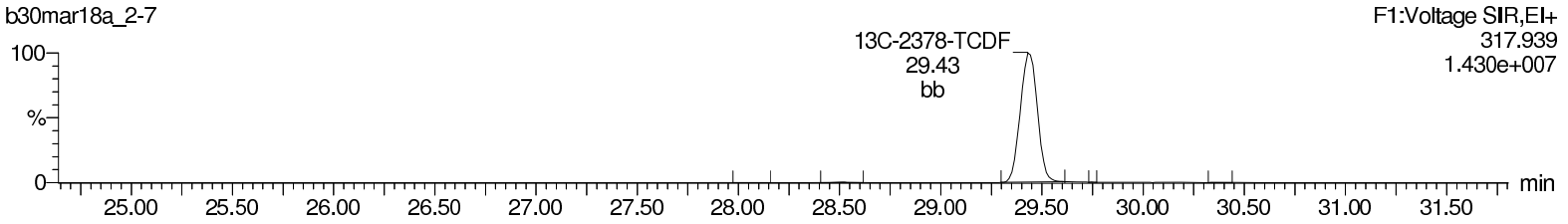
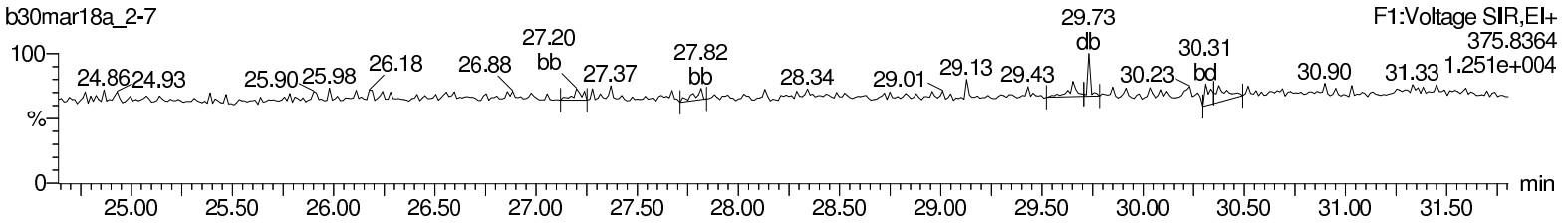
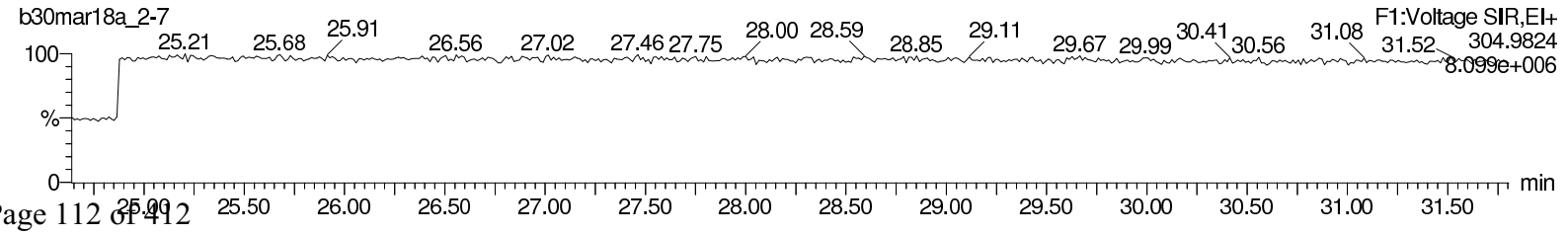


HxDPE



Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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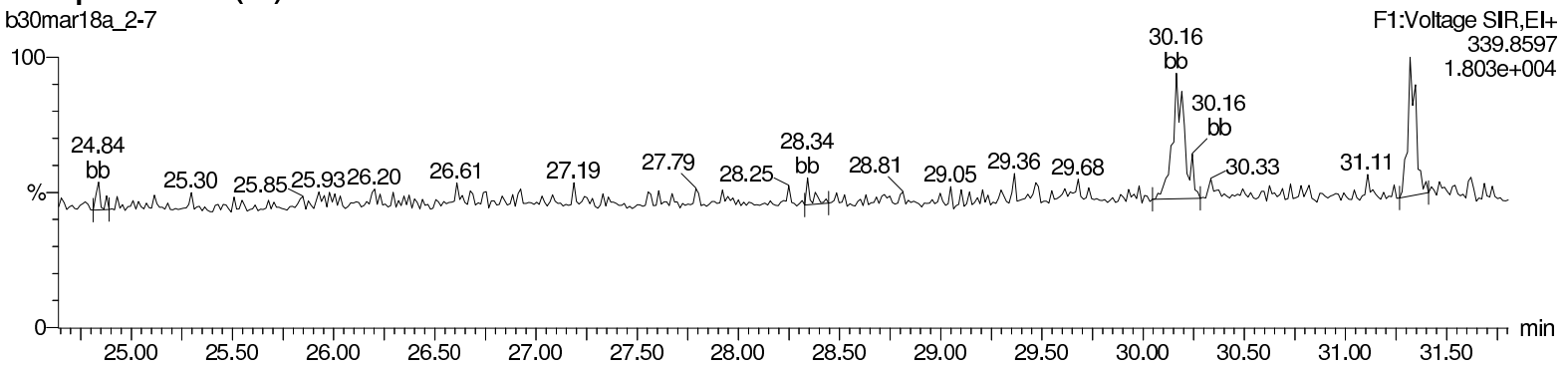
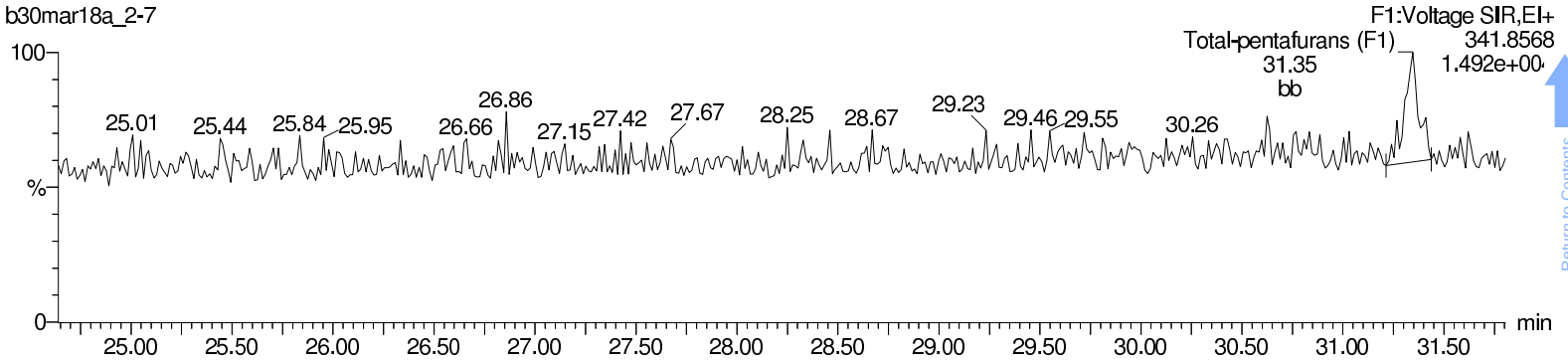
Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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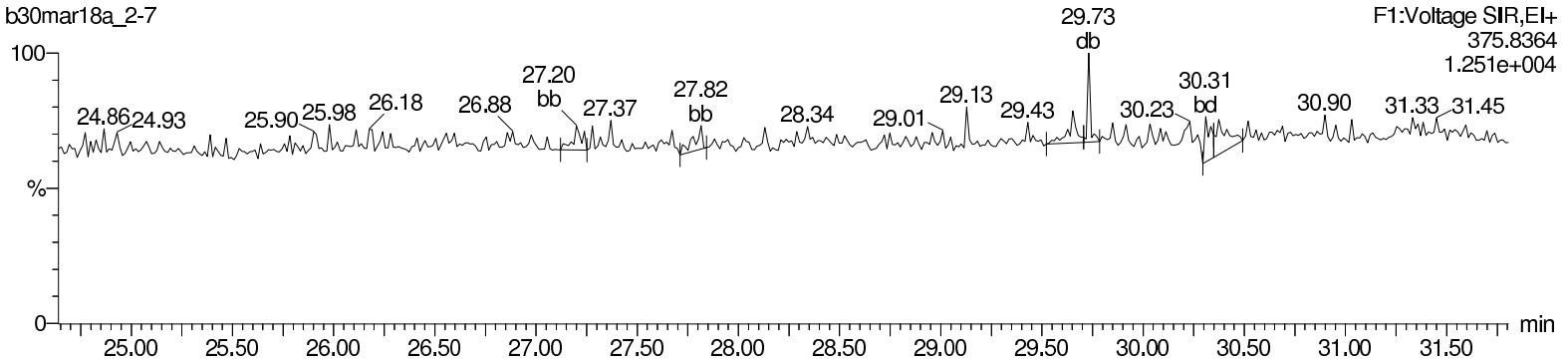
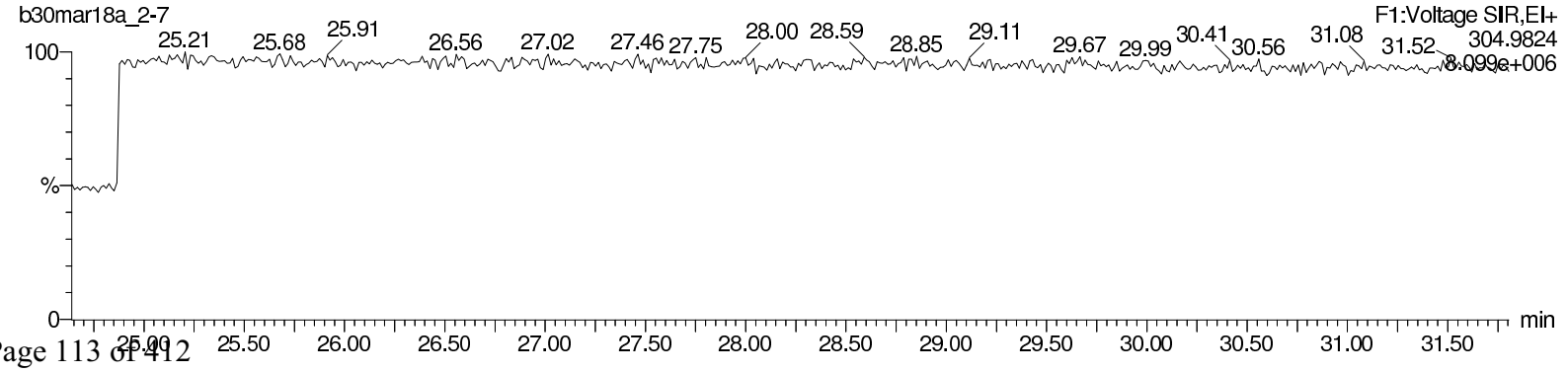


Lock Mass F1



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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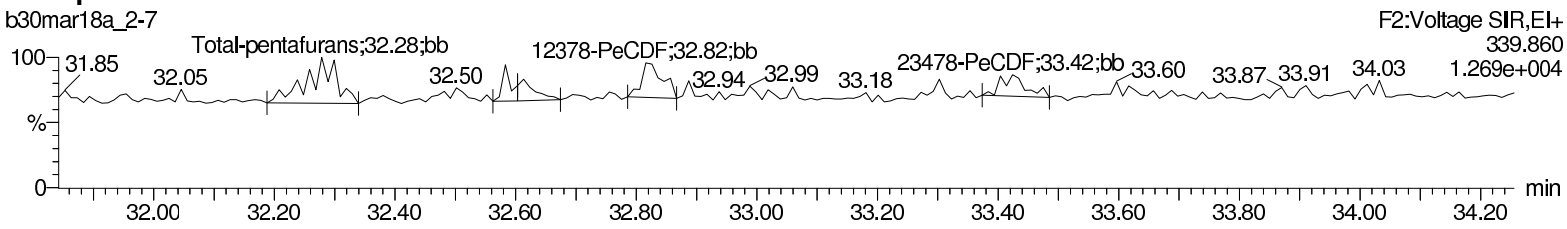
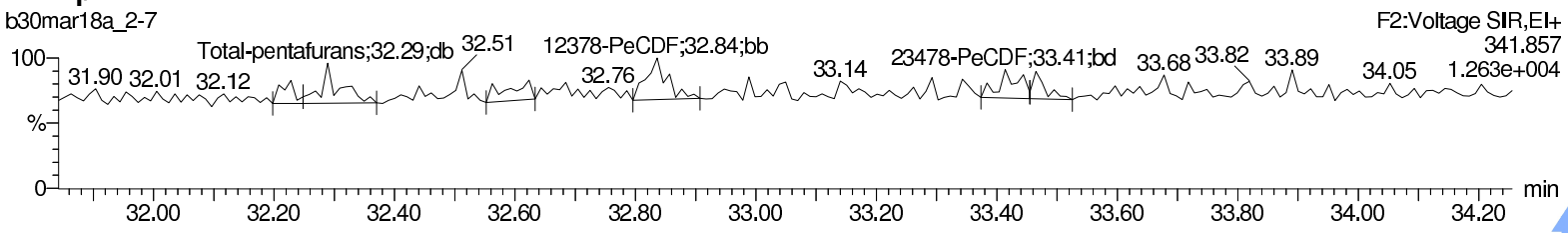
Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

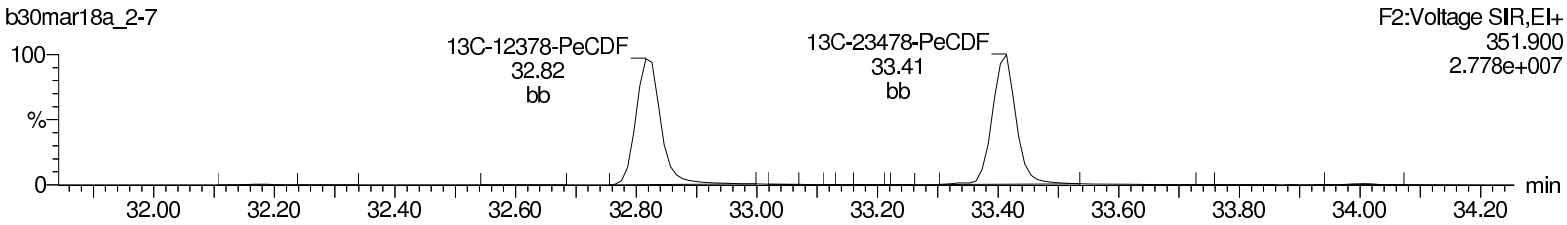
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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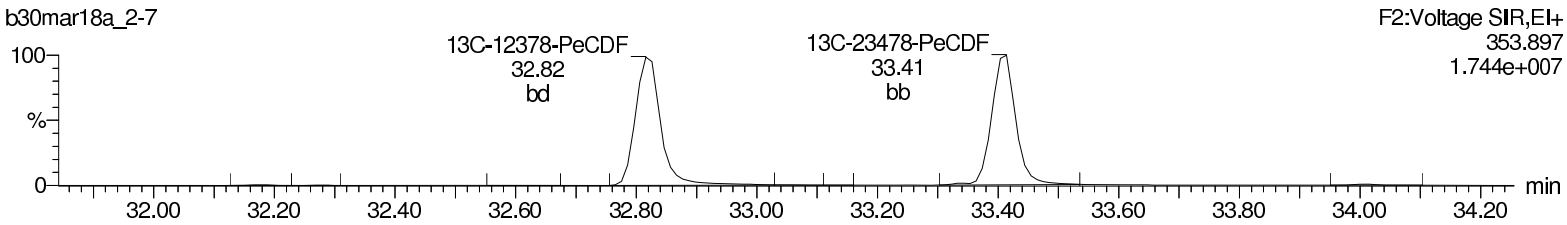

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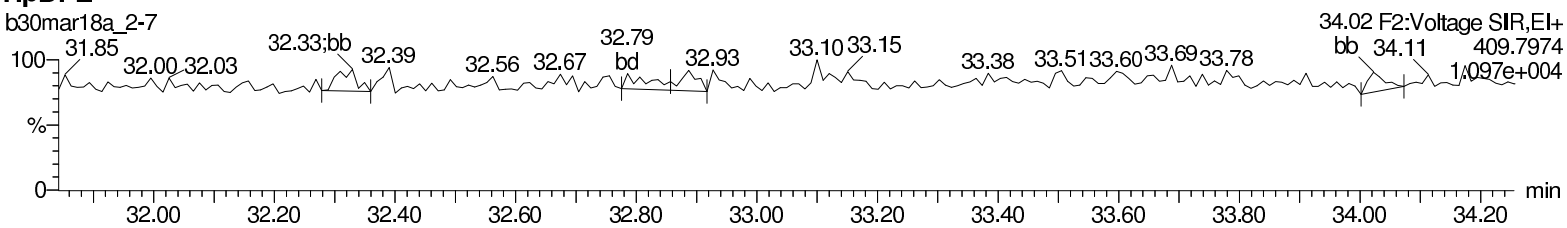
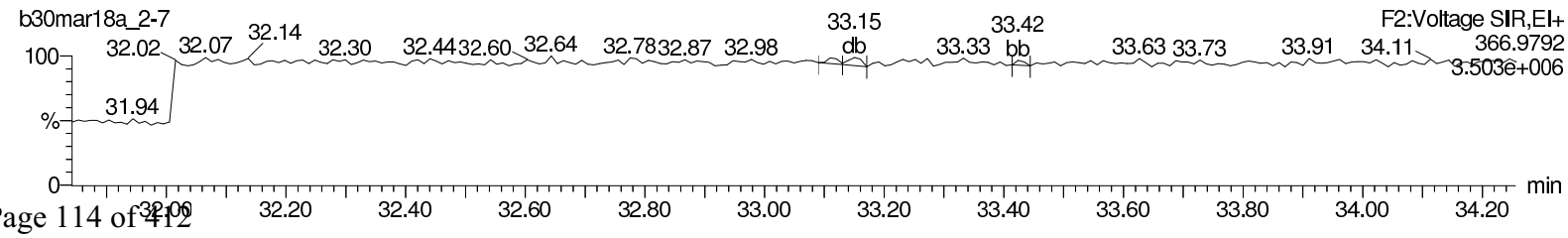


Lock Mass F2



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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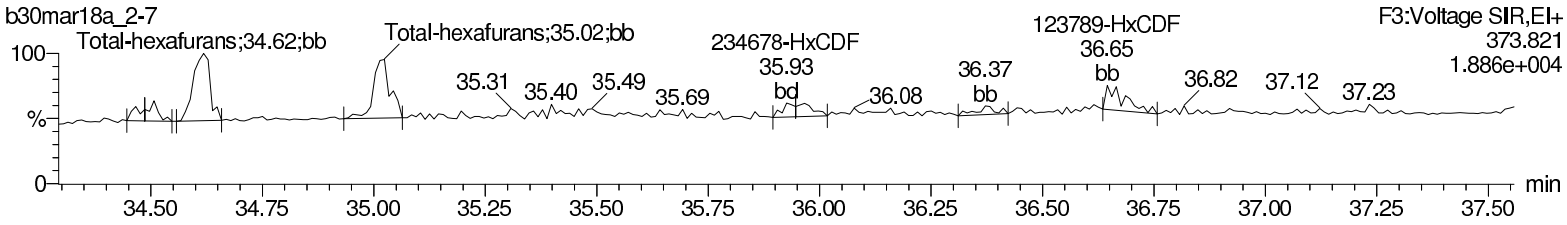
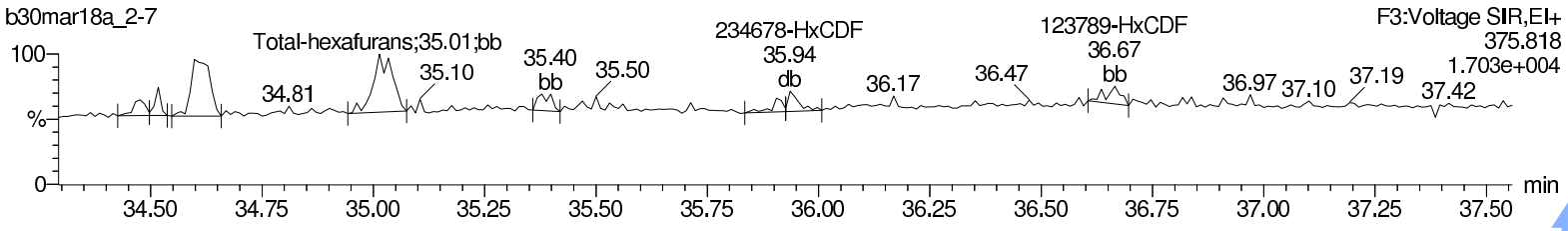
Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

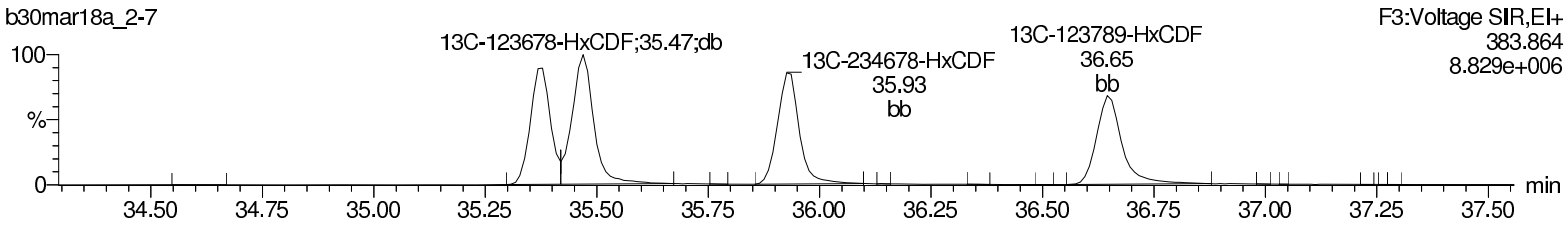
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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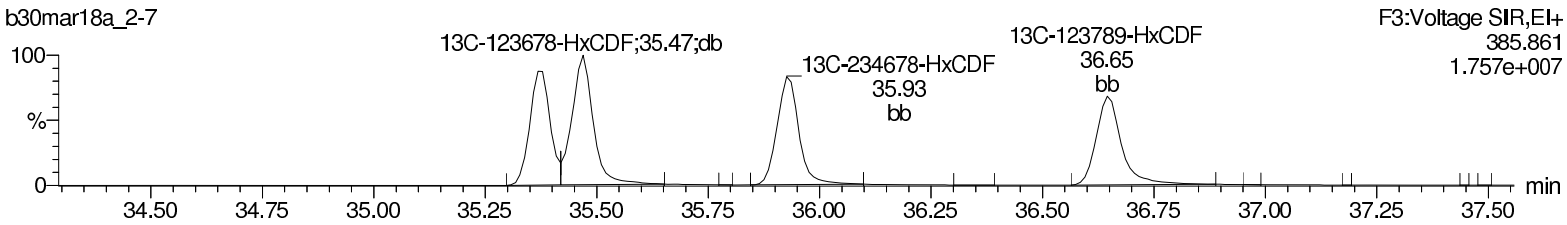
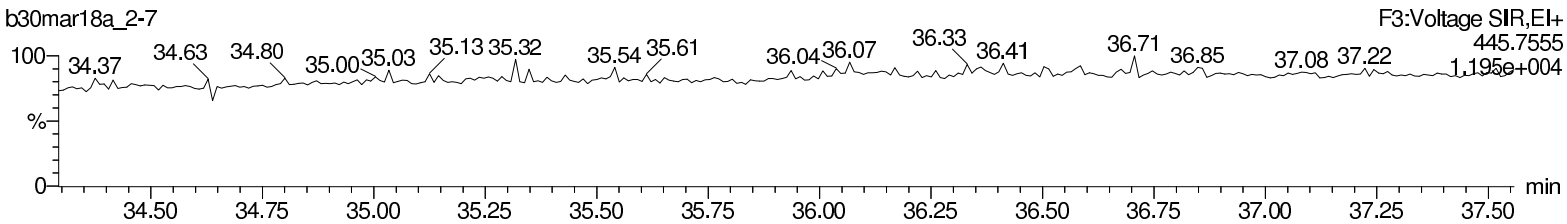
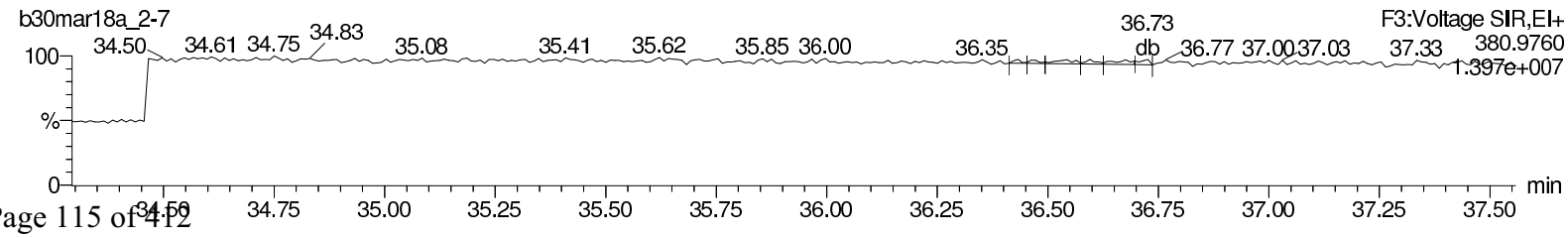


OcDPE



Lock Mass F3



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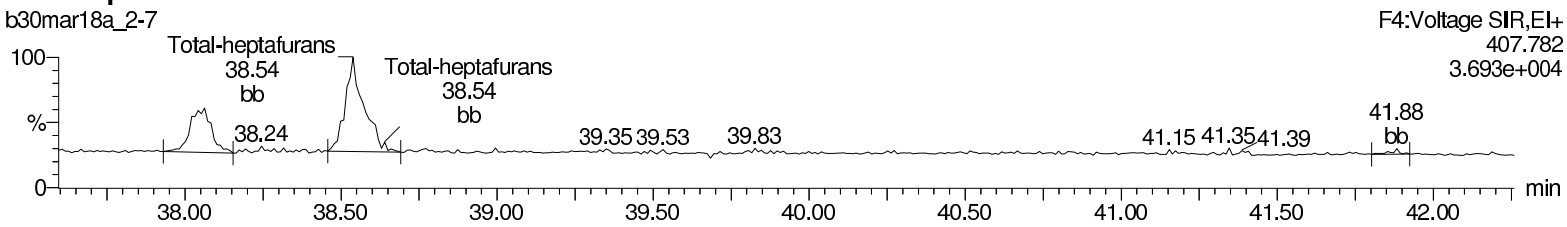
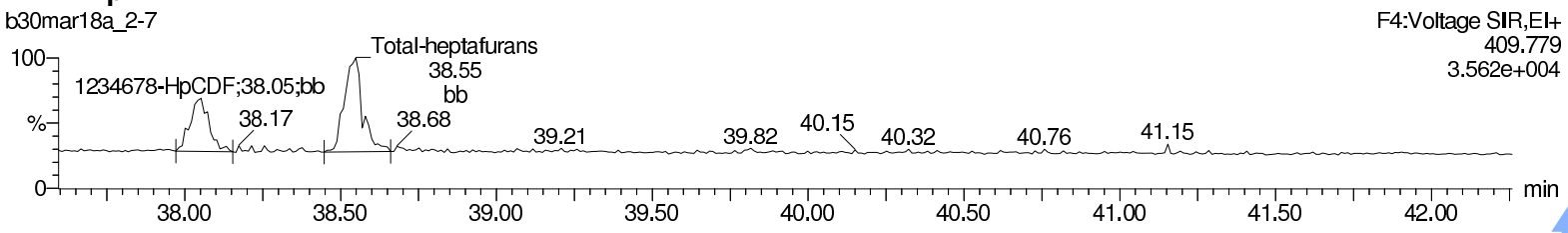
Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

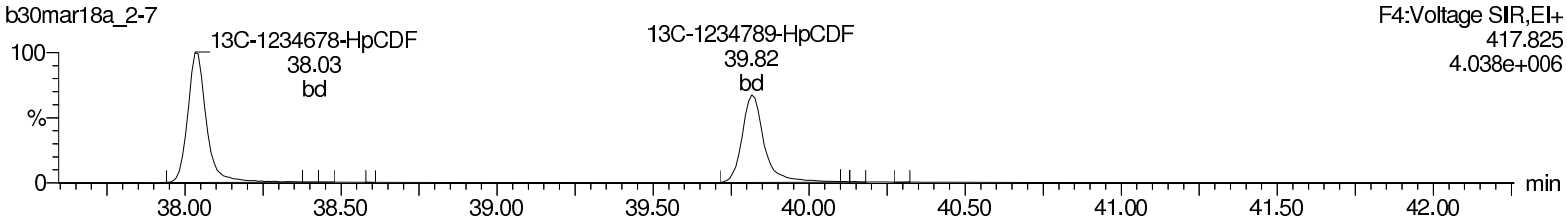
Total-heptafurans



Total-heptafurans



13C-1234678-HpCDF



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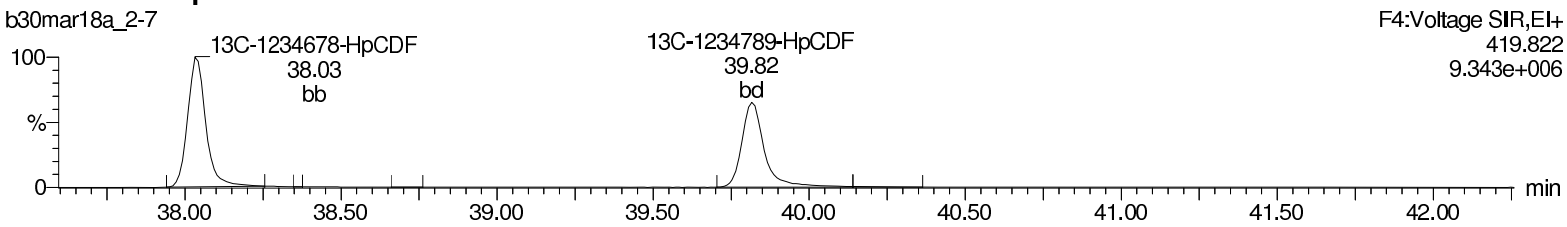
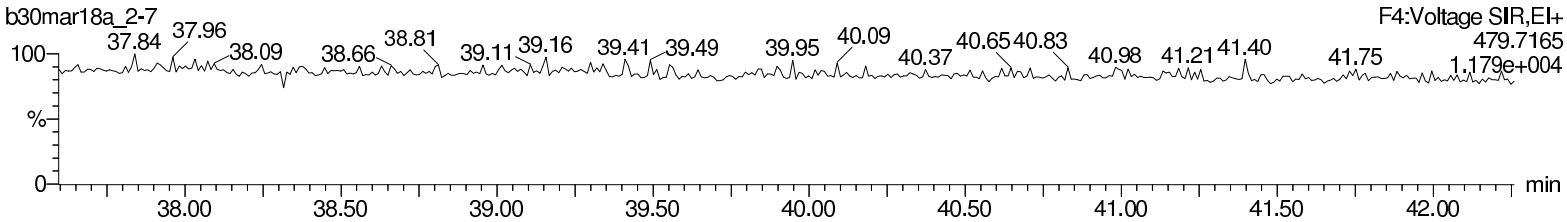
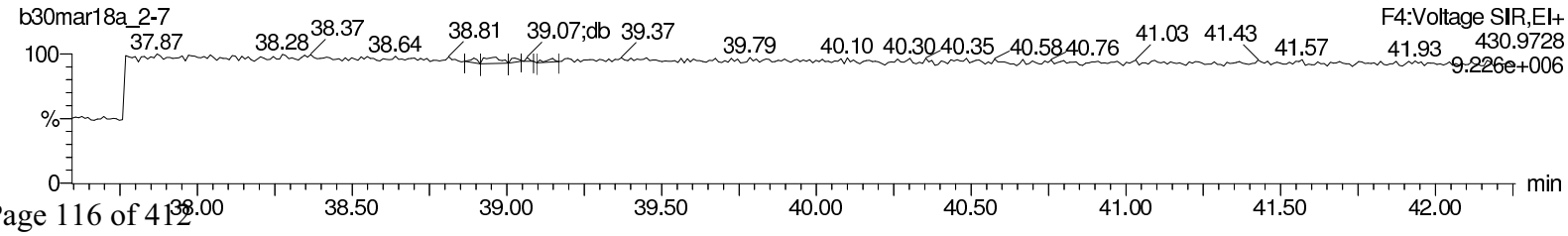


NoDPE



Lock Mass F4



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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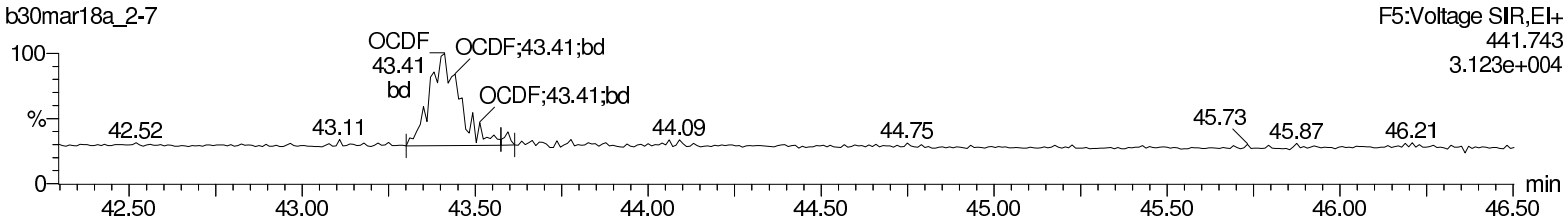
Name: b30mar18a_2-7, Date: 30-Mar-2018, Time: 23:26:43, ID: 13123004-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDF



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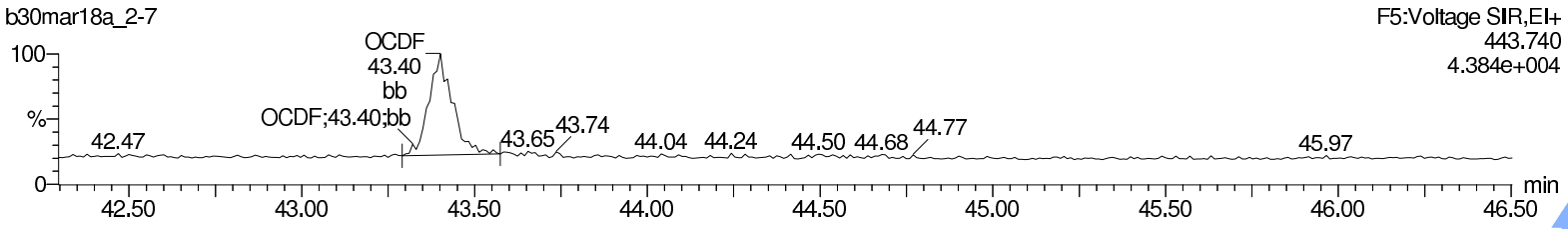
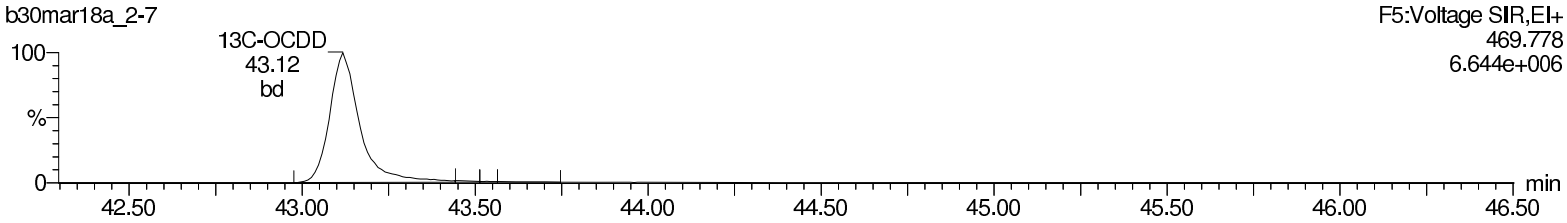
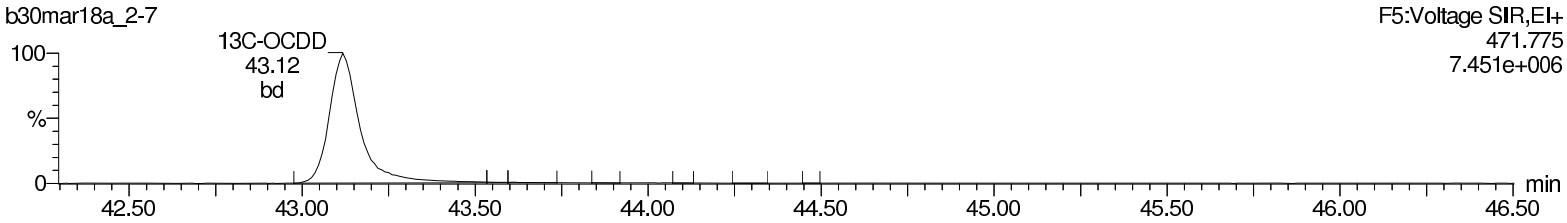


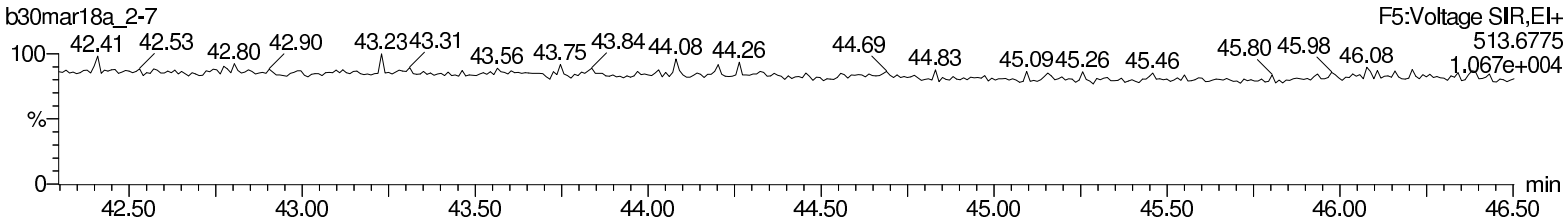
13C-OCDD



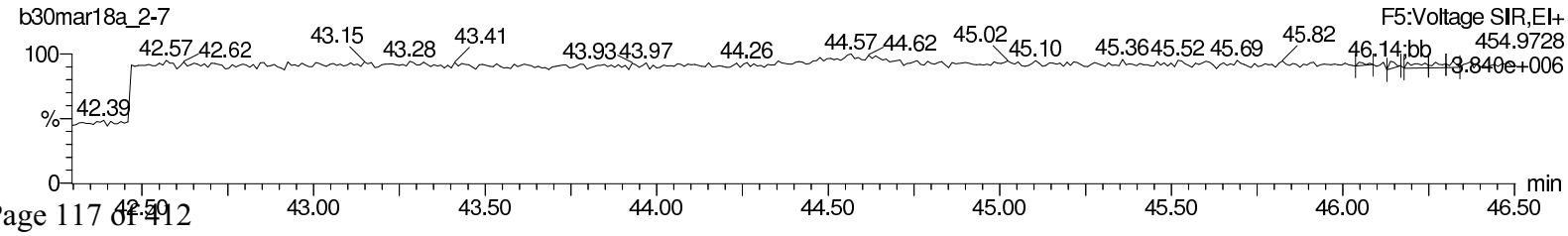
13C-OCDD



DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123005**	**Date Collected:**	**03/22/2018 09:20**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0008S013**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 00:15**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-8**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1053.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000678	ng/L	0.000678	0.00949
40321-76-4	1,2,3,7,8-PeCDD	U	0.000446	ng/L	0.000446	0.0475
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000636	ng/L	0.000636	0.0475
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000575	ng/L	0.000575	0.0475
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000623	ng/L	0.000623	0.0475
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.00697	ng/L	0.000892	0.0475
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.105	ng/L	0.00156	0.0949
51207-31-9	2,3,7,8-TCDF	U	0.000516	ng/L	0.000516	0.00949
57117-41-6	1,2,3,7,8-PeCDF	U	0.000298	ng/L	0.000298	0.0475
57117-31-4	2,3,4,7,8-PeCDF	U	0.00027	ng/L	0.00027	0.0475
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000372	ng/L	0.000372	0.0475
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000338	ng/L	0.000338	0.0475
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000382	ng/L	0.000382	0.0475
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.000778	ng/L	0.000509	0.0475
67562-39-4	1,2,3,4,6,7,8-HpCDF	JK	0.00139	ng/L	0.000361	0.0475
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000562	ng/L	0.000562	0.0475
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.00617	ng/L	0.00135	0.0949
41903-57-5	Total TeCDD	U	0.000678	ng/L	0.000678	0.00949
36088-22-9	Total PeCDD	U	0.000446	ng/L	0.000446	0.0475
34465-46-8	Total HxCDD	JK	0.0023	ng/L	0.000575	0.0475
37871-00-4	Total HpCDD	JK	0.0189	ng/L	0.000892	0.0475
30402-14-3	Total TeCDF	U	0.000516	ng/L	0.000516	0.00949
30402-15-4	Total PeCDF	U	0.00027	ng/L	0.00027	0.0475
55684-94-1	Total HxCDF	JK	0.00125	ng/L	0.000338	0.0475
38998-75-3	Total HpCDF	JK	0.00372	ng/L	0.000361	0.0475
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000195	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.000976	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.56	1.90	ng/L	82.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.40	1.90	ng/L	73.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.52	1.90	ng/L	80.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.54	1.90	ng/L	81.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.54	1.90	ng/L	80.9	(23%-140%)
13C-OCDD		2.61	3.80	ng/L	68.7	(17%-157%)
13C-2,3,7,8-TCDF		1.59	1.90	ng/L	84.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.62	1.90	ng/L	85.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.53	1.90	ng/L	80.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.46	1.90	ng/L	77.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.54	1.90	ng/L	81.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.51	1.90	ng/L	79.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.57	1.90	ng/L	82.7	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123005**	**Date Collected:**	**03/22/2018 09:20**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0008S013**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 00:15**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-8**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1053.6 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.42	1.90	ng/L	75.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.40	1.90	ng/L	73.6	(26%-138%)
37Cl-2,3,7,8-TCDD		0.174	0.190	ng/L	91.8	(35%-197%)

Comments:

J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:36:23 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:38:01 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD							NO		0.0357		1351			1072			
2	12378-PeCDD	1.67e2	1.38e2	3.05e2	33.60	1.000	1.21	YES	0.028	0.0235	3.30e3	1269	2.6	1.96e3	897	2.2	bb	bb
3	123478-HxCDD	7.74e1	5.26e1	1.30e2	36.06	1.000	1.47	YES	0.013	0.0335	2.38e3	1515	1.6	2.30e3	931	2.5	MM	bd
4	123678-HxCDD	1.05e2	1.18e2	2.23e2	36.14	1.000	0.89	YES	0.020	0.0303	2.94e3	1515	1.9	3.01e3	931	3.2	MM	db
5	123789-HxCDD							NO		0.0328		1515			931			
6	1234678-HpCDD	1.49e3	1.70e3	3.19e3	39.24	1.001	0.87	YES	0.367	0.0470	2.67e4	1261	21.1	2.45e4	975	25.1	bb	bb
7	OCDD	1.72e4	1.84e4	3.56e4	43.14	1.000	0.93	NO	5.520	0.0822	1.76e5	1011	174.5	2.01e5	1093	184.0	bd	bd
8	2378-TCDF							NO		0.0272		914			1390			
9	12378-PeCDF	1.30e2	5.61e1	1.86e2	32.83	1.000	2.31	YES	0.011	0.0157	3.62e3	1119	3.2	1.11e3	1242	0.9	bb	bb
10	23478-PeCDF							NO		0.0142		1119			1242			
11	123478-HxCDF							NO		0.0196		1038			832			
12	123678-HxCDF							NO		0.0178		1038			832			
13	234678-HxCDF							NO		0.0201		1038			832			
14	123789-HxCDF	2.46e2	2.04e2	4.50e2	36.68	1.001	1.21	NO	0.041	0.0268	4.90e3	1038	4.7	4.00e3	832	4.8	MM	MM
15	1234678-HpCDF	3.95e2	3.27e2	7.22e2	38.06	1.001	1.21	YES	0.073	0.0190	9.66e3	553	17.5	6.97e3	641	10.9	bb	MM
16	1234789-HpCDF							NO		0.0296		553			641			
17	OCDF	9.25e2	1.20e3	2.13e3	43.39	1.006	0.77	NO	0.325	0.0711	1.03e4	711	14.4	1.30e4	1132	11.4	MM	bb
18	13C-2378-TCDD	7.86e5	1.03e6	1.81e6	30.37	1.024	0.76	NO	82.385	0.0723	8.25e6	4507	1829.7	1.07e7	2738	3924.4	bb	bb
19	13C-12378-PeCDD	8.39e5	5.25e5	1.36e6	33.60	1.133	1.60	NO	73.606	0.0917	1.79e7	5073	3537.4	1.15e7	2665	4308.6	bb	bb
20	13C-123478-HxCDD	6.42e5	5.27e5	1.17e6	36.06	0.992	1.22	NO	80.010	0.122	1.20e7	6712	1781.2	9.65e6	4892	1973.5	bd	bd
21	13C-123678-HxCDD	7.13e5	5.83e5	1.30e6	36.14	0.994	1.22	NO	81.140	0.111	1.32e7	6712	1965.1	1.06e7	4892	2174.8	dd	dd
22	13C-1234678-HpCDD	4.48e5	4.19e5	8.67e5	39.21	1.078	1.07	NO	80.893	0.167	6.13e6	4617	1327.9	5.86e6	7086	826.8	bb	bb
23	13C-OCDD	6.65e5	7.53e5	1.42e6	43.13	1.186	0.88	NO	137.417	0.132	6.60e6	4332	1522.3	7.48e6	4571	1635.5	bd	bd
24	13C-2378-TCDF	9.42e5	1.22e6	2.16e6	29.44	0.993	0.77	NO	83.974	0.0785	1.00e7	5596	1788.1	1.31e7	3618	3614.7	bb	bb
25	13C-12378-PeCDF	1.25e6	7.96e5	2.04e6	32.83	1.107	1.57	NO	85.262	0.139	2.79e7	6193	4499.7	1.76e7	9010	1949.0	bd	bd
26	13C-23478-PeCDF	1.17e6	7.50e5	1.92e6	33.41	1.127	1.56	NO	80.856	0.140	2.74e7	6193	4426.9	1.75e7	9010	1940.1	db	db
27	13C-123478-HxCDF	4.15e5	7.91e5	1.21e6	35.38	0.973	0.52	NO	77.108	0.158	8.21e6	7805	1051.7	1.63e7	8293	1970.4	bd	bd
28	13C-123678-HxCDF	4.76e5	9.95e5	1.47e6	35.47	0.975	0.48	NO	81.319	0.136	9.08e6	7805	1162.8	1.80e7	8293	2173.6	db	db
29	13C-234678-HxCDF	4.15e5	8.07e5	1.22e6	35.94	0.988	0.51	NO	79.609	0.160	7.65e6	7805	980.6	1.49e7	8293	1796.9	bb	bb
30	13C-123789-HxCDF	3.97e5	7.64e5	1.16e6	36.65	1.008	0.52	NO	82.697	0.175	6.25e6	7805	800.6	1.22e7	8293	1474.8	bd	bb
31	13C-1234678-HpCDF	2.72e5	6.35e5	9.07e5	38.04	1.046	0.43	NO	75.041	0.107	4.30e6	4028	1067.0	9.92e6	4400	2253.6	bb	bd

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:36:23 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:38:01 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.23e5	4.84e5	7.06e5	39.83	1.095	0.46	NO	73.553	0.134	2.87e6	4028	711.6	6.34e6	4400	1440.2	bd	bb
33	13C-1234-TCDD	8.44e5	1.08e6	1.93e6	29.65	0.000	0.78	NO	100.000	0.0825	9.61e6	4507	2131.9	1.23e7	2738	4488.9	bb	bb
34	13C-123789-HxCDD	7.64e5	6.59e5	1.42e6	36.36	0.000	1.16	NO	100.000	0.125	1.25e7	6712	1859.5	1.03e7	4892	2114.8	db	dd
35	37Cl-2378-TCDD	2.06e5		2.06e5	30.40	1.025			9.183	0.0117	2.10e6	1195	1758.9				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:36:23 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:38:01 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetradioxins	8.75e1	1.16e2	2.03e2	29.46	0.75	NO	0.013	0.0357	2.85e3	1351	2.1	1.82e3	1072	1.7	db	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	1.67e2	1.38e2	3.05e2	33.60	1.21	YES	0.028	0.0235	3.30e3	1269	2.6	1.96e3	897	2.2	bb	bb
2	Total-pentadioxins	1.81e2	6.24e1	2.44e2	33.41	2.91	YES	0.023	0.0235	4.29e3	1269	3.4	2.38e3	897	2.6	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123678-HxCDD	1.05e2	1.18e2	2.23e2	36.14	0.89	YES	0.020	0.0303	2.94e3	1515	1.9	3.01e3	931	3.2	MM	db
2	123478-HxCDD	7.74e1	5.26e1	1.30e2	36.06	1.47	YES	0.013	0.0335	2.38e3	1515	1.6	2.30e3	931	2.5	MM	bd
3	Total-hexadioxins	5.41e2	3.15e2	8.55e2	35.50	1.72	YES	0.084	0.0322	7.22e3	1515	4.8	4.83e3	931	5.2	MM	db
4	Total-hexadioxins	2.73e2	1.07e2	3.80e2	35.37	2.56	YES	0.037	0.0322	6.37e3	1515	4.2	4.63e3	931	5.0	bd	bd
5	Total-hexadioxins	1.96e2	1.34e2	3.30e2	34.89	1.46	YES	0.032	0.0322	5.07e3	1515	3.3	5.04e3	931	5.4	bb	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptadioxins	3.64e2	1.34e2	4.99e2	39.81	2.71	YES	0.057	0.0470	5.22e3	1261	4.1	3.61e3	975	3.7	bb	bb
2	1234678-HpCDD	1.49e3	1.70e3	3.19e3	39.24	0.87	YES	0.367	0.0470	2.67e4	1261	21.1	2.45e4	975	25.1	bb	bb
3	Total-heptadioxins	2.71e3	2.75e3	5.46e3	38.36	0.99	NO	0.629	0.0470	4.14e4	1261	32.8	4.18e4	975	42.9	bb	bb
4	Total-heptadioxins	4.13e2	1.02e2	5.15e2	38.03	4.05	YES	0.059	0.0470	9.23e3	1261	7.3	3.59e3	975	3.7	bb	bb

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1																	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:36:23 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:38:01 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	5.24e1	5.89e1	1.11e2	25.14	0.89	YES	0.006	0.0146	6.63e2	954	0.7	1.98e3	1362	1.5	bb	bb
2	Total-pentafurans (F1)	1.48e2	1.17e2	2.65e2	31.36	1.27	YES	0.015	0.0146	2.67e3	954	2.8	1.86e3	1362	1.4	bb	bb
3	Total-pentafurans (F1)	7.40e1	8.25e1	1.57e2	30.40	0.90	YES	0.009	0.0146	1.40e3	954	1.5	2.89e3	1362	2.1	db	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDF	1.30e2	5.61e1	1.86e2	32.83	2.31	YES	0.011	0.0157	3.62e3	1119	3.2	1.11e3	1242	0.9	bb	bb

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDF	2.46e2	2.04e2	4.50e2	36.68	1.21	NO	0.041	0.0268	4.90e3	1038	4.7	4.00e3	832	4.8	MM	MM
2	Total-hexafurans	1.59e2	1.55e2	3.14e2	34.62	1.02	YES	0.025	0.0208	4.98e3	1038	4.8	3.88e3	832	4.7	bb	bb

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	5.53e2	5.42e2	1.10e3	38.56	1.02	NO	0.123	0.0237	1.01e4	553	18.2	9.93e3	641	15.5	bb	MM
2	1234678-HpCDF	3.95e2	3.27e2	7.22e2	38.06	1.21	YES	0.073	0.0190	9.66e3	553	17.5	6.97e3	641	10.9	bb	MM

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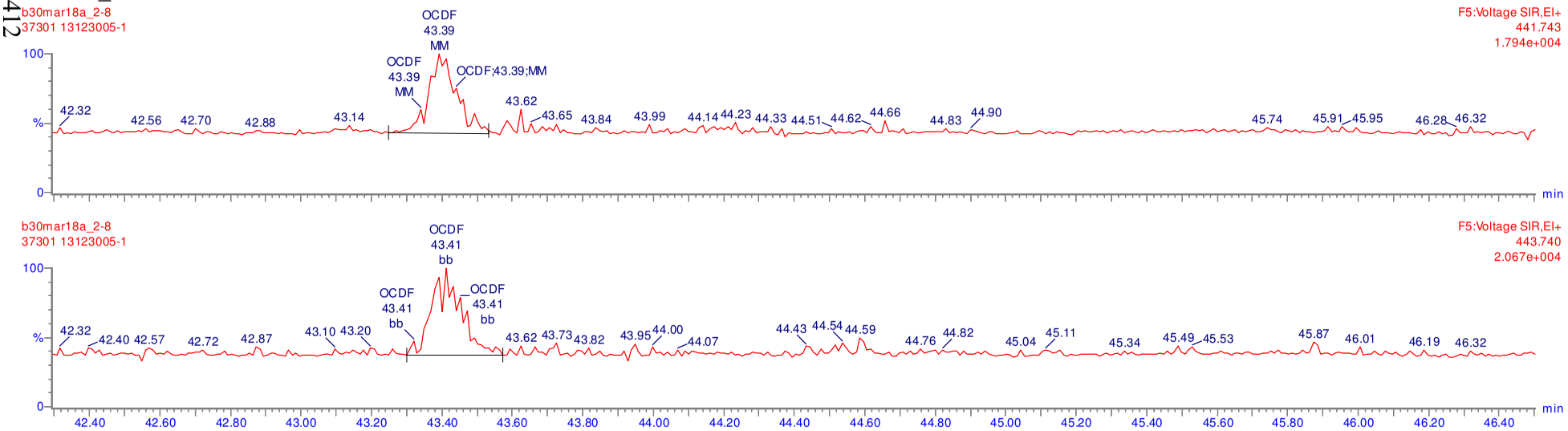
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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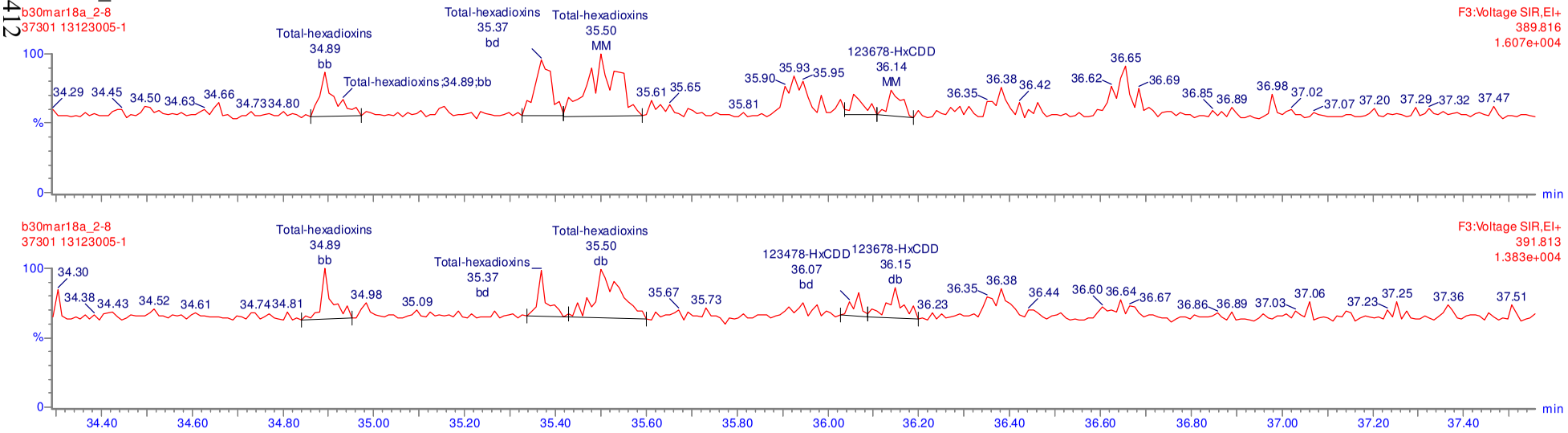
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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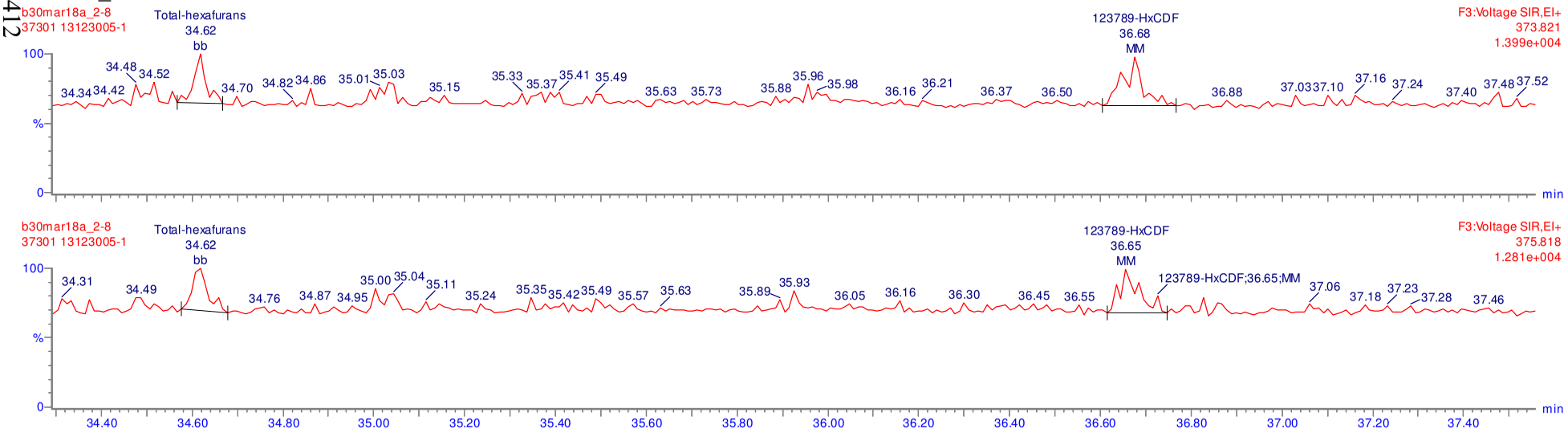
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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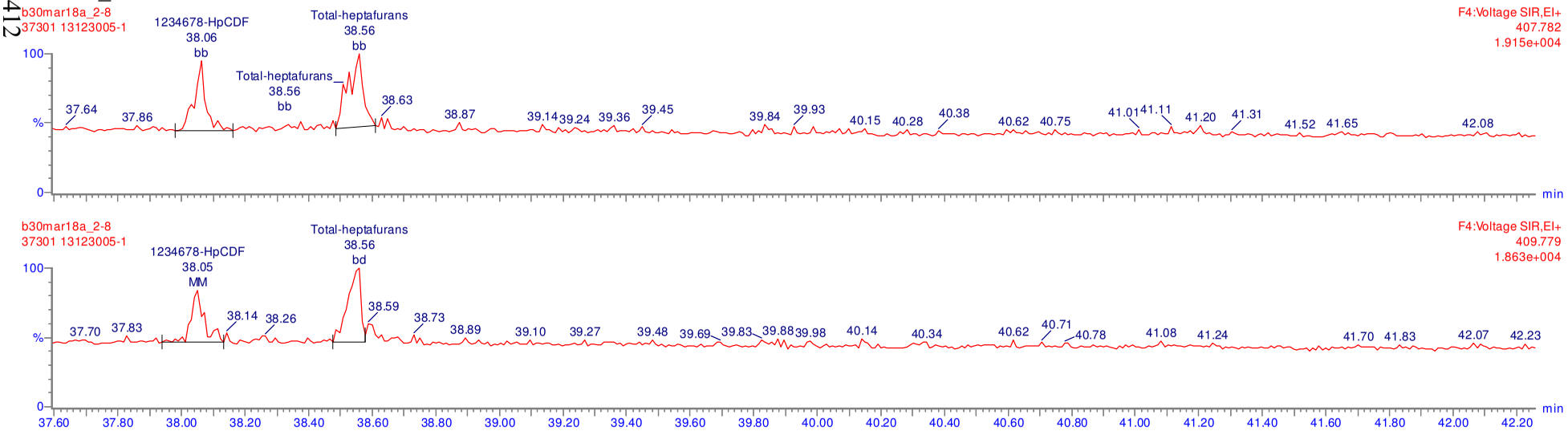
METHOD 1613
HRP763_1



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MANUAL INTEGRATION
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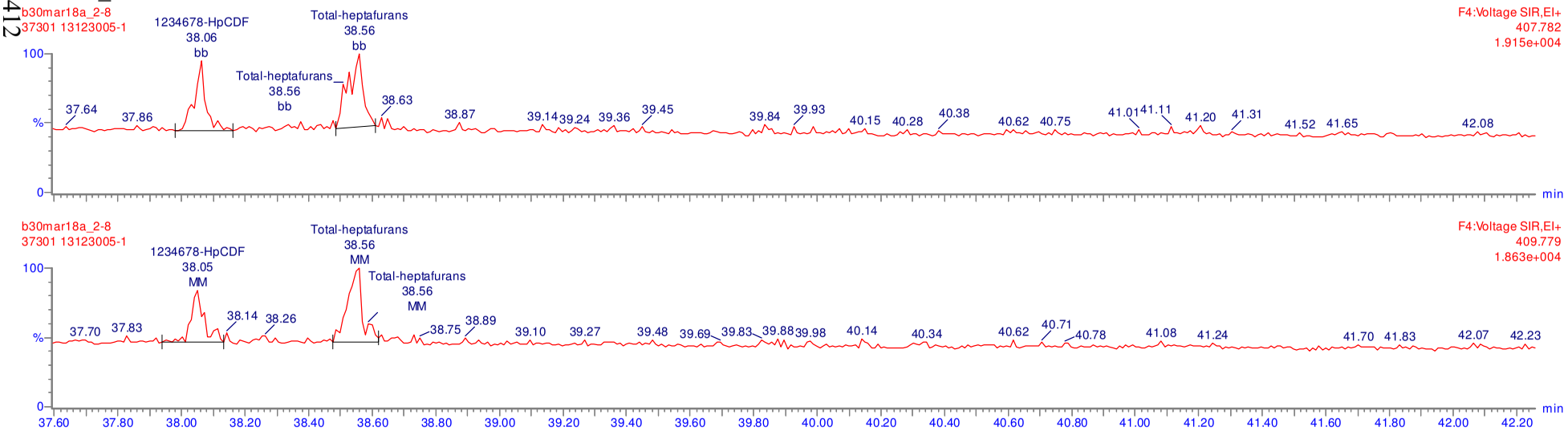
HRP763_1



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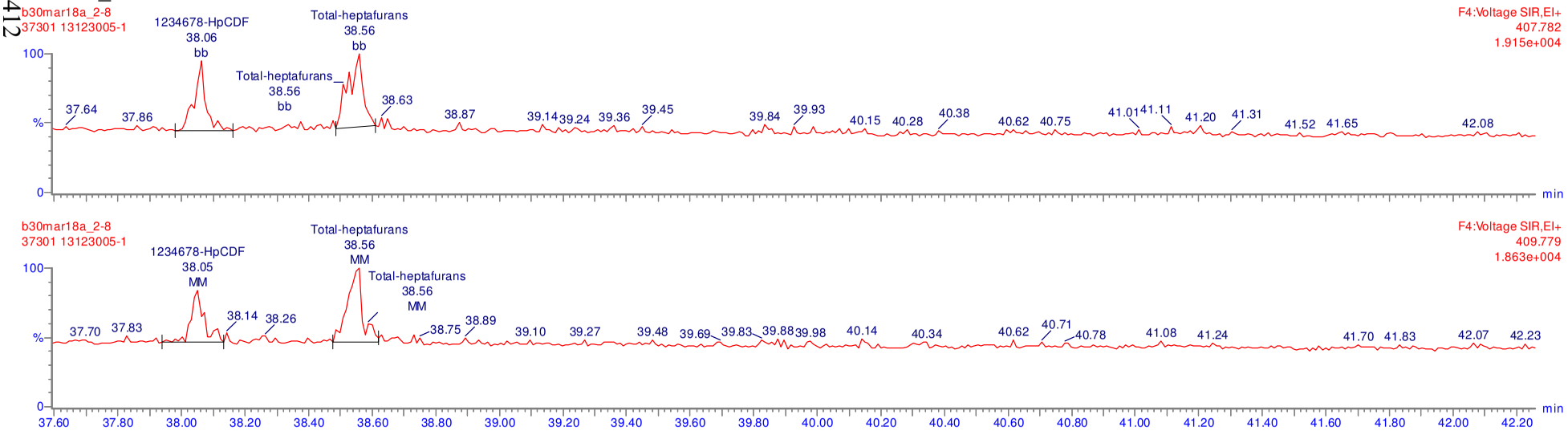
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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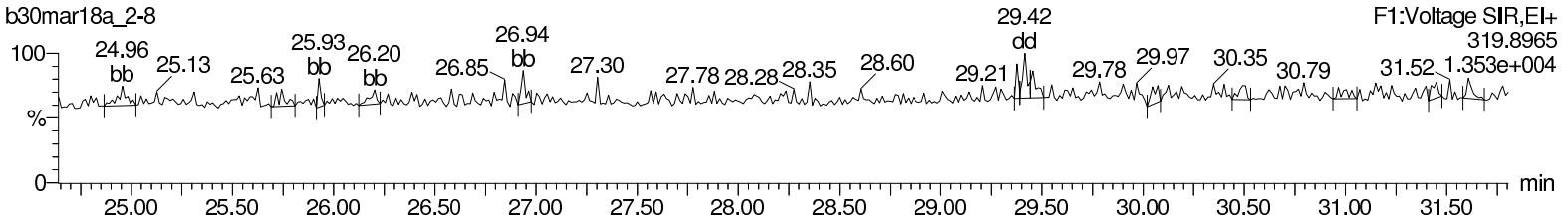
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

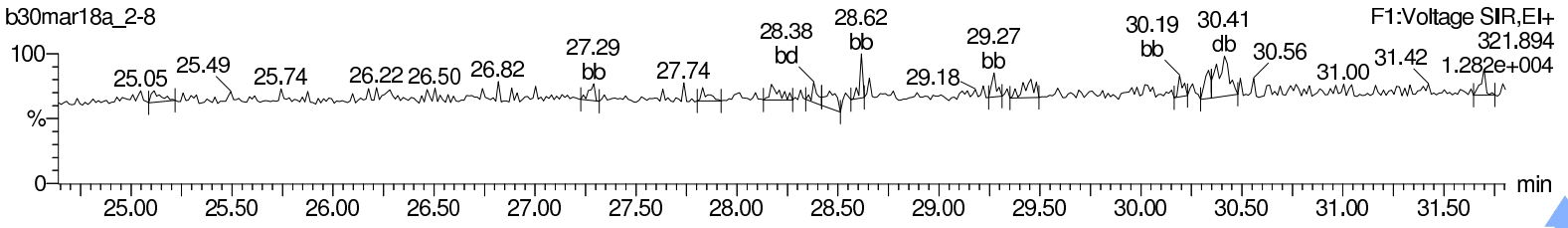
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-tetradioxins



Total-tetradioxins



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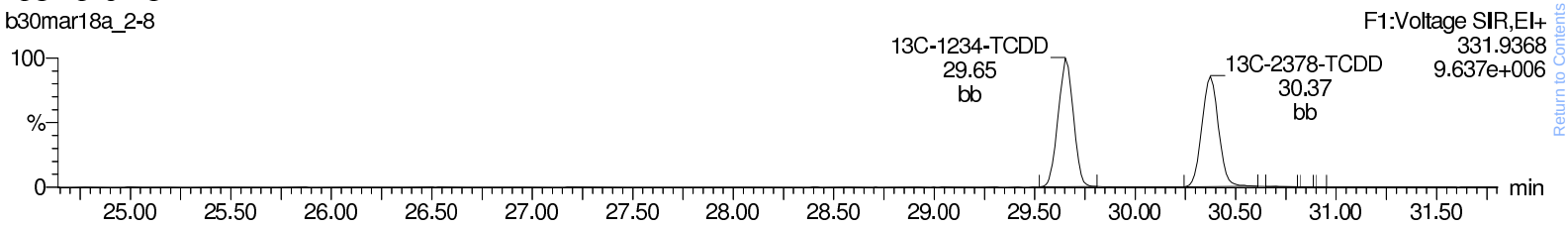

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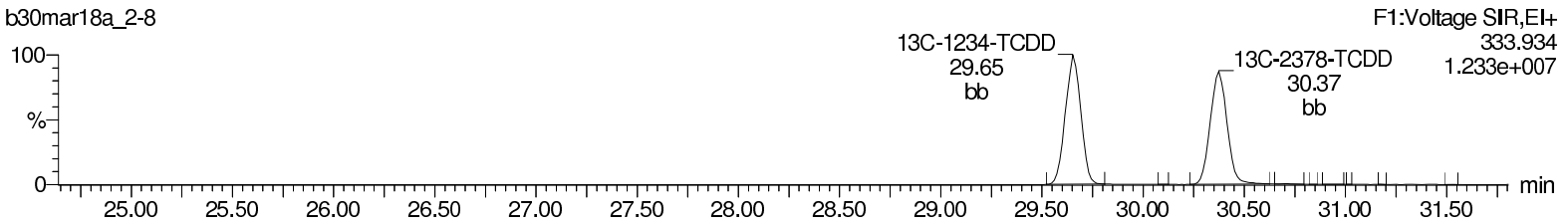

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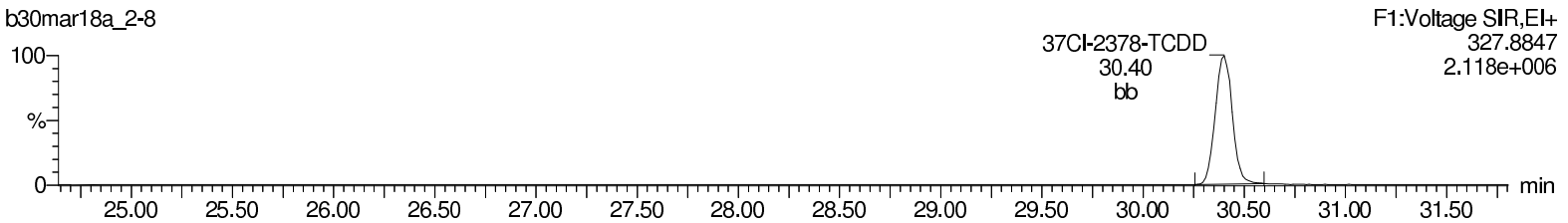
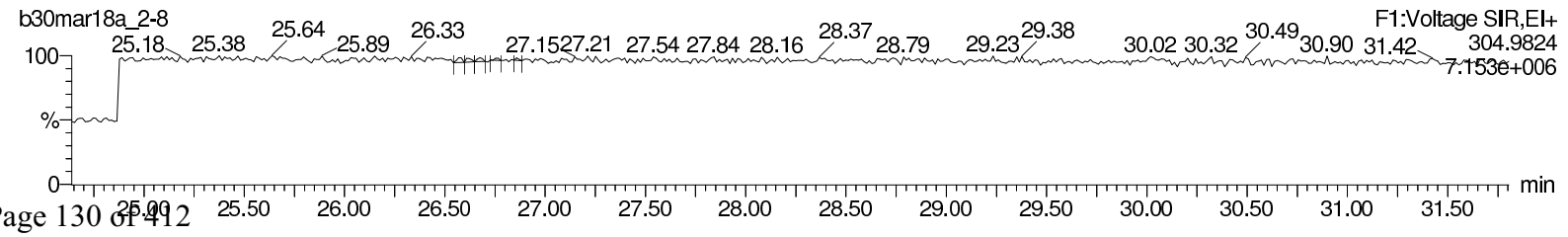


Lock Mass F1



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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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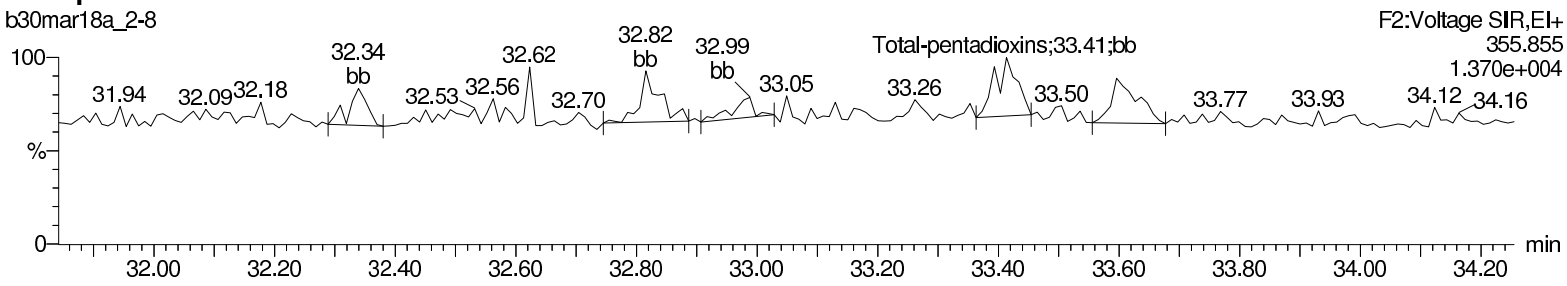
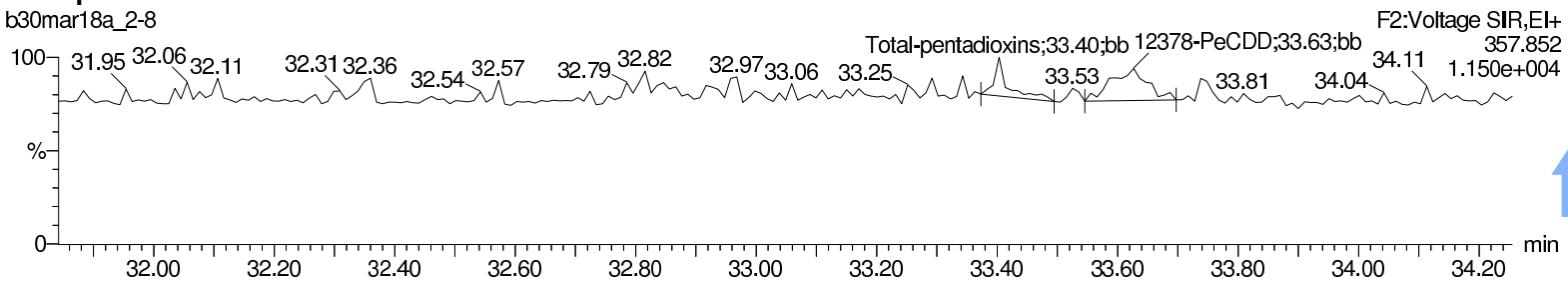
Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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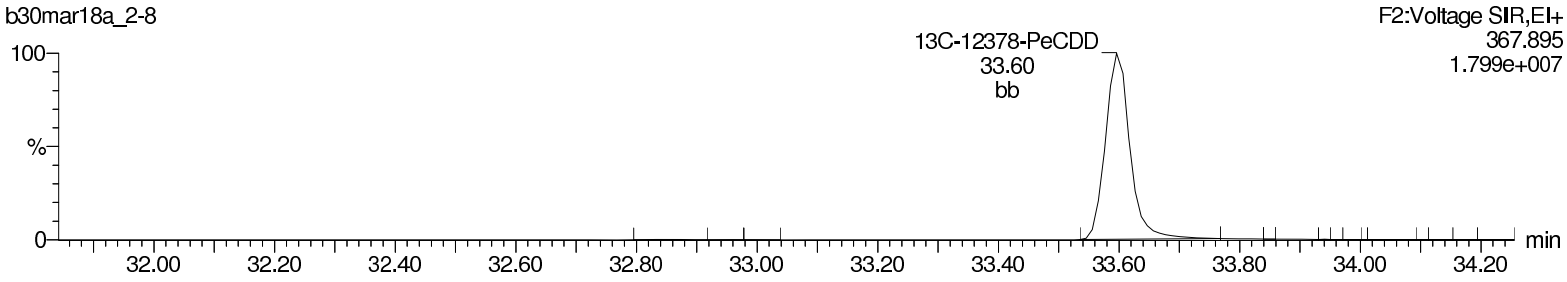

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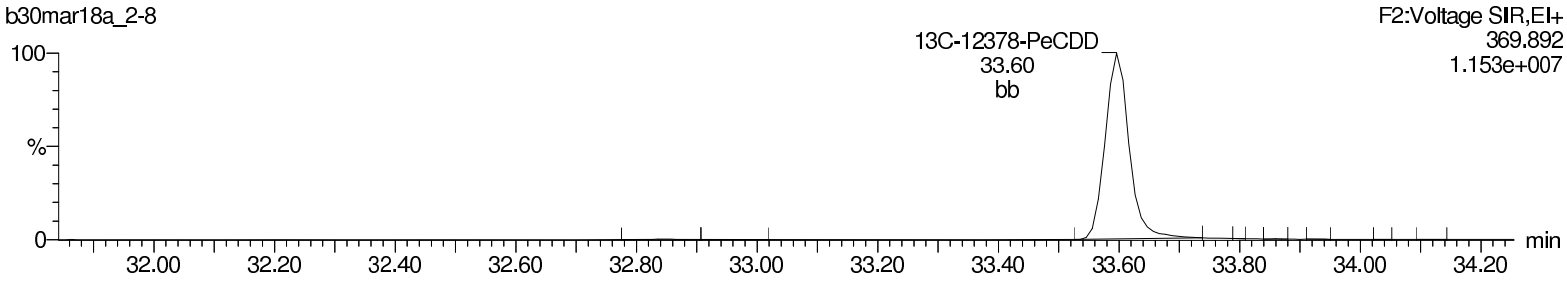

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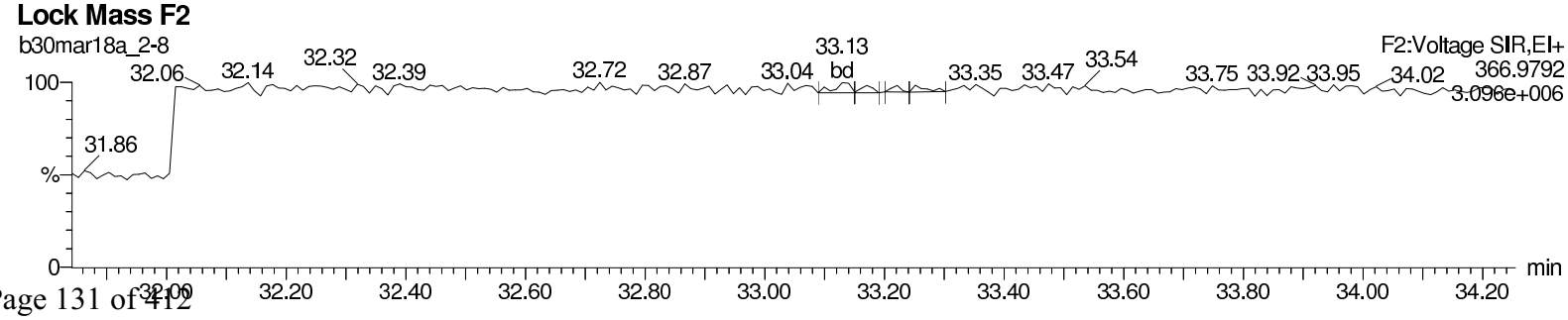

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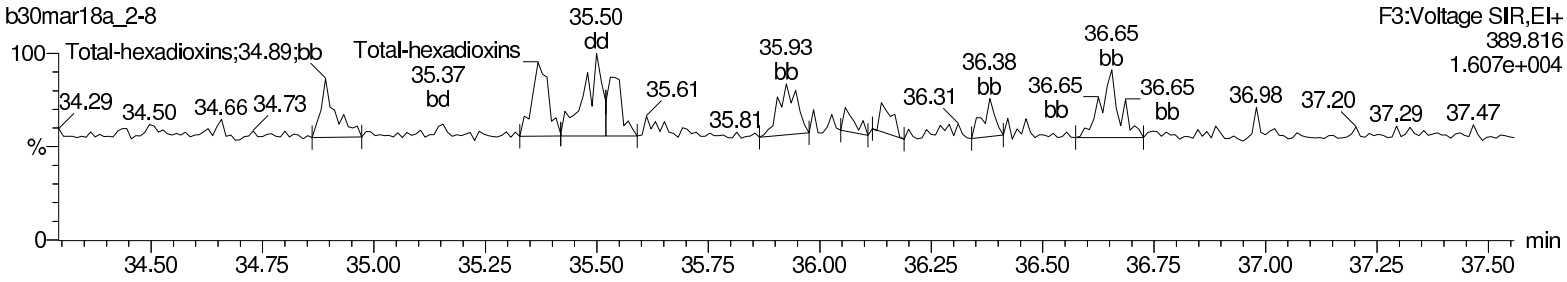
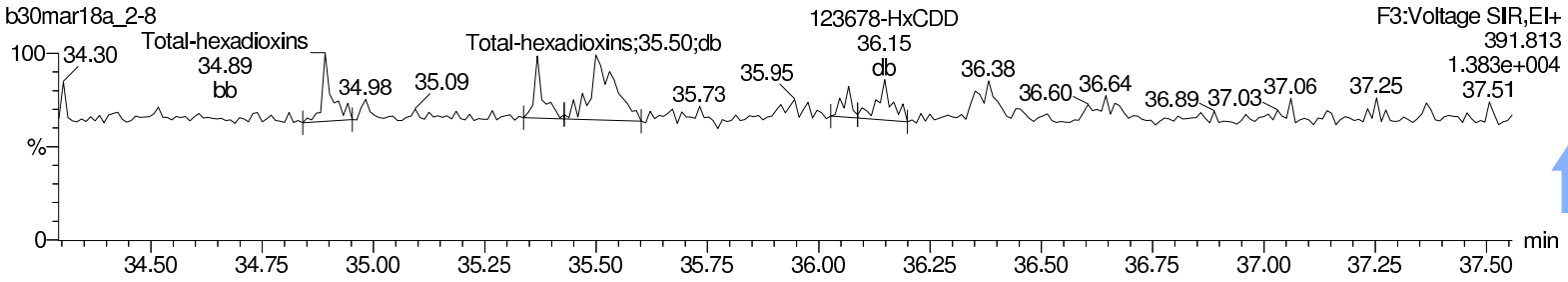
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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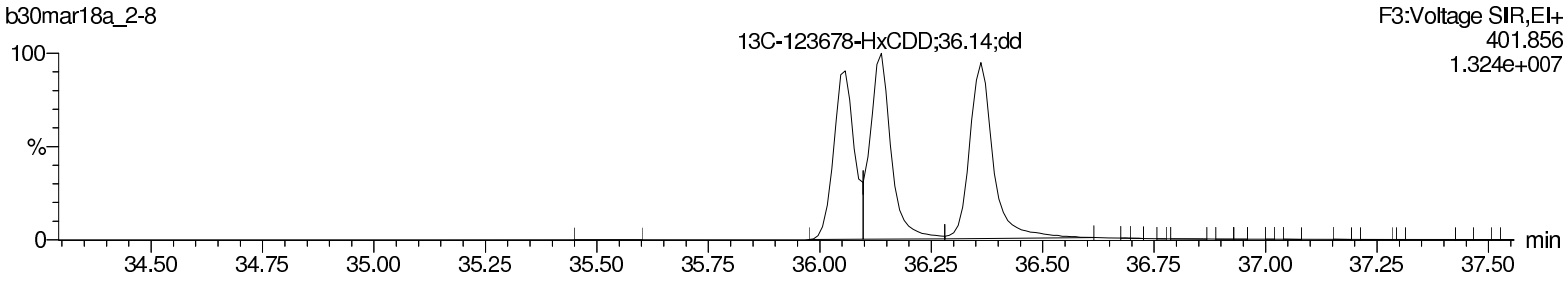

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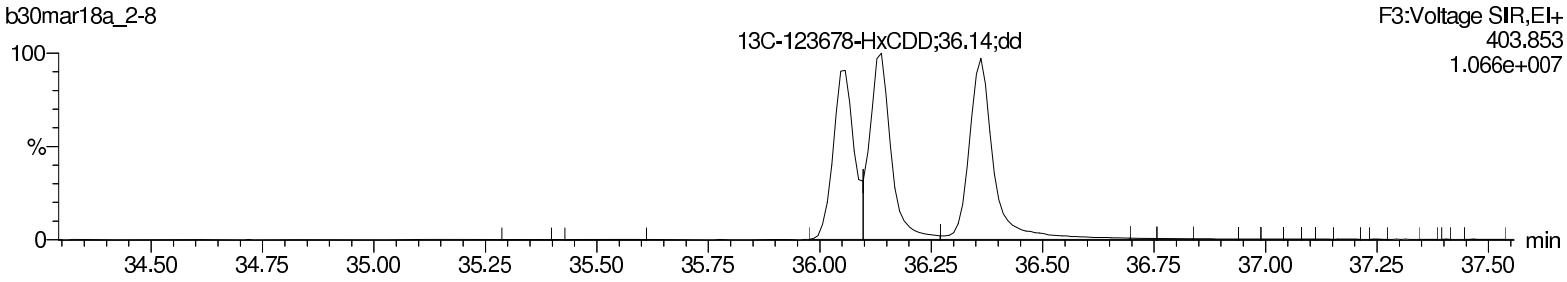

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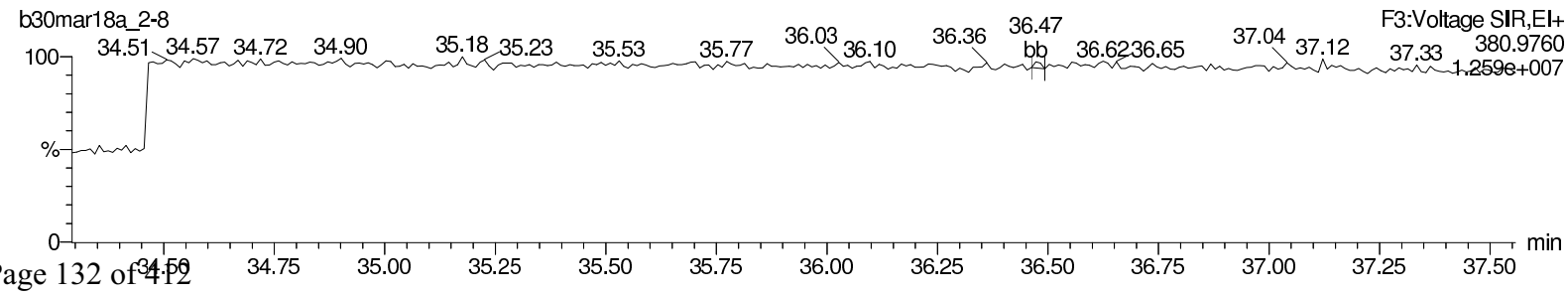

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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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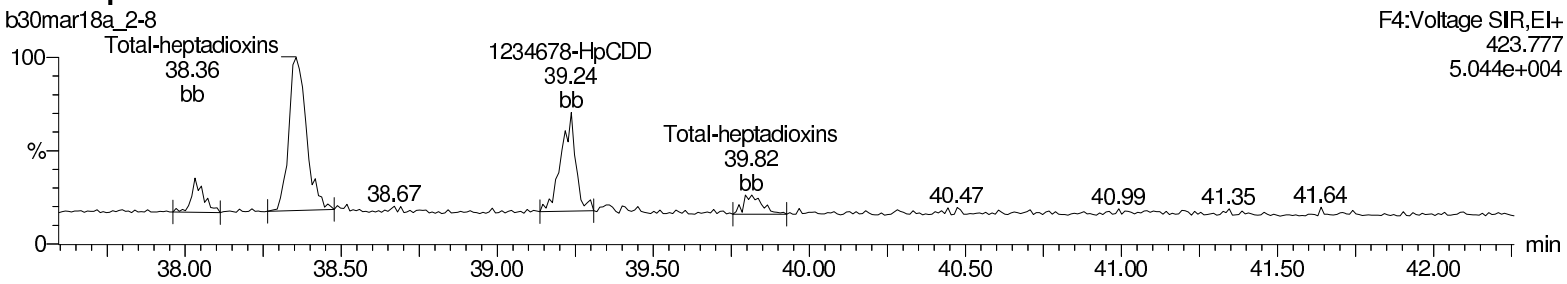
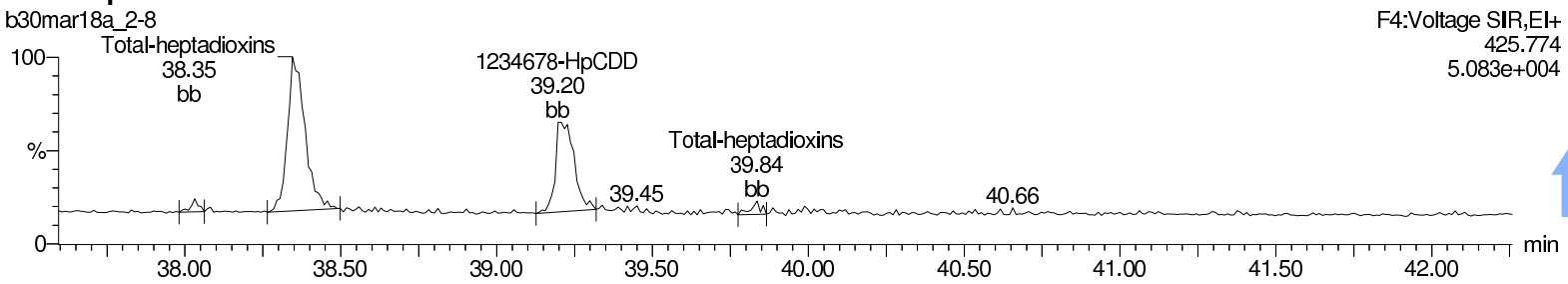
Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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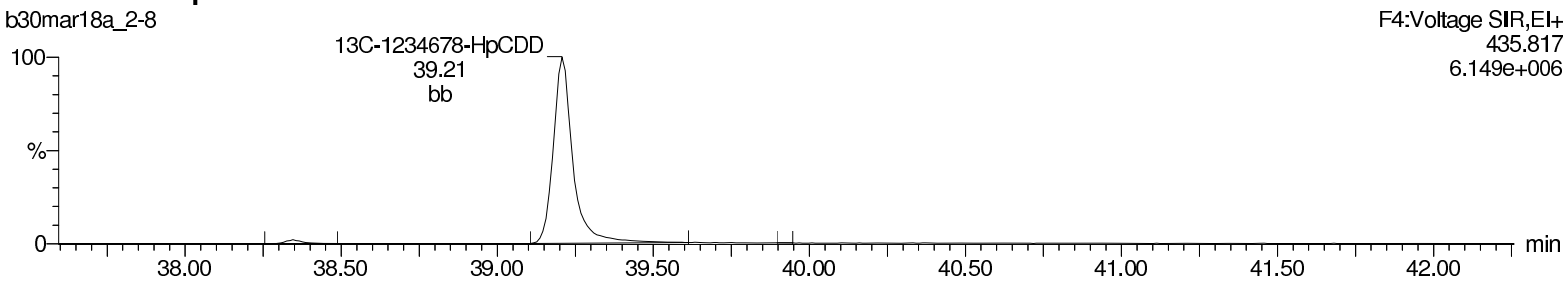

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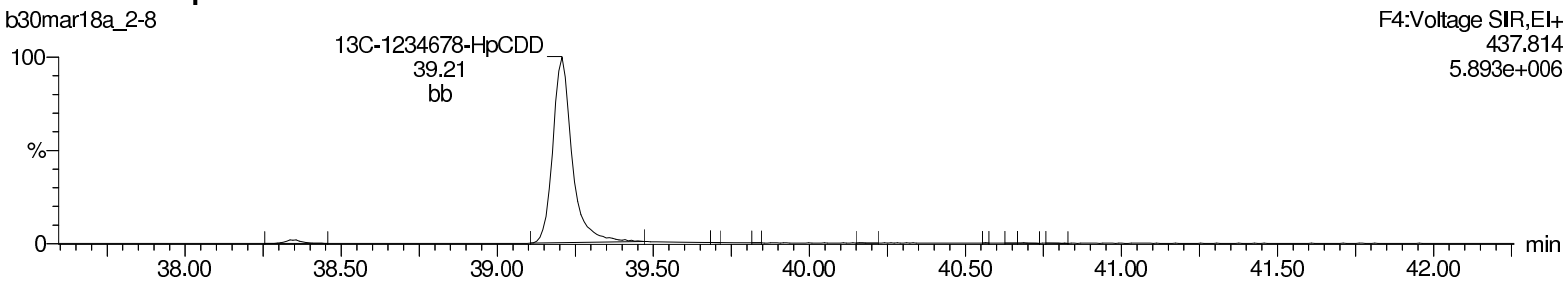

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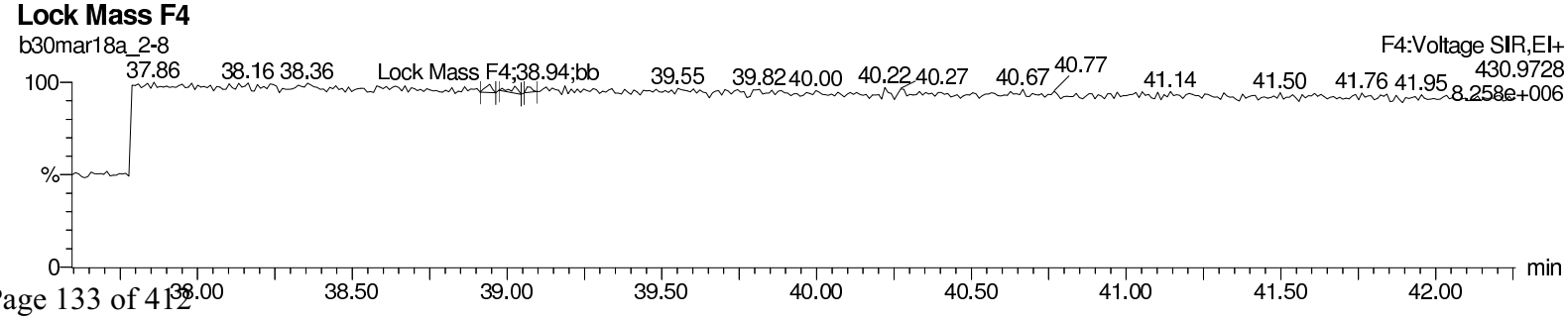

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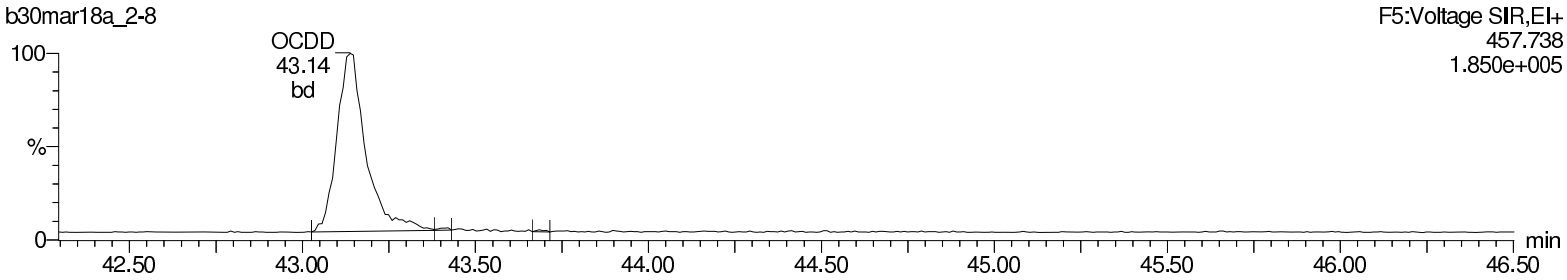
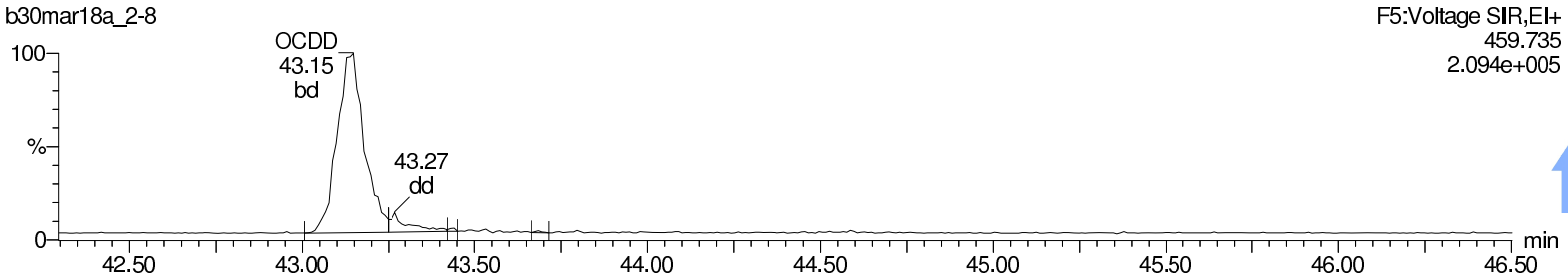
Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



OCDD



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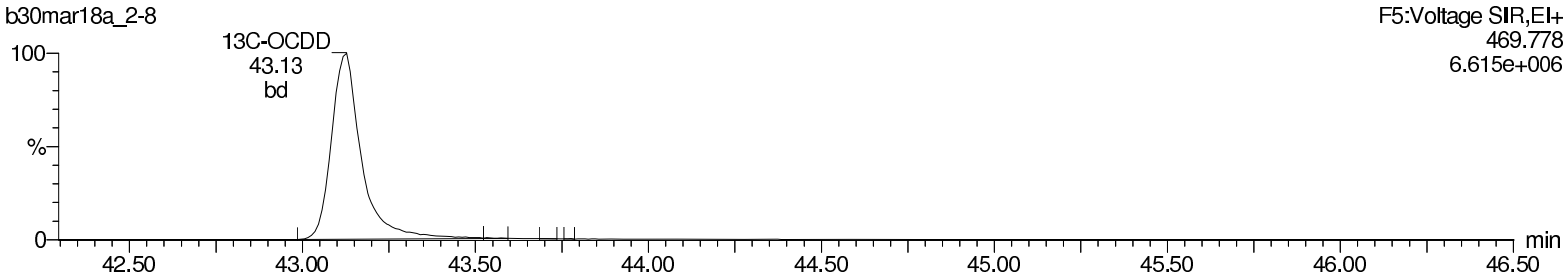

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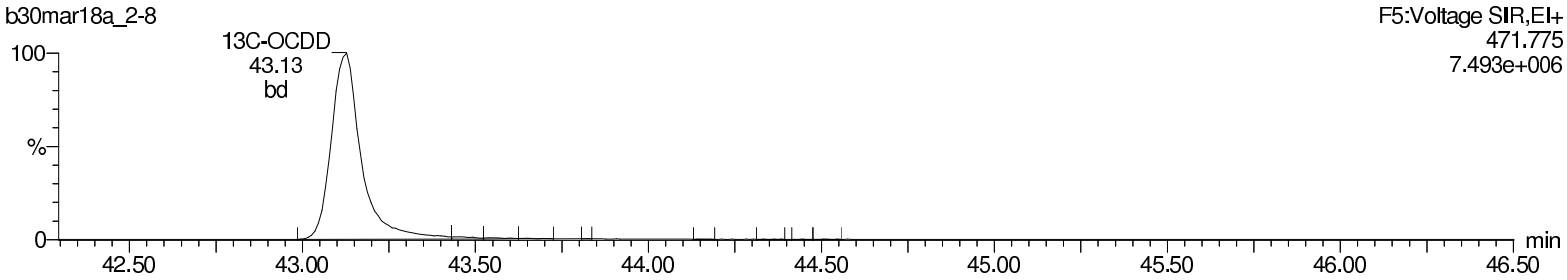

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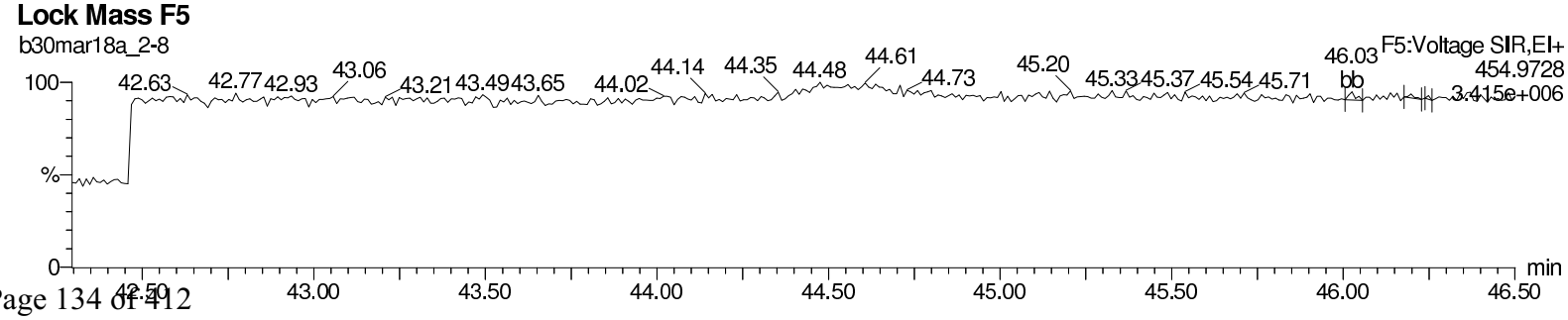

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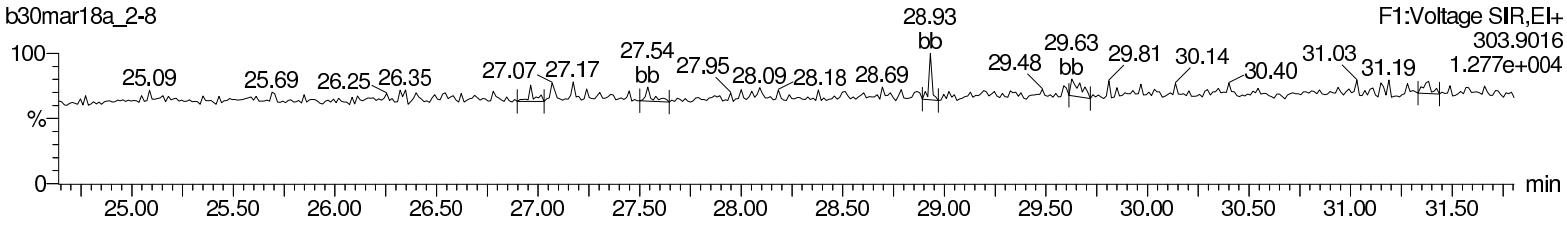
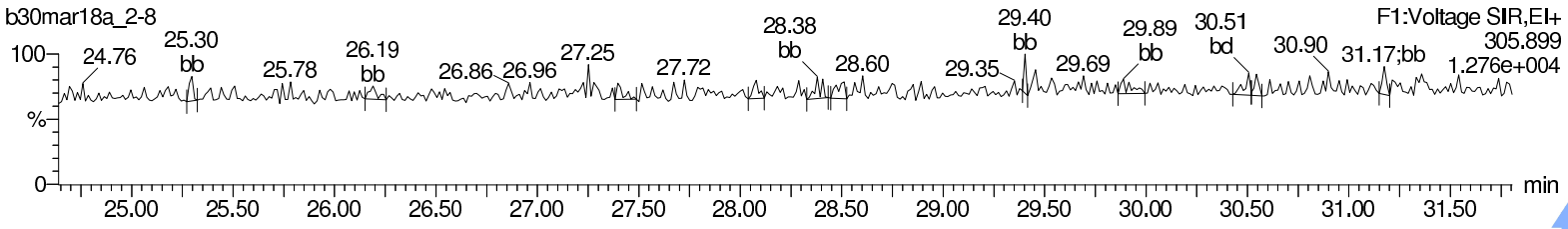
Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-tetrafurans



Total-tetrafurans



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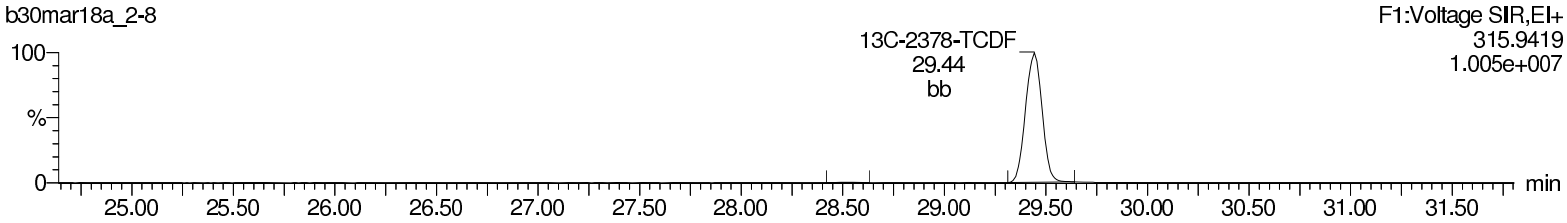

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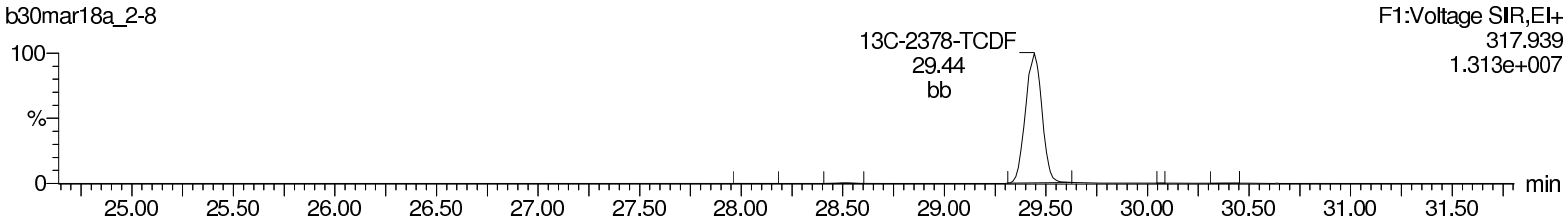
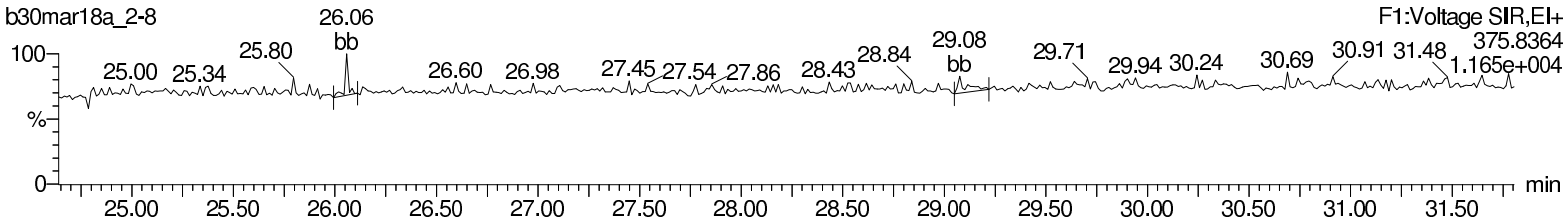
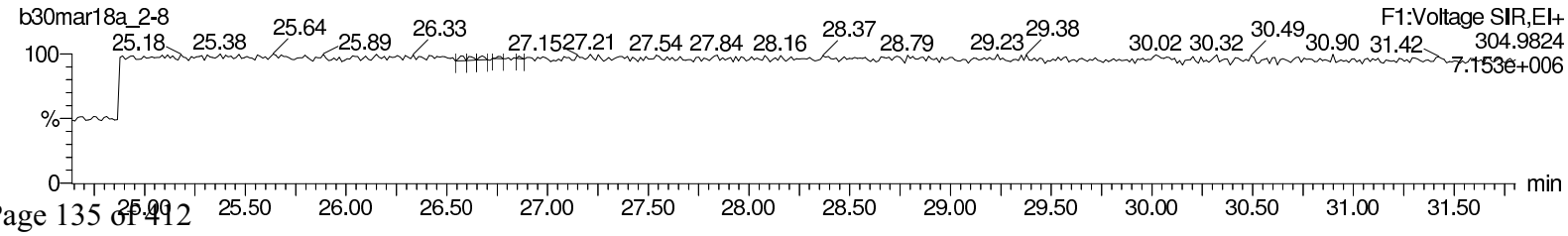


HxDPE



Lock Mass F1



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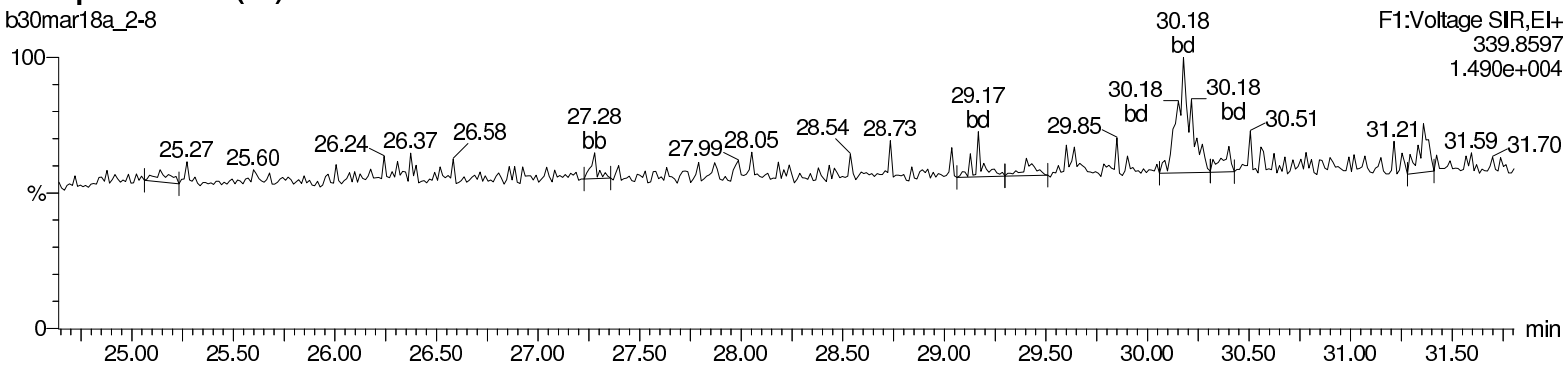
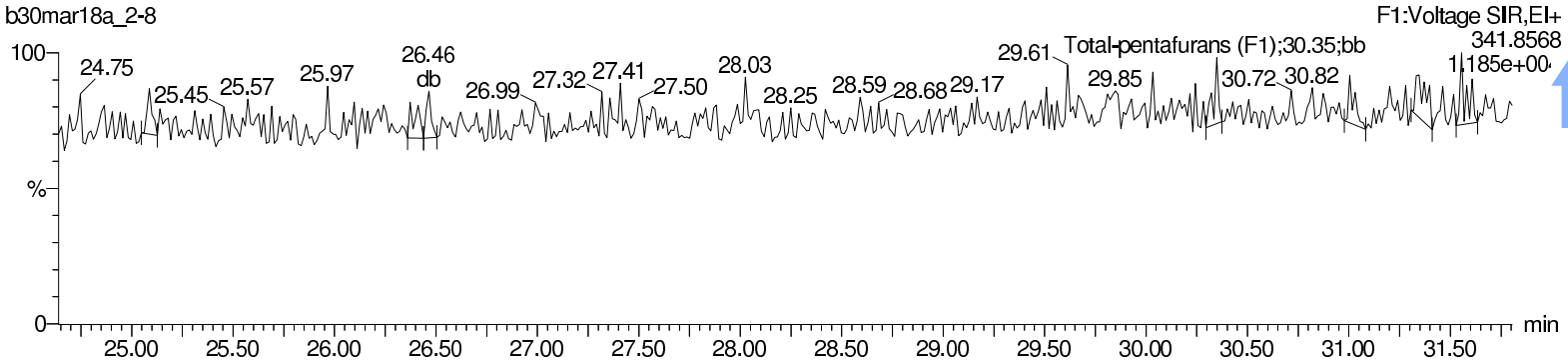
Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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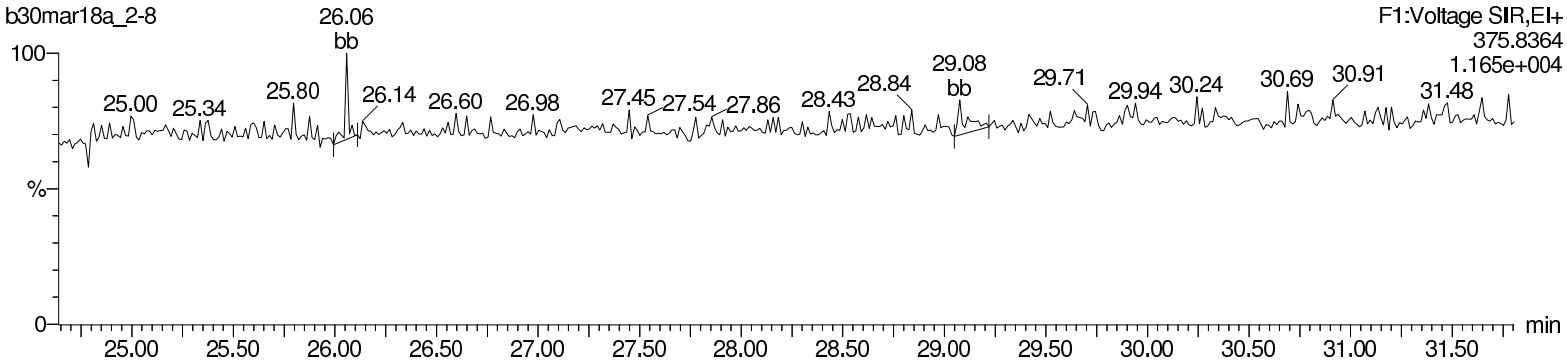
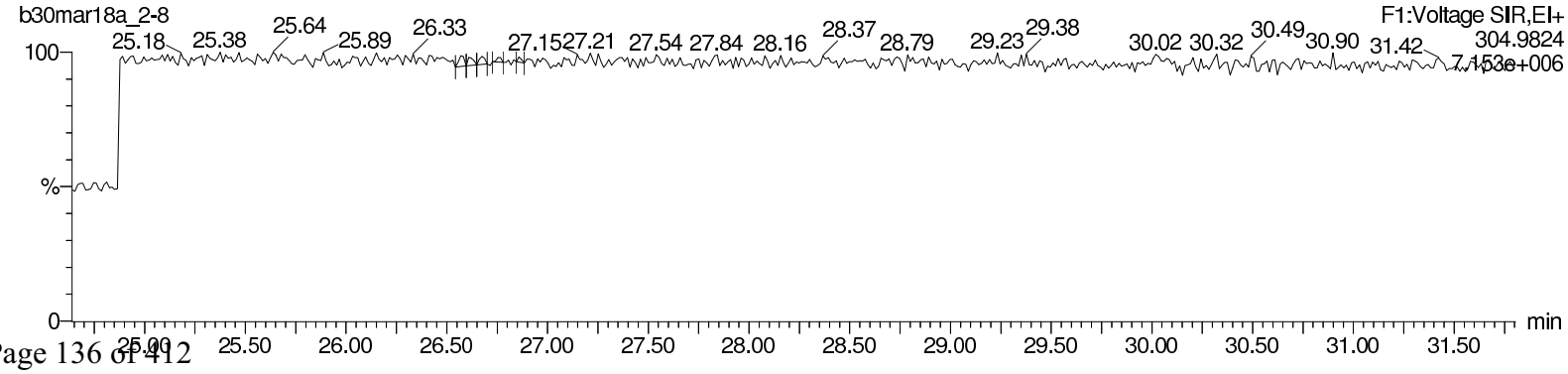


Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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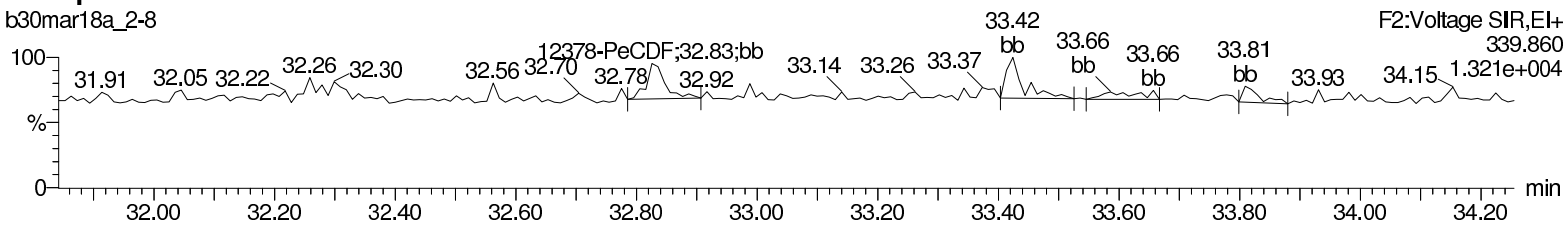
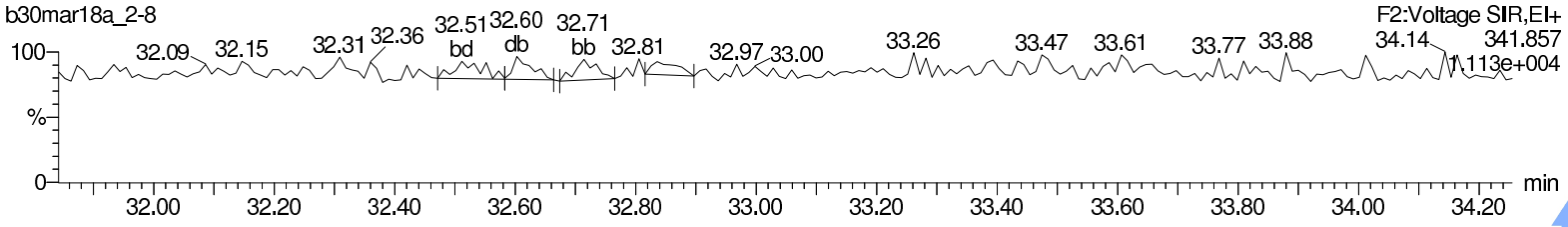
Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

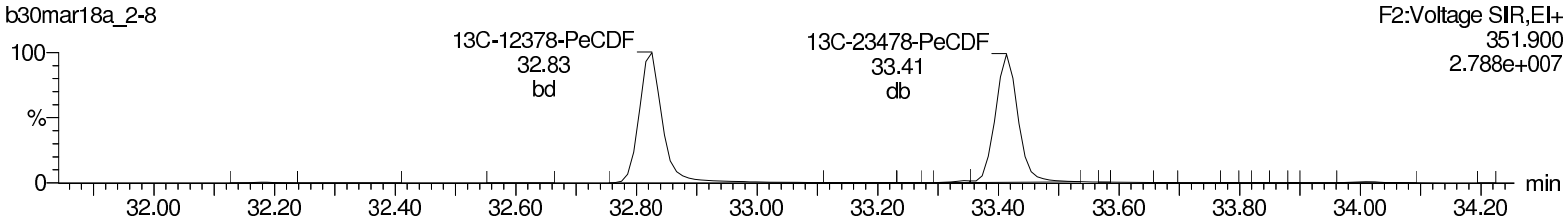
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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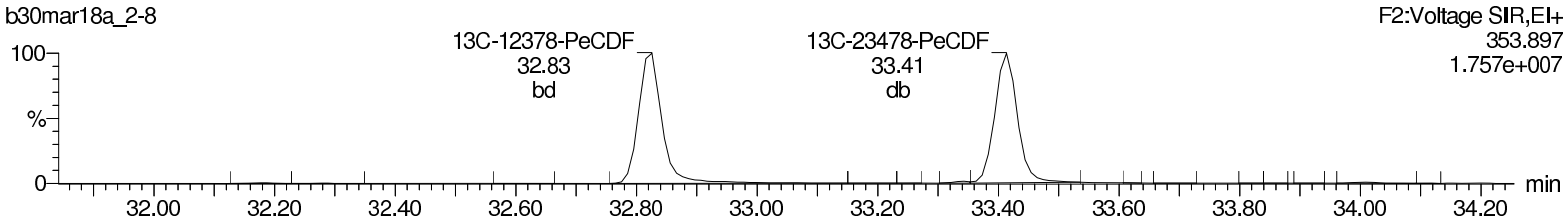
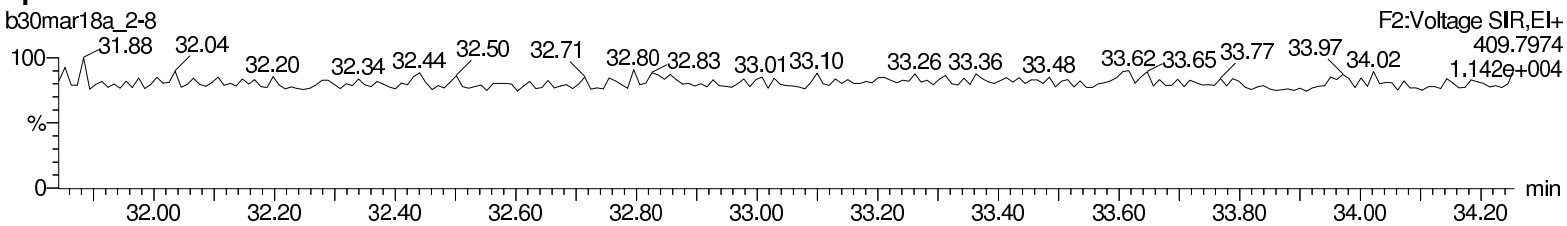
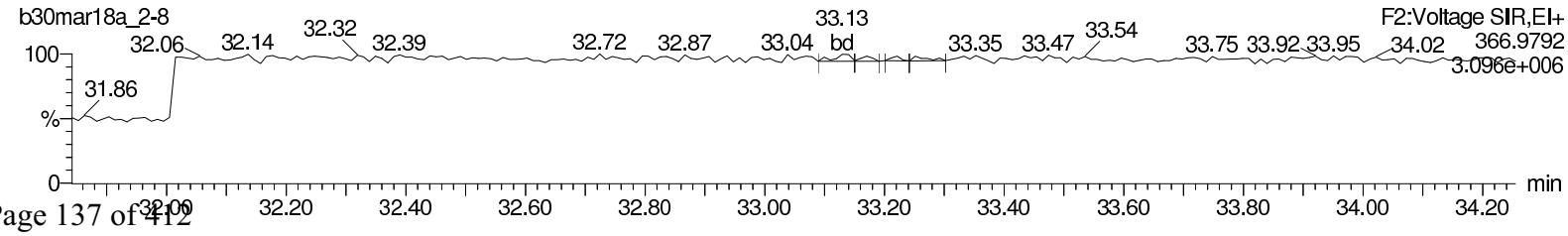


HpDPE



Lock Mass F2

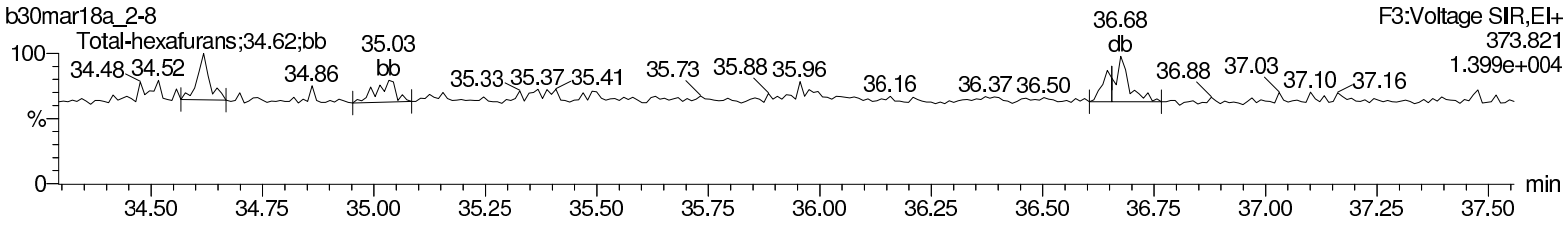


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

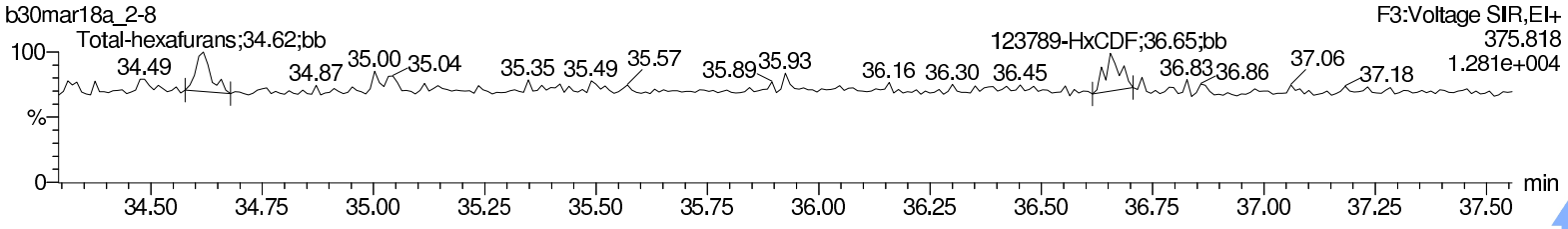
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

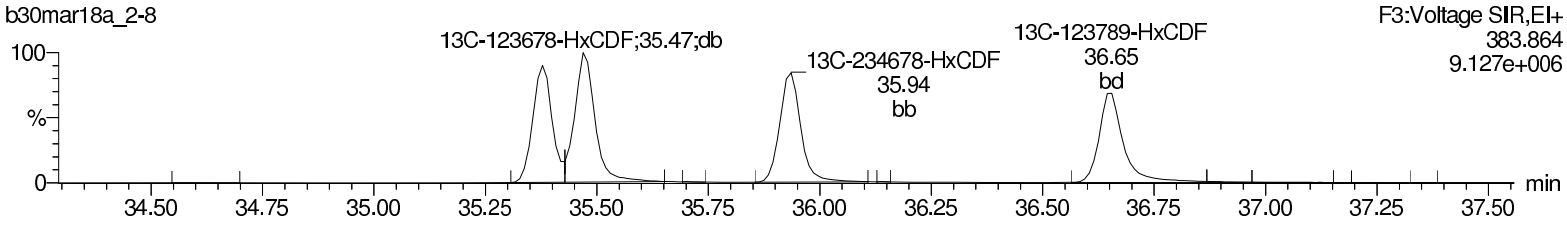
Total-hexafurans



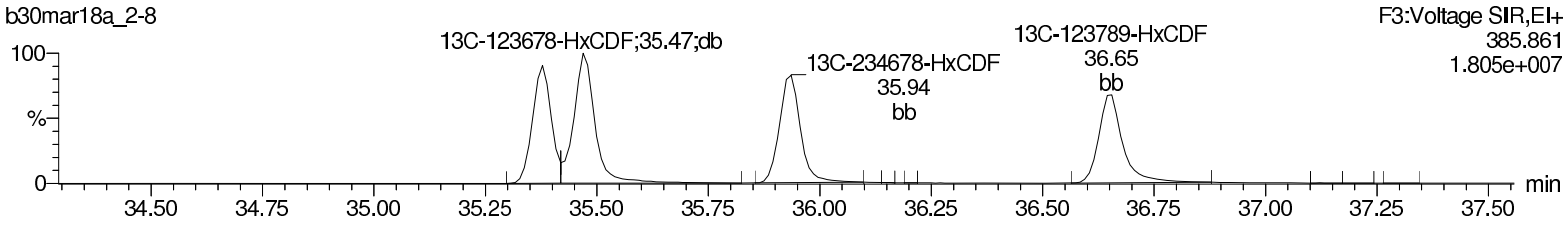
Total-hexafurans



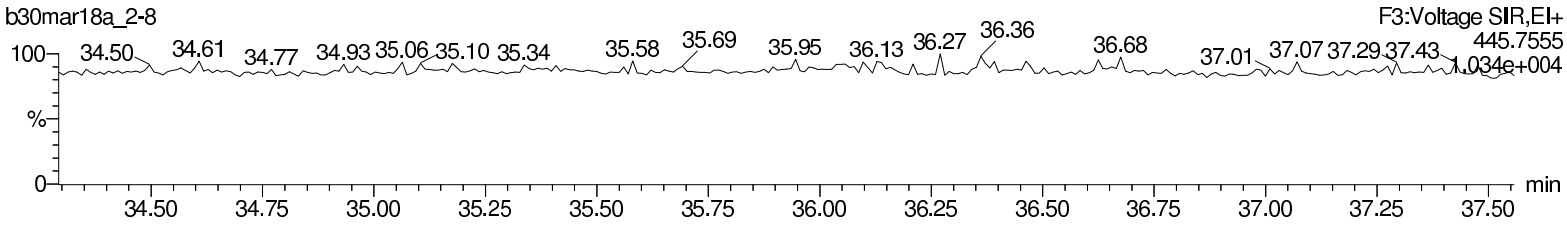
13C-123478-HxCDF



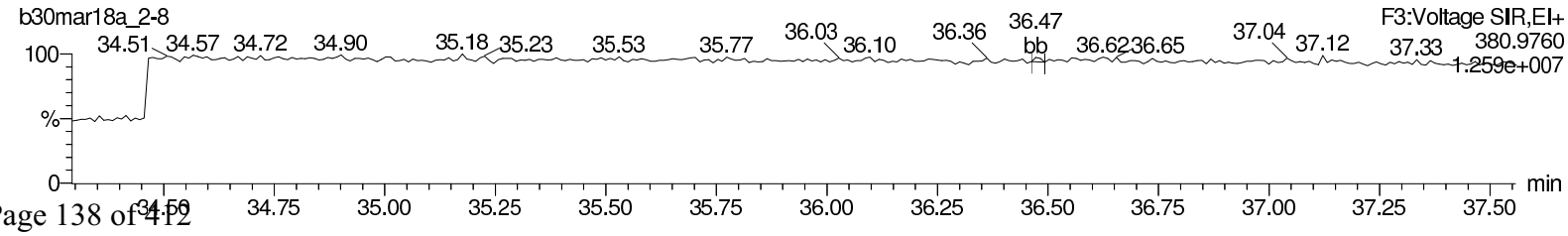
13C-123478-HxCDF



OcDPE



Lock Mass F3

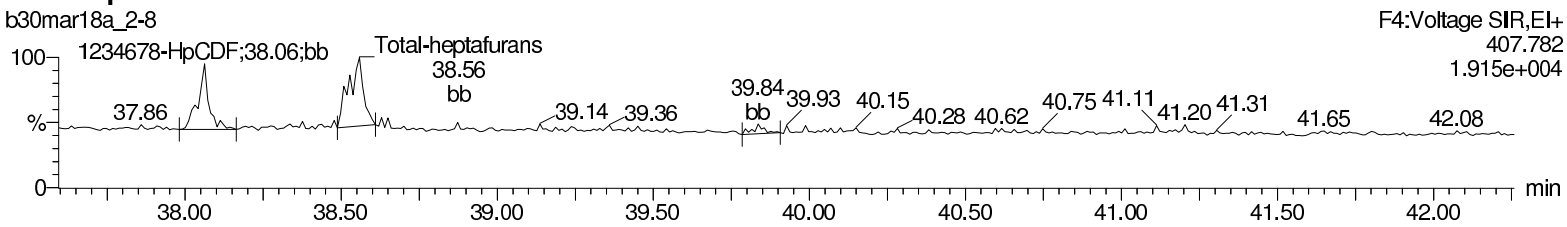


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

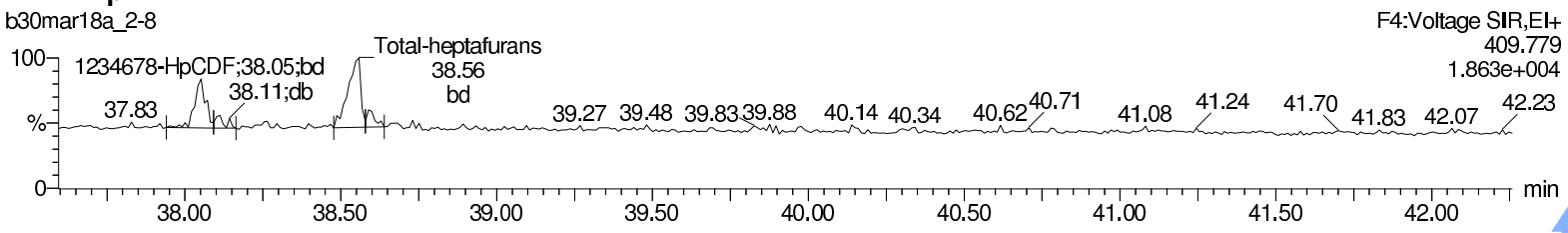
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

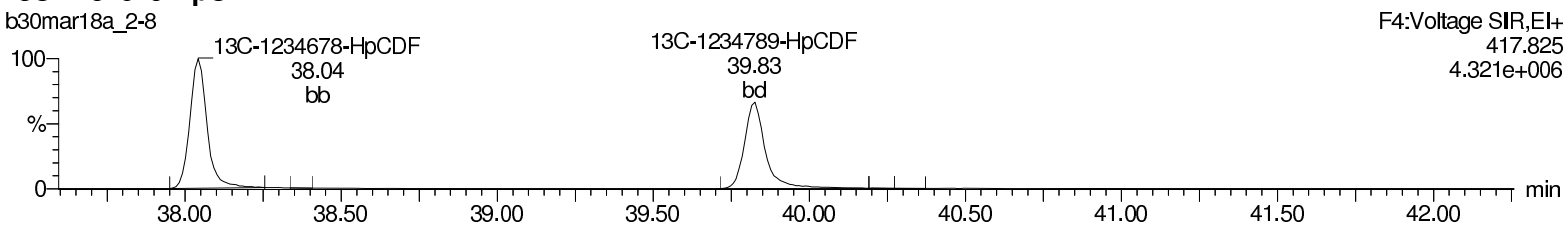
Total-heptafurans



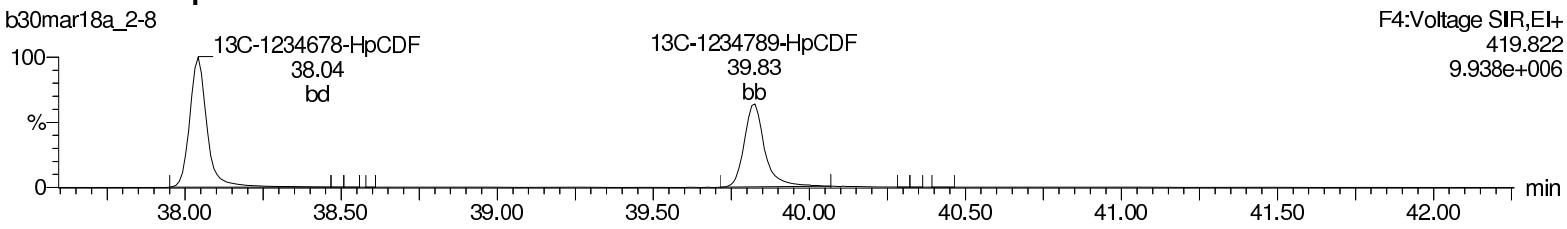
Total-heptafurans



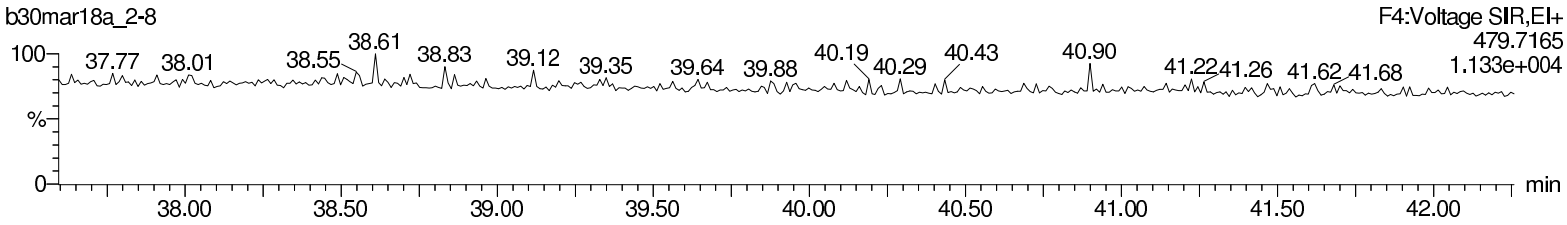
13C-1234678-HpCDF



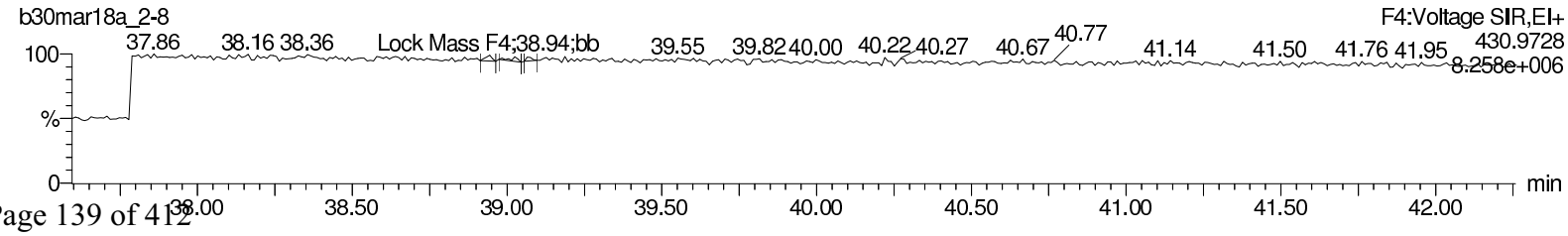
13C-1234678-HpCDF



NoDPE



Lock Mass F4

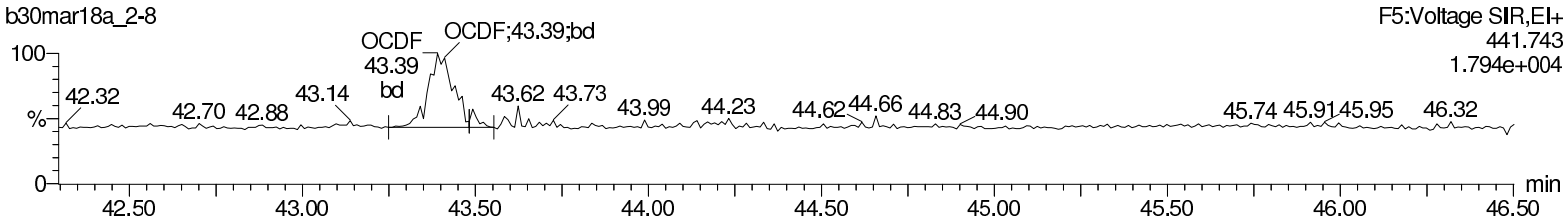


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

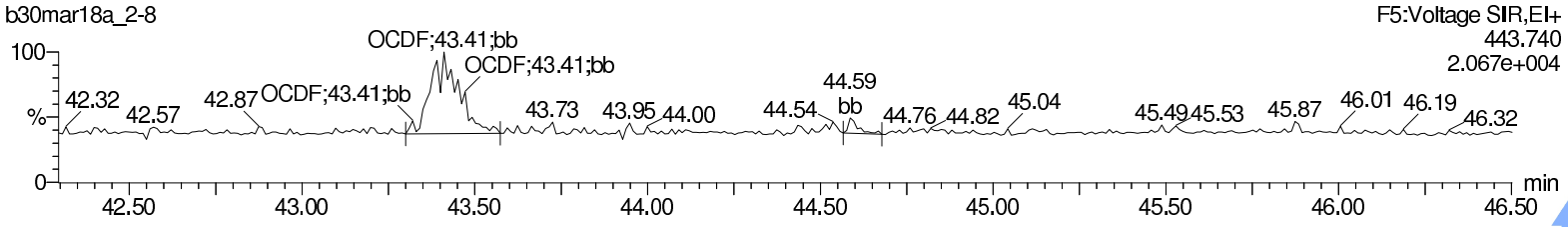
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-8, Date: 31-Mar-2018, Time: 00:15:16, ID: 13123005-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

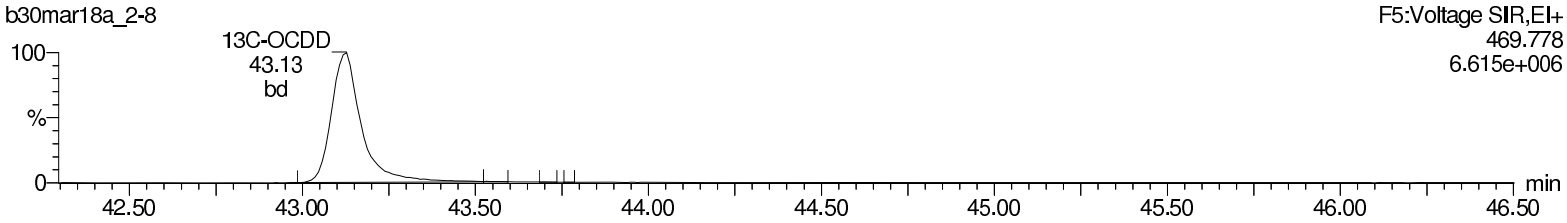
OCDF



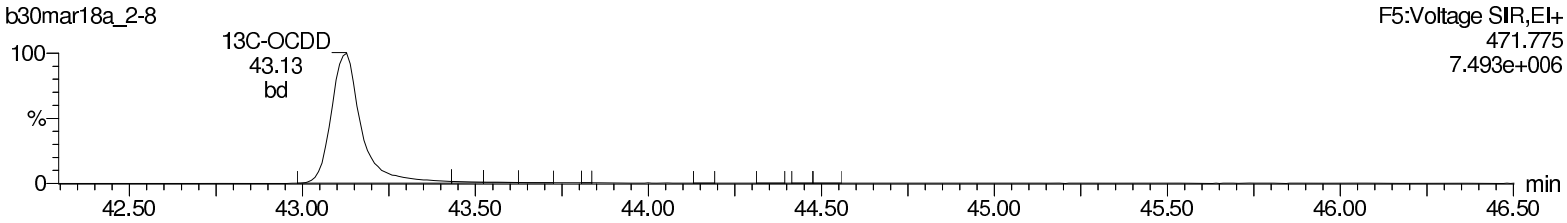
OCDF



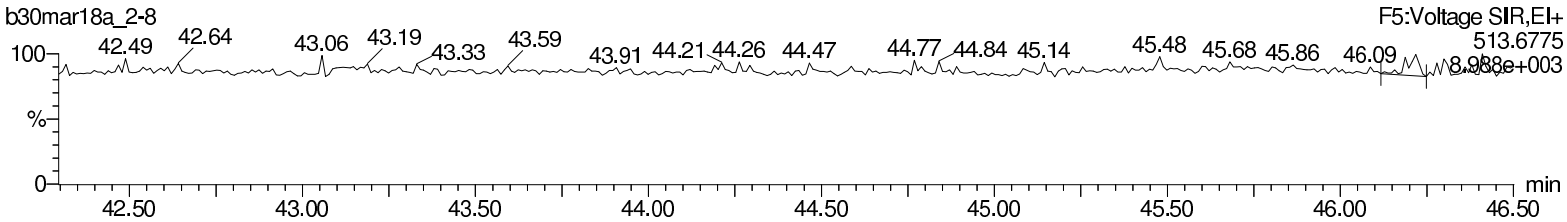
13C-OCDD



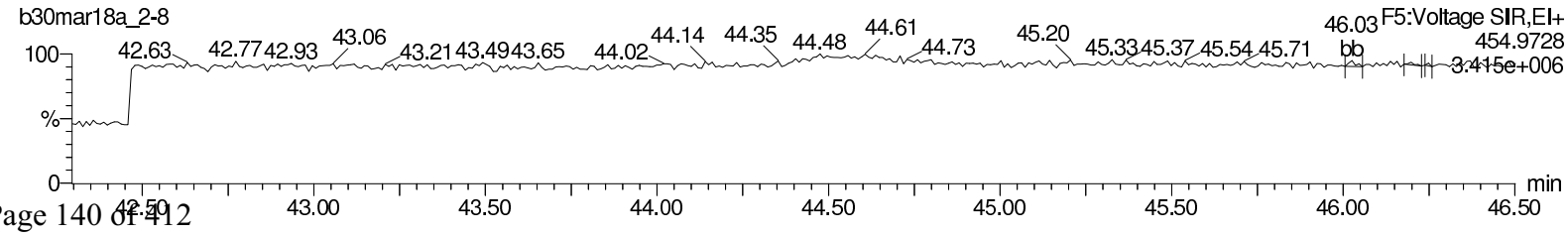
13C-OCDD



DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123006**	**Date Collected:**	**03/22/2018 08:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0009S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:03**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-9**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1024.9 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000562	ng/L	0.000562	0.00976
40321-76-4	1,2,3,7,8-PeCDD	U	0.000355	ng/L	0.000355	0.0488
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000531	ng/L	0.000531	0.0488
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.000956	ng/L	0.000541	0.0488
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000552	ng/L	0.000552	0.0488
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.0166	ng/L	0.00113	0.0488
3268-87-9	1,2,3,4,6,7,8,9-OCDD		0.220	ng/L	0.00265	0.0976
51207-31-9	2,3,7,8-TCDF	U	0.000336	ng/L	0.000336	0.00976
57117-41-6	1,2,3,7,8-PeCDF	JK	0.000332	ng/L	0.000263	0.0488
57117-31-4	2,3,4,7,8-PeCDF	U	0.000248	ng/L	0.000248	0.0488
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000433	ng/L	0.000433	0.0488
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000427	ng/L	0.000427	0.0488
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000453	ng/L	0.000453	0.0488
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.000578	ng/L	0.000578	0.0488
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00341	ng/L	0.000704	0.0488
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.00104	ng/L	0.00104	0.0488
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	0.0131	ng/L	0.0016	0.0976
41903-57-5	Total TeCDD	U	0.000562	ng/L	0.000562	0.00976
36088-22-9	Total PeCDD	U	0.000355	ng/L	0.000355	0.0488
34465-46-8	Total HxCDD	JK	0.00502	ng/L	0.000531	0.0488
37871-00-4	Total HpCDD	JK	0.048	ng/L	0.00113	0.0488
30402-14-3	Total TeCDF	U	0.000336	ng/L	0.000336	0.00976
30402-15-4	Total PeCDF	JK	0.00127	ng/L	0.000248	0.0488
55684-94-1	Total HxCDF	J	0.00209	ng/L	0.000427	0.0488
38998-75-3	Total HpCDF	J	0.010	ng/L	0.000704	0.0488
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000375	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00104	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.92	1.95	ng/L	98.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.55	1.95	ng/L	79.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.66	1.95	ng/L	84.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.72	1.95	ng/L	88.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.70	1.95	ng/L	87.3	(23%-140%)
13C-OCDD		2.93	3.90	ng/L	75.0	(17%-157%)
13C-2,3,7,8-TCDF		1.97	1.95	ng/L	101	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.84	1.95	ng/L	94.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.72	1.95	ng/L	88.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.69	1.95	ng/L	86.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.73	1.95	ng/L	88.6	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.72	1.95	ng/L	88.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.88	1.95	ng/L	96.4	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123006**	**Date Collected:**	**03/22/2018 08:50**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**EVBMP0009S011**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:03**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-9**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1024.9 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.55	1.95	ng/L	79.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.55	1.95	ng/L	79.5	(26%-138%)
37Cl-2,3,7,8-TCDD		0.193	0.195	ng/L	98.8	(35%-197%)

Comments:

J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:42:05 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:43:05 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	9.31e1	2.76e2	3.69e2	30.36	0.999	0.34	YES	0.018	0.0288	2.86e3	1347	2.1	3.41e3	1046	3.3	bb	bb
2	12378-PeCDD							NO		0.0182		1154			835			
3	123478-HxCDD	7.72e1	9.86e1	1.76e2	36.07	1.000	0.78	YES	0.017	0.0272	1.70e3	965	1.8	3.74e3	1327	2.8	bd	bd
4	123678-HxCDD	3.49e2	2.34e2	5.83e2	36.17	1.001	1.49	YES	0.049	0.0277	6.05e3	965	6.3	4.30e3	1327	3.2	db	db
5	123789-HxCDD	1.07e2	1.89e2	2.95e2	36.38	1.006	0.57	YES	0.027	0.0283	3.19e3	965	3.3	5.47e3	1327	4.1	bb	bb
6	1234678-HpCDD	4.38e3	3.64e3	8.02e3	39.22	1.000	1.20	YES	0.849	0.0580	5.82e4	1690	34.5	5.33e4	1377	38.7	bb	bb
7	OCDD	3.77e4	4.24e4	8.00e4	43.15	1.000	0.89	NO	11.281	0.136	3.74e5	1441	259.8	4.15e5	2373	174.7	bd	bd
8	2378-TCDF							NO		0.0172		752			1142			
9	12378-PeCDF	2.21e2	1.17e2	3.38e2	32.85	1.001	1.88	YES	0.017	0.0135	5.26e3	977	5.4	3.53e3	1360	2.6	bb	bb
10	23478-PeCDF	1.01e2	1.19e2	2.21e2	33.44	1.001	0.85	YES	0.011	0.0127	2.95e3	977	3.0	2.41e3	1360	1.8	bb	bb
11	123478-HxCDF							NO		0.0222		1401			1022			
12	123678-HxCDF							NO		0.0219		1401			1022			
13	234678-HxCDF							NO		0.0232		1401			1022			
14	123789-HxCDF	6.51e1	1.79e2	2.44e2	36.67	1.001	0.36	YES	0.019	0.0296	2.33e3	1401	1.7	2.86e3	1022	2.8	bb	bb
15	1234678-HpCDF	9.55e2	9.01e2	1.86e3	38.06	1.001	1.06	NO	0.175	0.0361	1.62e4	1535	10.6	1.64e4	862	19.1	bb	bb
16	1234789-HpCDF							NO		0.0535		1535			862			
17	OCDF	2.13e3	2.69e3	4.82e3	43.41	1.007	0.79	NO	0.671	0.0820	2.31e4	922	25.0	2.90e4	1398	20.7	MM	bb
18	13C-2378-TCDD	1.00e6	1.31e6	2.31e6	30.39	1.024	0.77	NO	98.383	0.0863	1.01e7	5106	1983.7	1.29e7	3672	3515.6	bb	bb
19	13C-12378-PeCDD	9.60e5	6.10e5	1.57e6	33.61	1.133	1.57	NO	79.258	0.0914	2.12e7	4367	4846.2	1.31e7	3462	3770.1	bb	bb
20	13C-123478-HxCDD	6.90e5	5.57e5	1.25e6	36.06	0.991	1.24	NO	84.828	0.127	1.39e7	7084	1964.1	1.12e7	5349	2091.1	bd	bd
21	13C-123678-HxCDD	7.84e5	6.37e5	1.42e6	36.15	0.994	1.23	NO	88.306	0.117	1.36e7	7084	1915.2	1.12e7	5349	2095.8	db	db
22	13C-1234678-HpCDD	4.73e5	4.69e5	9.42e5	39.22	1.078	1.01	NO	87.311	0.158	6.61e6	5546	1192.5	6.27e6	5755	1089.9	bb	bb
23	13C-OCDD	7.38e5	8.21e5	1.56e6	43.13	1.186	0.90	NO	150.005	0.109	7.26e6	3587	2025.1	8.33e6	3914	2129.0	bd	bb
24	13C-2378-TCDF	1.21e6	1.58e6	2.78e6	29.44	0.992	0.77	NO	101.117	0.0803	1.30e7	5454	2382.1	1.70e7	4106	4138.0	bb	bb
25	13C-12378-PeCDF	1.47e6	9.38e5	2.41e6	32.83	1.107	1.57	NO	94.221	0.126	3.21e7	5352	6001.6	2.08e7	8566	2423.5	bd	bb
26	13C-23478-PeCDF	1.37e6	8.72e5	2.24e6	33.42	1.127	1.57	NO	88.123	0.127	3.03e7	5352	5661.5	1.93e7	8566	2252.7	bb	bb
27	13C-123478-HxCDF	4.55e5	9.09e5	1.36e6	35.39	0.973	0.50	NO	86.680	0.145	9.12e6	6616	1379.2	1.80e7	8543	2109.6	bd	bd
28	13C-123678-HxCDF	5.61e5	1.05e6	1.61e6	35.48	0.975	0.53	NO	88.583	0.125	1.03e7	6616	1555.8	2.00e7	8543	2341.1	db	db
29	13C-234678-HxCDF	4.63e5	9.01e5	1.36e6	35.94	0.988	0.51	NO	88.257	0.148	8.57e6	6616	1295.5	1.69e7	8543	1976.9	bb	bb
30	13C-123789-HxCDF	4.57e5	9.06e5	1.36e6	36.65	1.008	0.50	NO	96.440	0.162	7.19e6	6616	1087.5	1.42e7	8543	1666.4	bb	bd
31	13C-1234678-HpCDF	2.95e5	6.72e5	9.67e5	38.04	1.046	0.44	NO	79.461	0.126	4.63e6	4056	1140.3	1.03e7	6144	1679.1	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:42:05 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:43:05 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.37e5	5.32e5	7.69e5	39.83	1.095	0.44	NO	79.541	0.159	3.11e6	4056	766.8	7.24e6	6144	1178.4	bd	bb
33	13C-1234-TCDD	8.94e5	1.17e6	2.06e6	29.67	0.000	0.77	NO	100.000	0.0985	9.66e6	5106	1892.5	1.23e7	3672	3362.6	bb	bb
34	13C-123789-HxCDD	7.87e5	6.45e5	1.43e6	36.37	0.000	1.22	NO	100.000	0.131	1.31e7	7084	1843.0	1.08e7	5349	2024.3	bd	bd
35	37Cl-2378-TCDD	2.36e5		2.36e5	30.41	1.025			9.883	0.0133	2.33e6	1371	1698.2				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:42:05 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:43:05 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	9.31e1	2.76e2	3.69e2	30.36	0.34	YES	0.018	0.0288	2.86e3	1347	2.1	3.41e3	1046	3.3	bb	bb
2	Total-tetradioxins	5.99e1	5.78e1	1.18e2	29.93	1.04	YES	0.006	0.0288	2.57e3	1347	1.9	1.54e3	1046	1.5	bd	bb
3	Total-tetradioxins	8.45e1	1.02e2	1.87e2	28.72	0.83	NO	0.009	0.0288	2.07e3	1347	1.5	2.72e3	1046	2.6	bb	bb
4	Total-tetradioxins	7.98e1	5.19e1	1.32e2	28.55	1.54	YES	0.006	0.0288	2.99e3	1347	2.2	1.43e3	1046	1.4	bb	bb

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentadioxins	1.55e2	7.26e1	2.27e2	32.84	2.13	YES	0.018	0.0182	4.40e3	1154	3.8	2.84e3	835	3.4	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-hexadioxins	2.67e2	1.10e2	3.78e2	36.67	2.42	YES	0.034	0.0278	4.01e3	965	4.2	3.25e3	1327	2.4	bb	bb
2	123789-HxCDD	1.07e2	1.89e2	2.95e2	36.38	0.57	YES	0.027	0.0283	3.19e3	965	3.3	5.47e3	1327	4.1	bb	bb
3	123678-HxCDD	3.49e2	2.34e2	5.83e2	36.17	1.49	YES	0.049	0.0277	6.05e3	965	6.3	4.30e3	1327	3.2	db	db
4	123478-HxCDD	7.72e1	9.86e1	1.76e2	36.07	0.78	YES	0.017	0.0272	1.70e3	965	1.8	3.74e3	1327	2.8	bd	bd
5	Total-hexadioxins	9.01e2	5.53e2	1.45e3	35.54	1.63	YES	0.131	0.0278	1.23e4	965	12.7	8.39e3	1327	6.3	MM	db
6	Total-hexadioxins	2.74e2	1.46e2	4.20e2	35.38	1.88	YES	0.038	0.0278	4.26e3	965	4.4	2.93e3	1327	2.2	MM	bd
7	Total-hexadioxins	5.24e2	3.24e2	8.49e2	34.90	1.62	YES	0.077	0.0278	1.07e4	965	11.1	7.60e3	1327	5.7	bb	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	1234678-HpCDD	4.38e3	3.64e3	8.02e3	39.22	1.20	YES	0.849	0.0580	5.82e4	1690	34.5	5.33e4	1377	38.7	bb	bb
2	Total-heptadioxins	7.40e3	7.79e3	1.52e4	38.37	0.95	NO	1.609	0.0580	1.17e5	1690	69.2	1.30e5	1377	94.5	bb	bd
3	Total-heptadioxins	5.43e2	1.27e2	6.70e2	38.06	4.27	YES	0.071	0.0580	1.02e4	1690	6.1	3.28e3	1377	2.4	bb	bb

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:42:05 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:43:05 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	5.10e1	9.11e1	1.42e2	30.43	0.56	YES	0.006	0.0172	9.89e2	752	1.3	1.65e3	1142	1.4	bb	bb
2	Total-tetrafurans	9.93e1	8.06e1	1.80e2	29.81	1.23	YES	0.007	0.0172	2.12e3	752	2.8	3.15e3	1142	2.8	bd	bb
3	Total-tetrafurans	8.86e1	1.06e2	1.95e2	29.63	0.83	NO	0.008	0.0172	2.07e3	752	2.8	1.82e3	1142	1.6	bb	bb

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	6.04e2	3.82e2	9.86e2	31.36	1.58	NO	0.048	0.0136	1.10e4	847	13.0	5.82e3	1583	3.7	bb	bb
2	Total-pentafurans (F1)	3.55e2	9.07e1	4.46e2	30.24	3.92	YES	0.022	0.0136	6.90e3	847	8.1	1.71e3	1583	1.1	db	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	23478-PeCDF	1.01e2	1.19e2	2.21e2	33.44	0.85	YES	0.011	0.0127	2.95e3	977	3.0	2.41e3	1360	1.8	bb	bb
2	12378-PeCDF	2.21e2	1.17e2	3.38e2	32.85	1.88	YES	0.017	0.0135	5.26e3	977	5.4	3.53e3	1360	2.6	bb	bb
3	Total-pentafurans	5.60e1	7.48e1	1.31e2	32.63	0.75	YES	0.006	0.0131	2.39e3	977	2.4	2.11e3	1360	1.5	bb	bb
4	Total-pentafurans	2.18e2	7.16e1	2.89e2	32.31	3.04	YES	0.014	0.0131	4.99e3	977	5.1	2.15e3	1360	1.6	db	bb

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDF	6.51e1	1.79e2	2.44e2	36.67	0.36	YES	0.019	0.0296	2.33e3	1401	1.7	2.86e3	1022	2.8	bb	bb
2	Total-hexafurans	3.90e2	3.33e2	7.22e2	35.04	1.17	NO	0.052	0.0241	1.36e4	1401	9.7	7.94e3	1022	7.8	bb	bb
3	Total-hexafurans	4.47e2	3.25e2	7.72e2	34.63	1.37	NO	0.055	0.0241	7.21e3	1401	5.1	8.27e3	1022	8.1	bb	bb
4	Total-hexafurans	1.76e2	7.78e1	2.54e2	34.51	2.26	YES	0.018	0.0241	6.46e3	1401	4.6	2.30e3	1022	2.2	bb	bb

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptafurans	1.72e3	1.53e3	3.25e3	38.54	1.12	NO	0.340	0.0438	2.72e4	1535	17.7	2.66e4	862	30.9	bb	bb
2	1234678-HpCDF	9.55e2	9.01e2	1.86e3	38.06	1.06	NO	0.175	0.0361	1.62e4	1535	10.6	1.64e4	862	19.1	bb	bb

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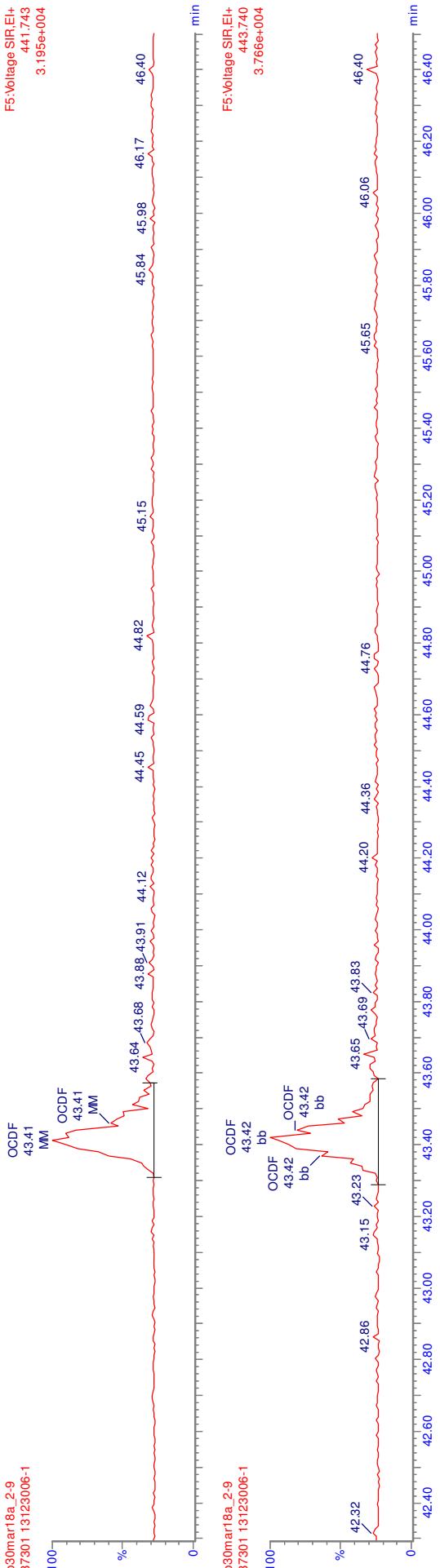
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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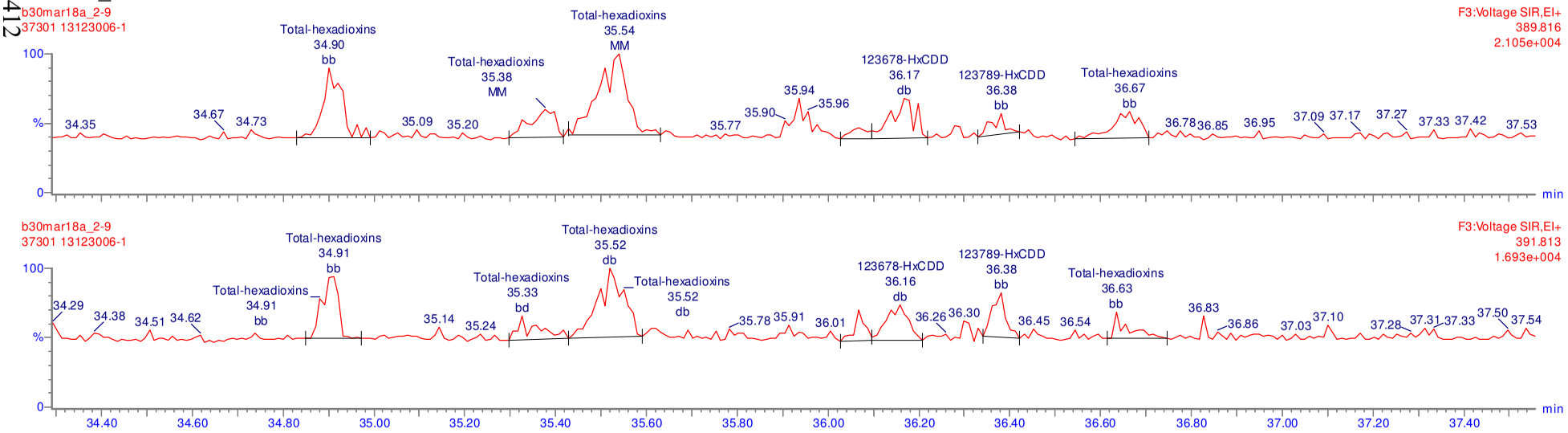
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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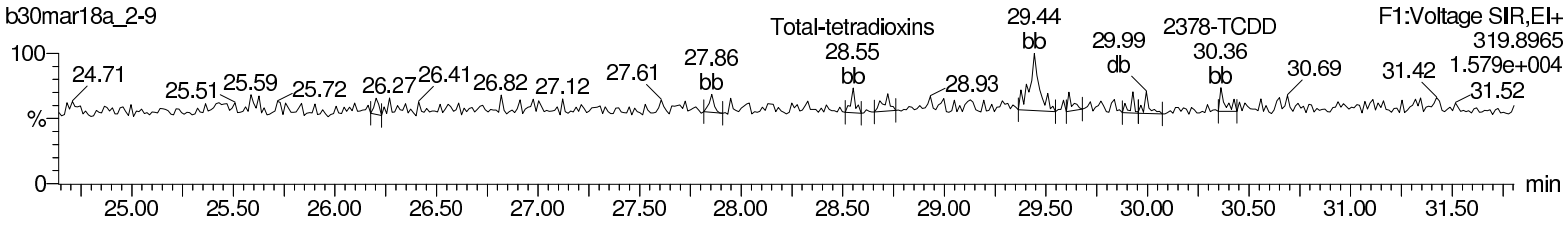
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-tetradioxins



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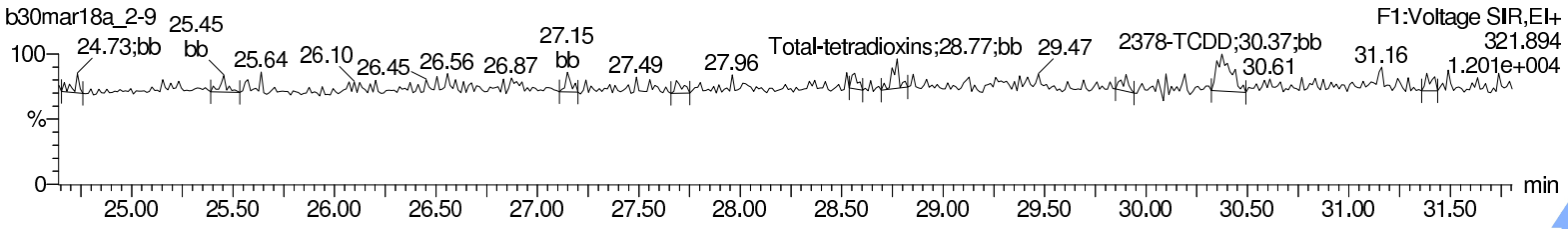

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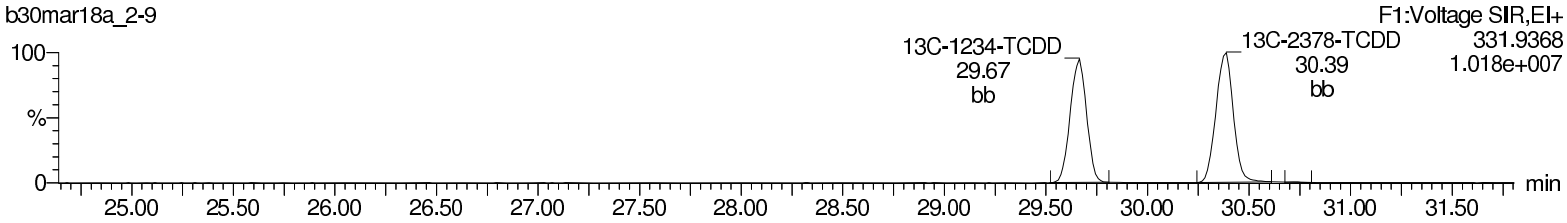

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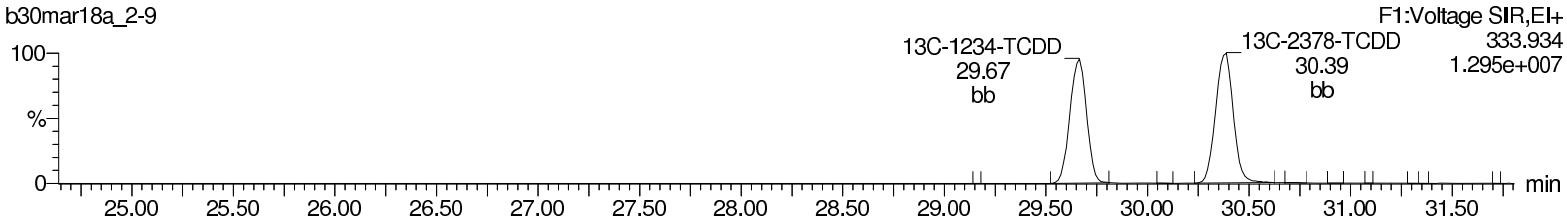

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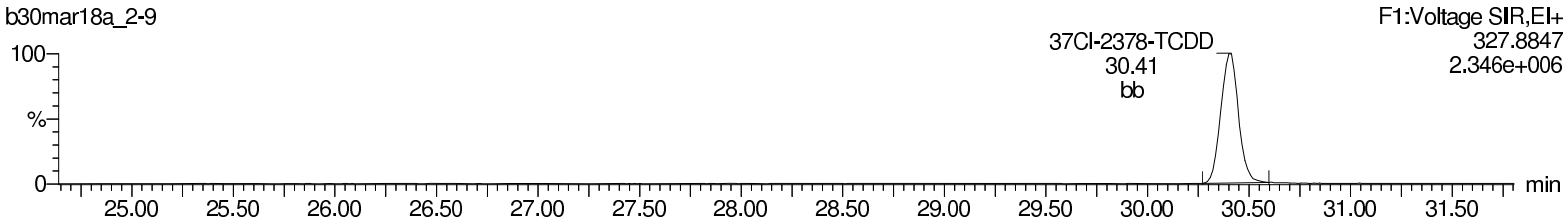

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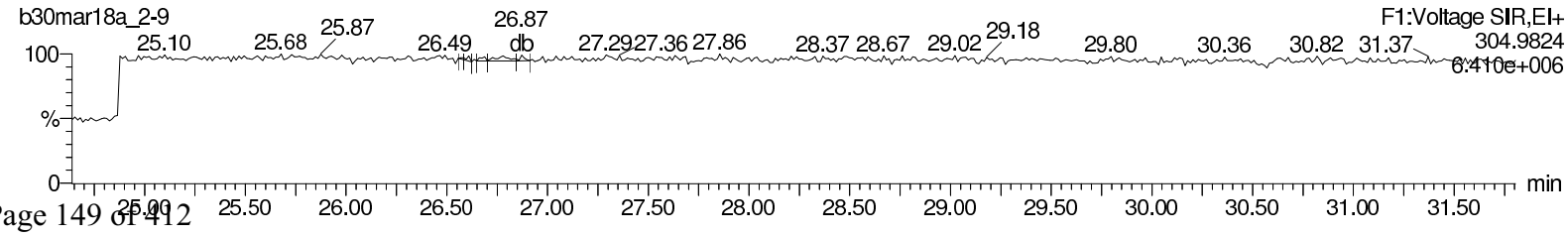

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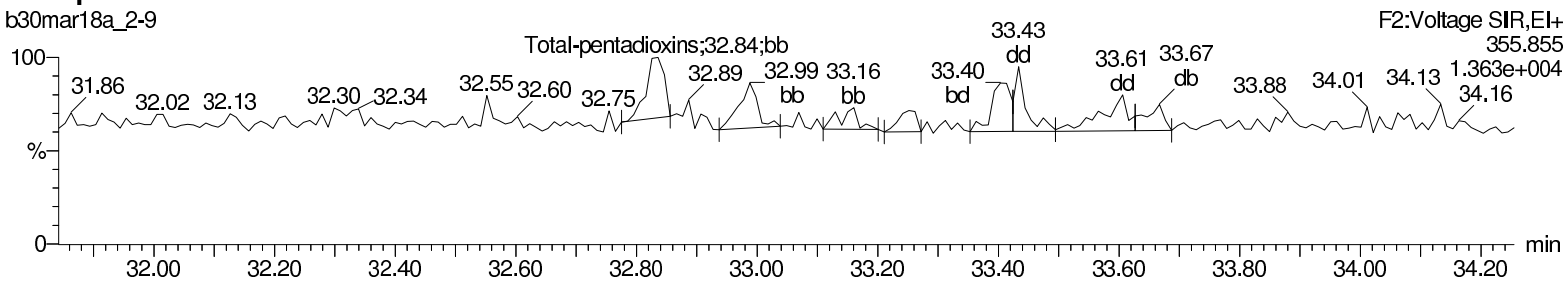
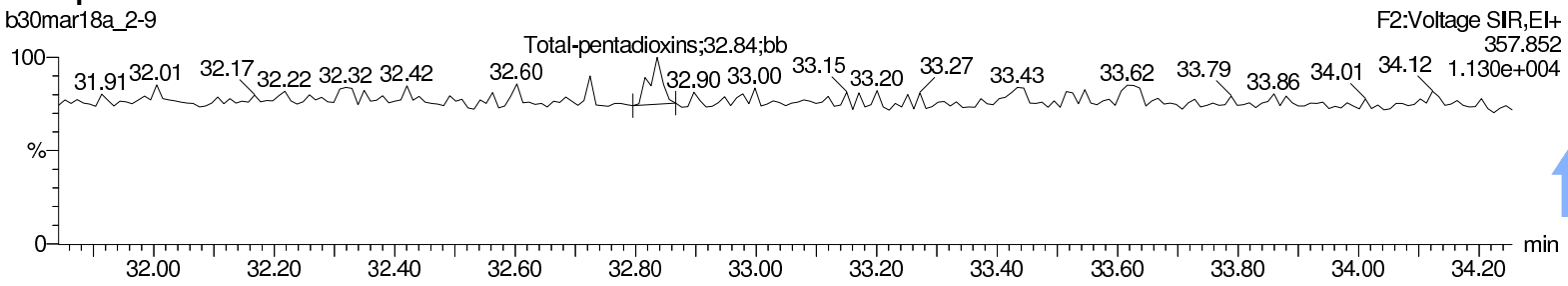
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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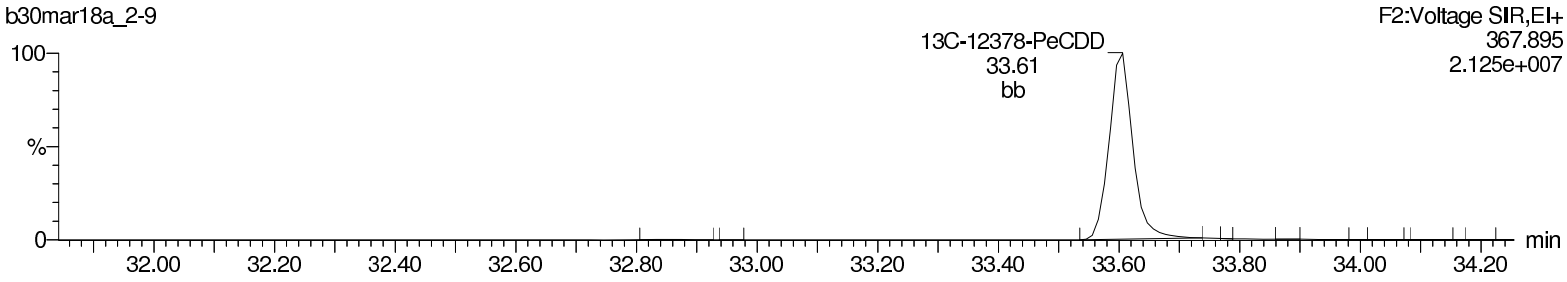

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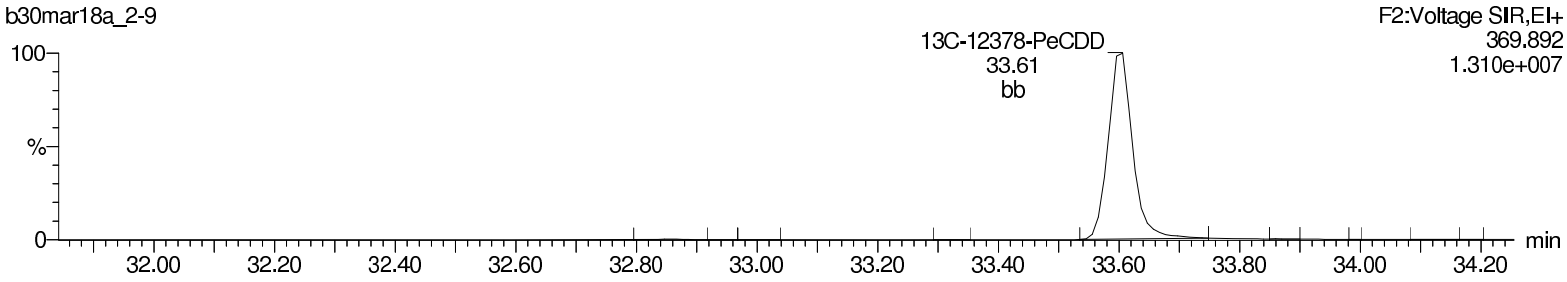

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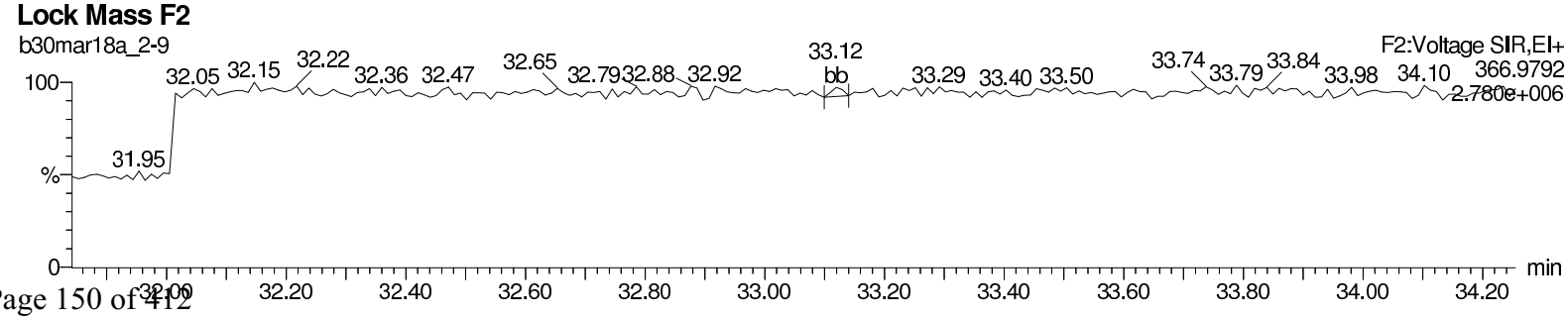

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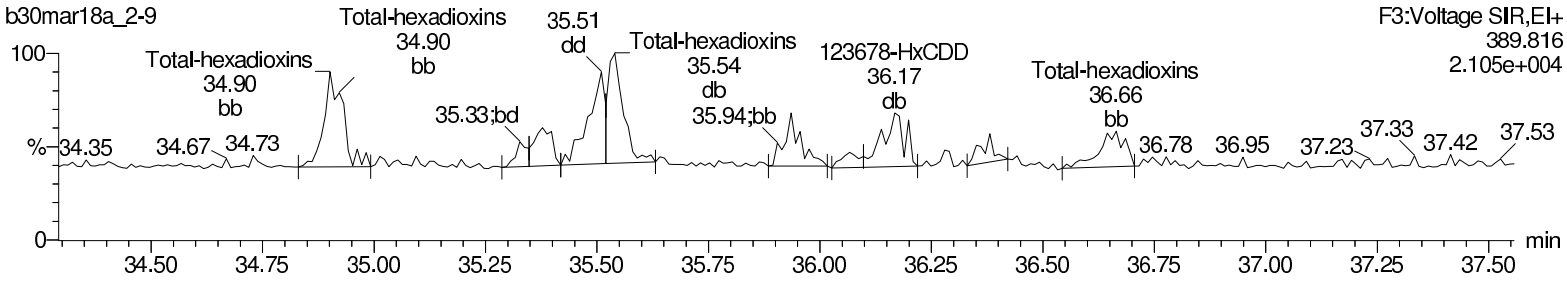
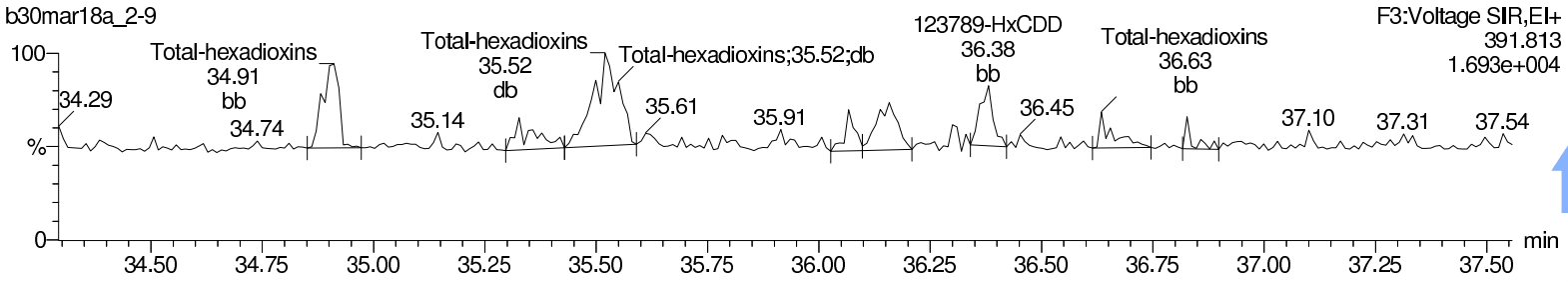
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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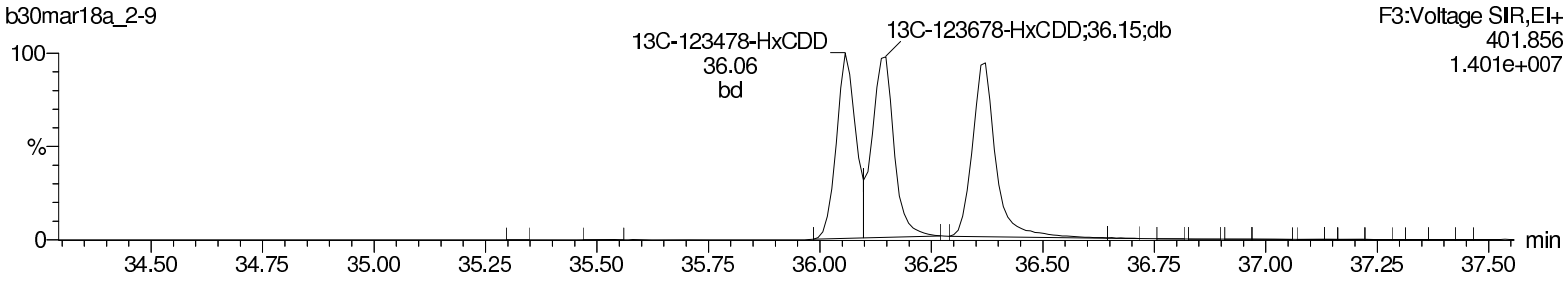

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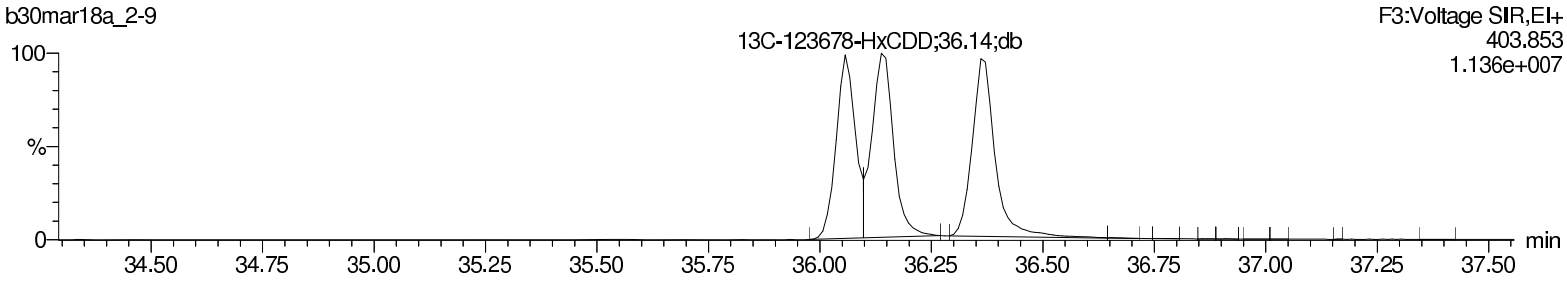

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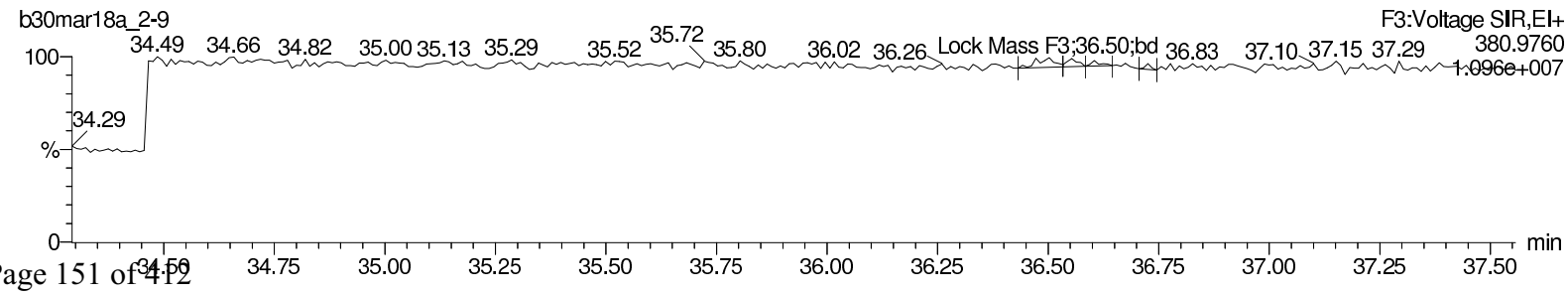

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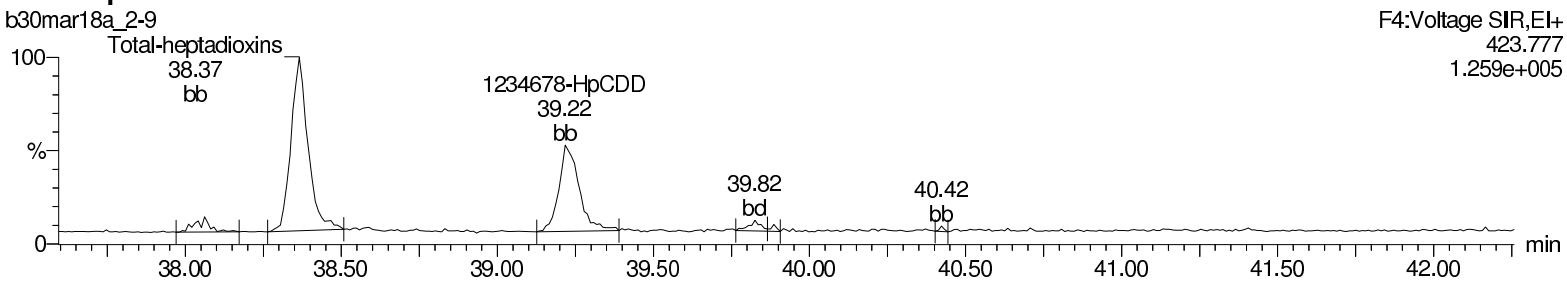
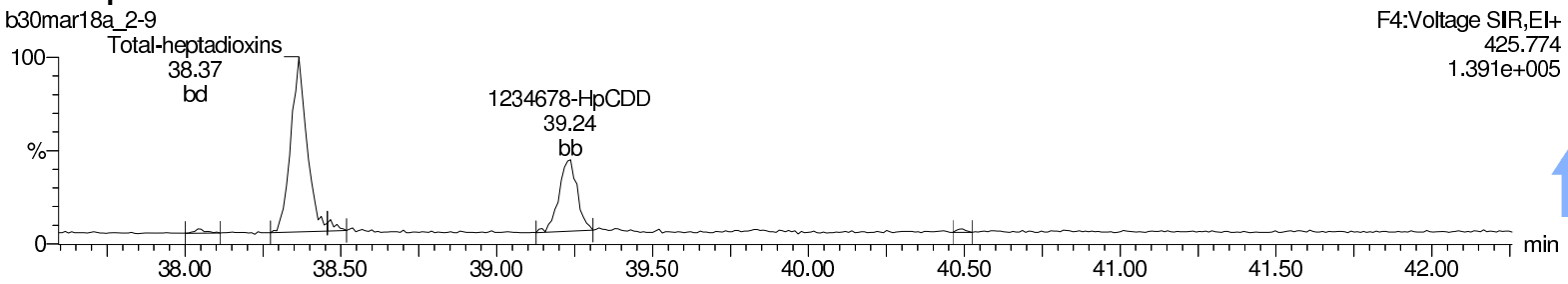
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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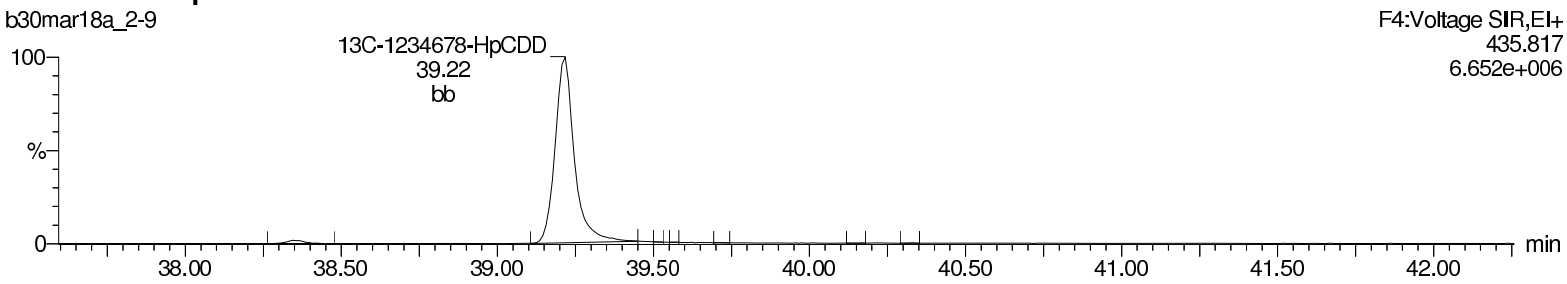

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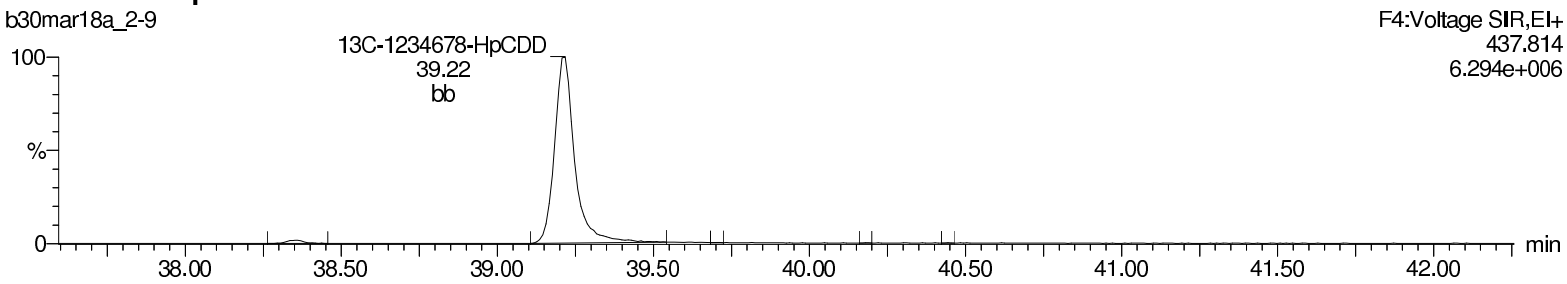

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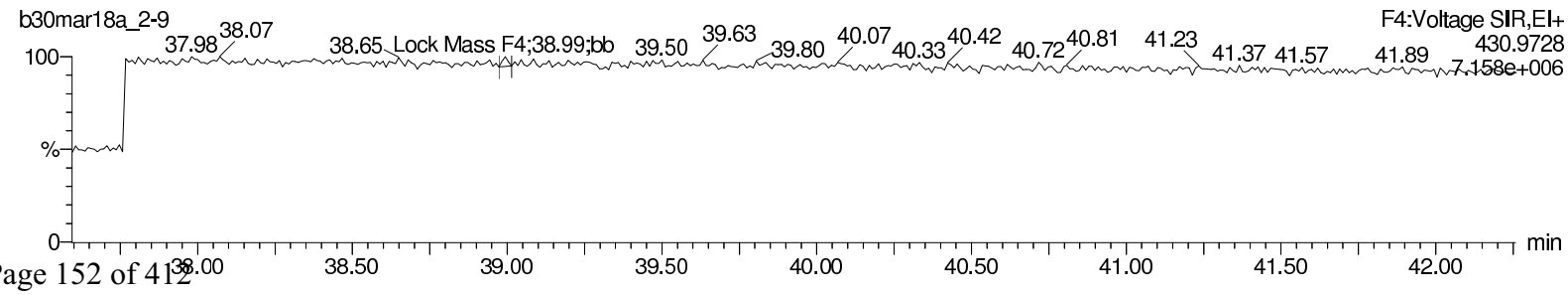

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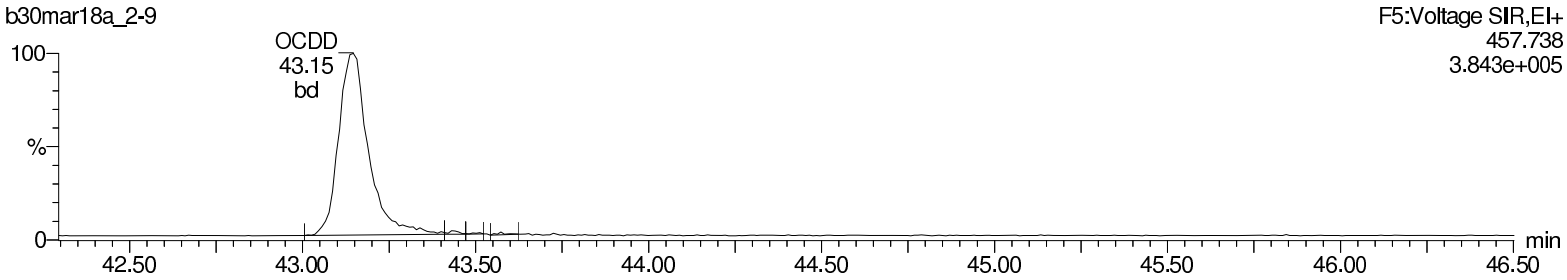
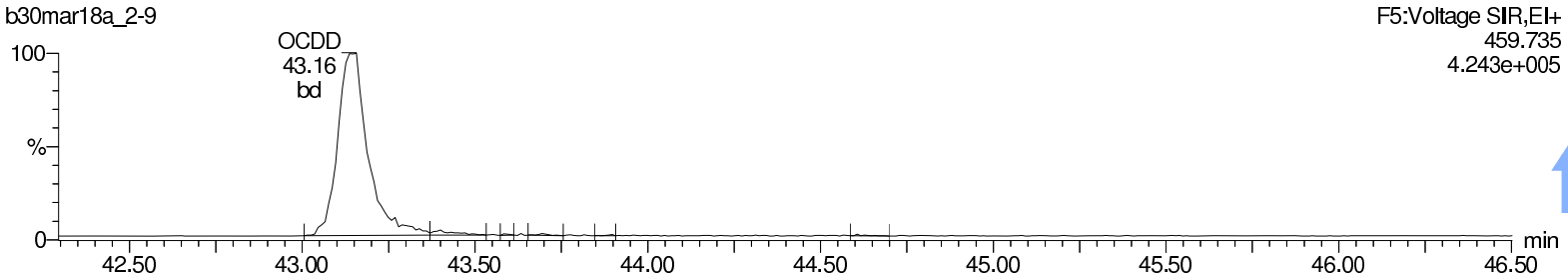
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

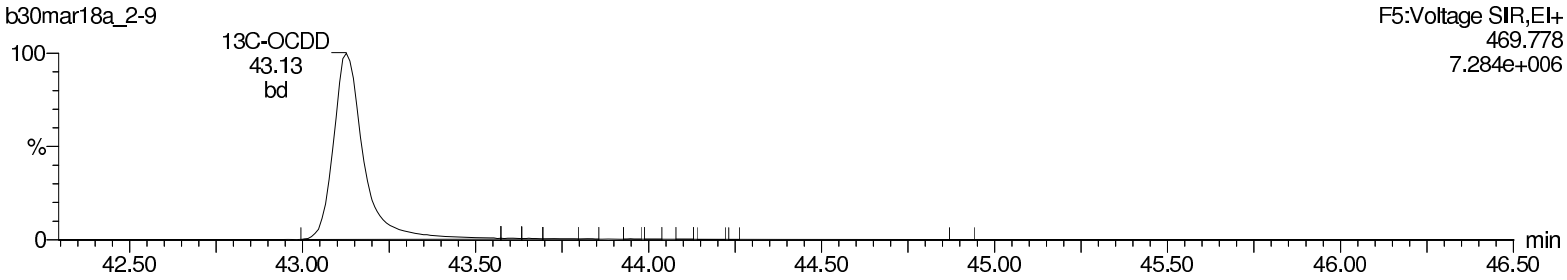
OCDD



OCDD



13C-OCDD



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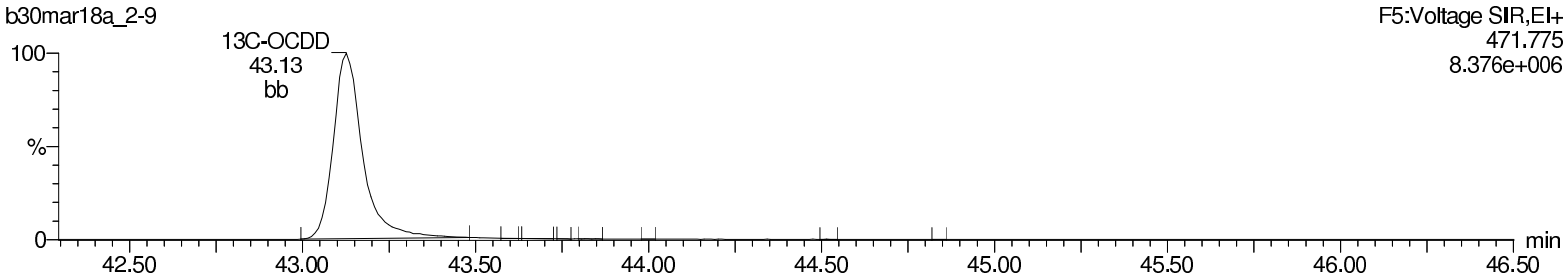
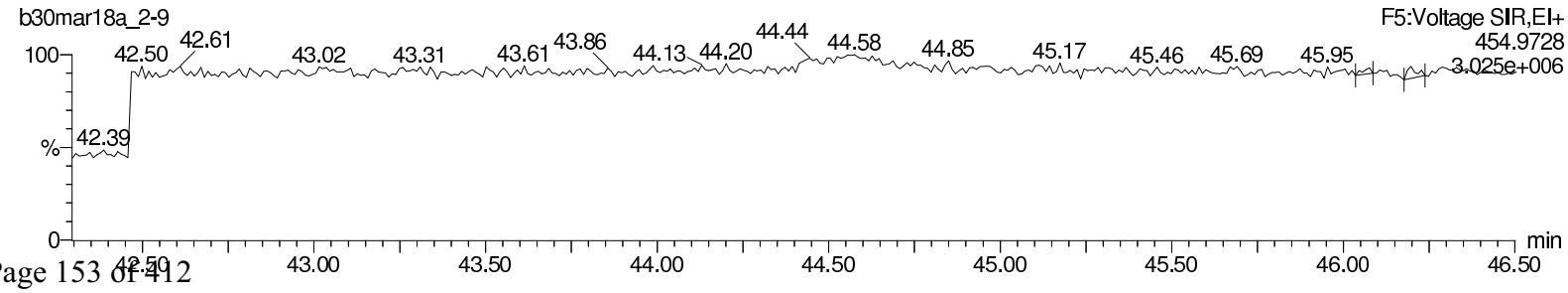


Lock Mass F5



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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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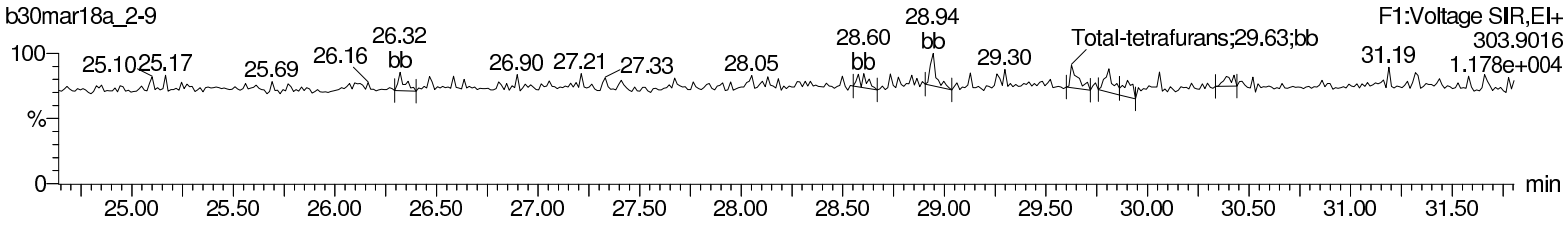
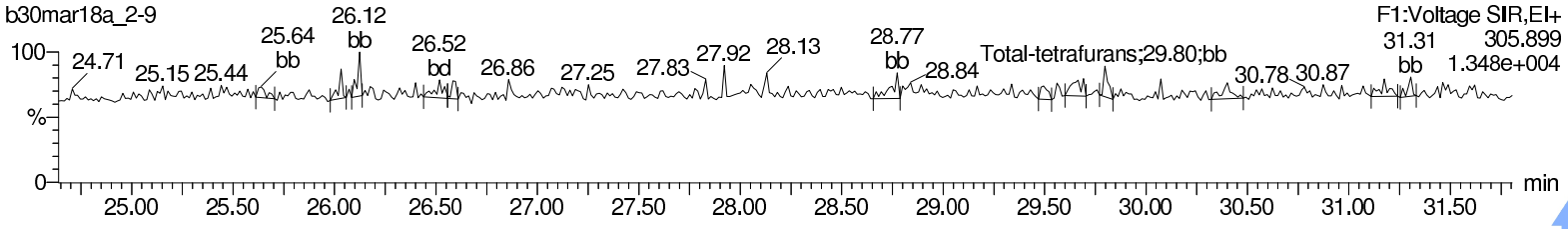
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-tetrafurans



Total-tetrafurans



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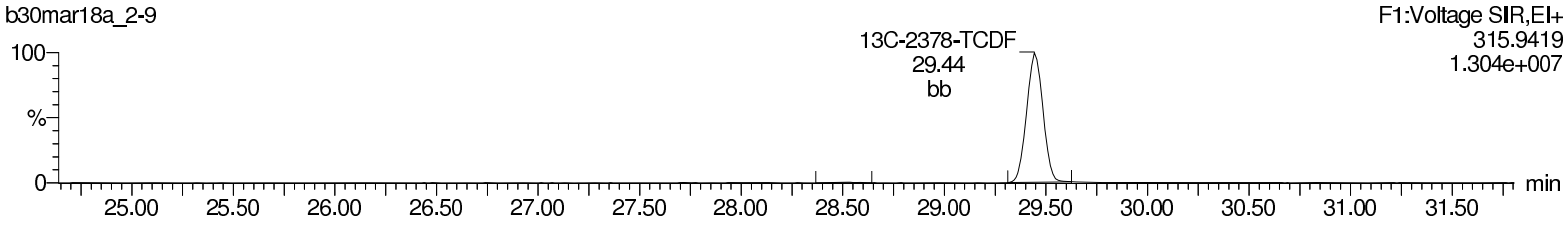

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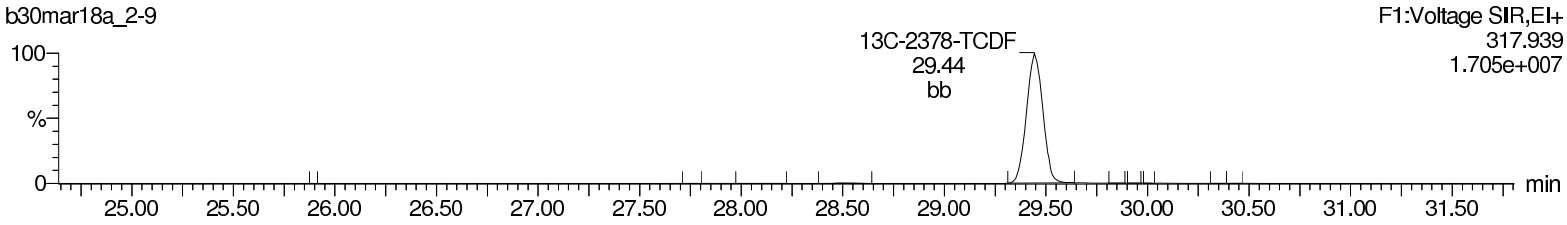
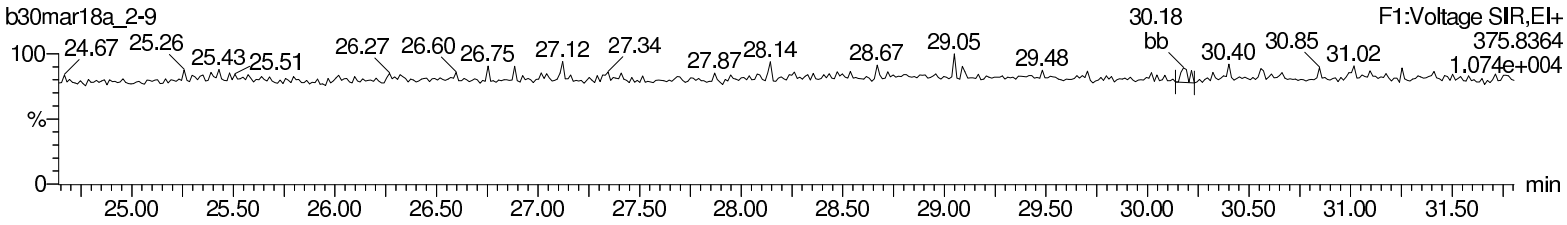
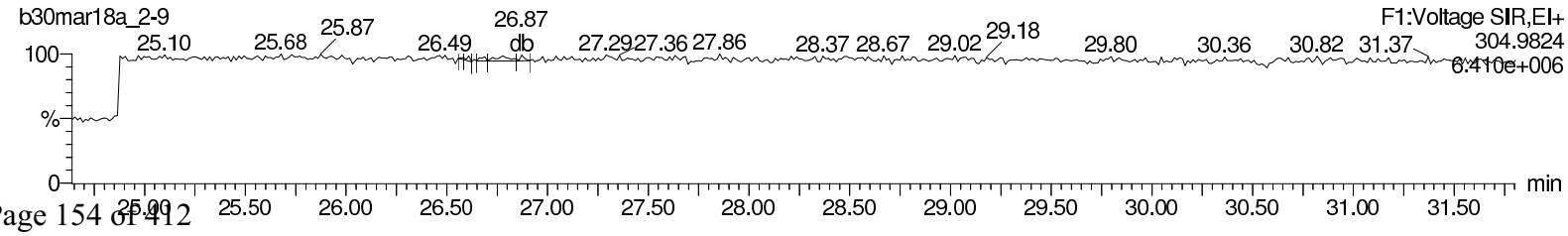


HxDPE



Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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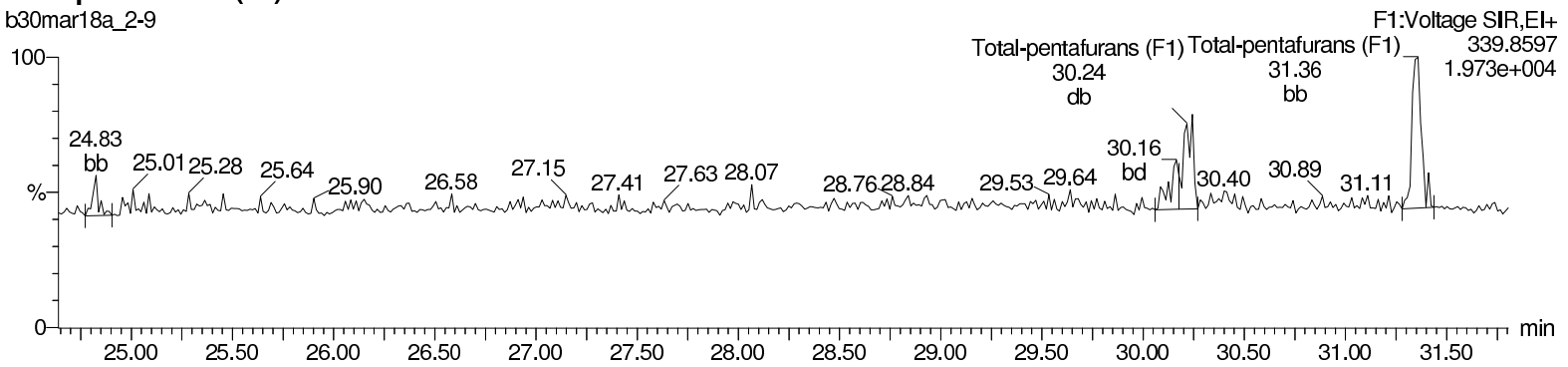
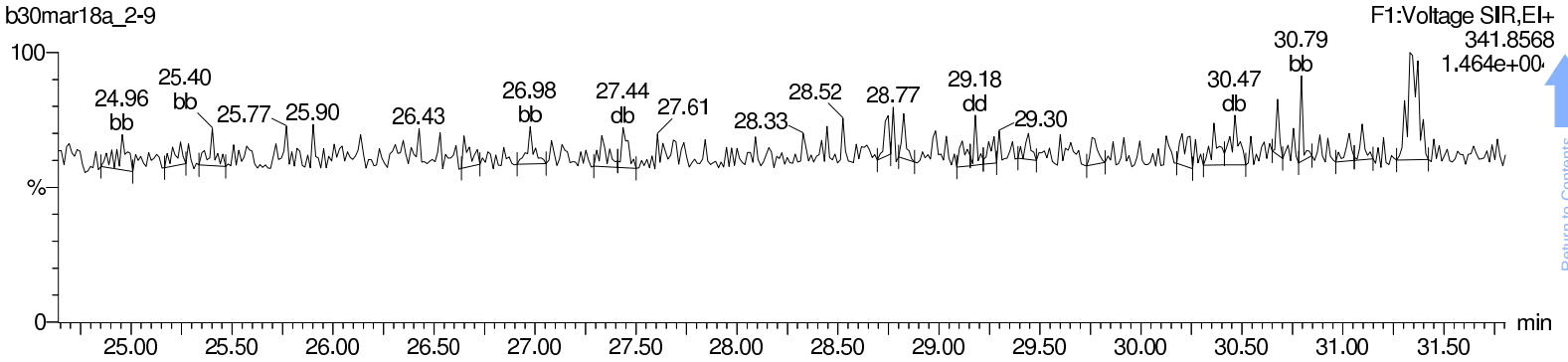
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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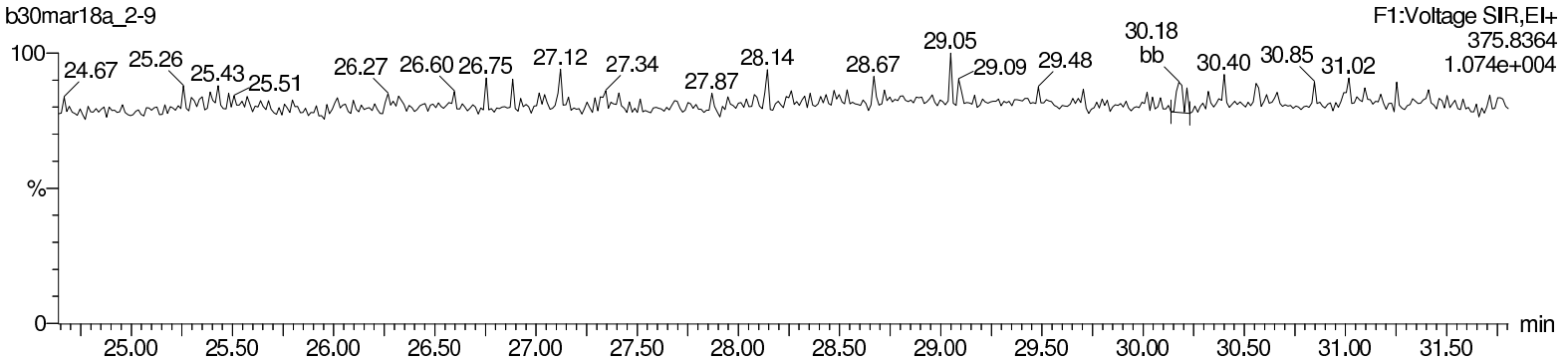
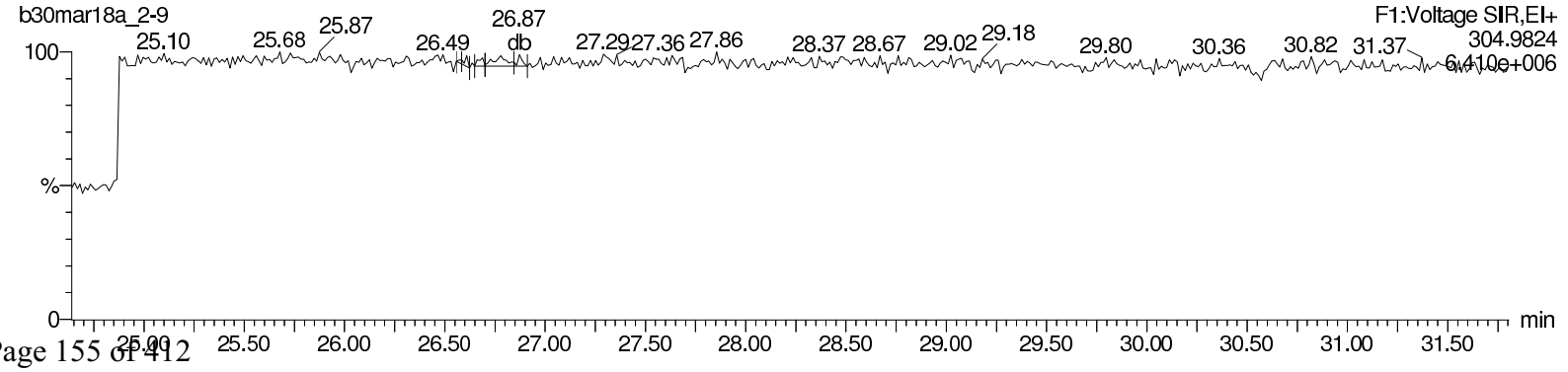


Lock Mass F1



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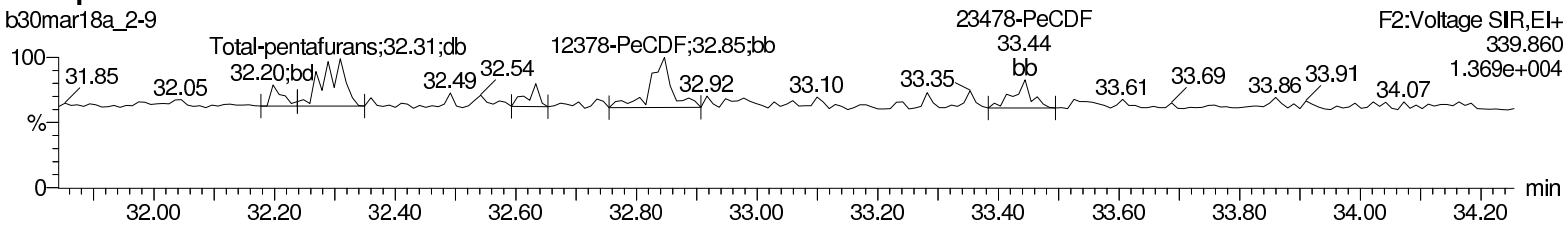
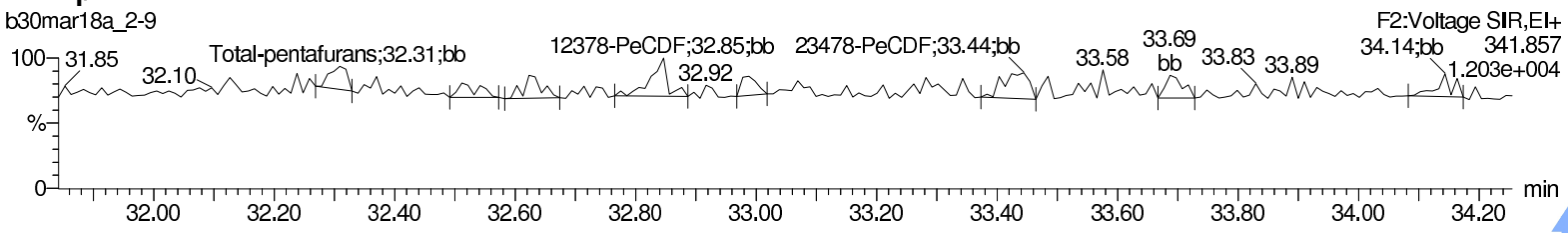
Total-pentafurans



Total-pentafurans



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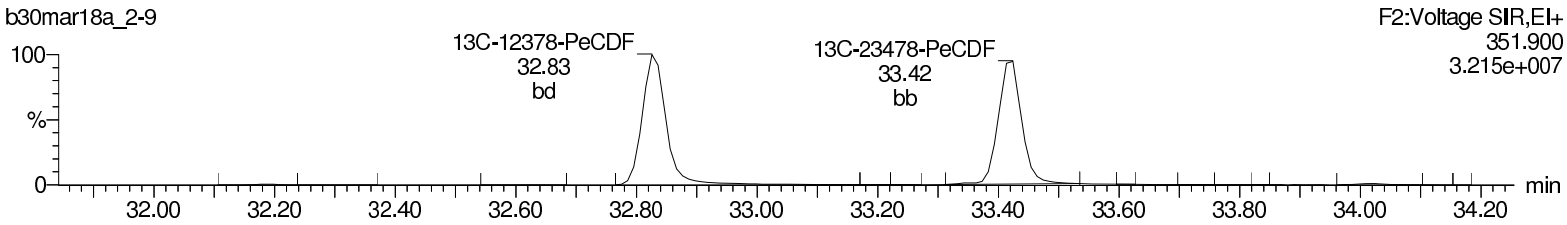

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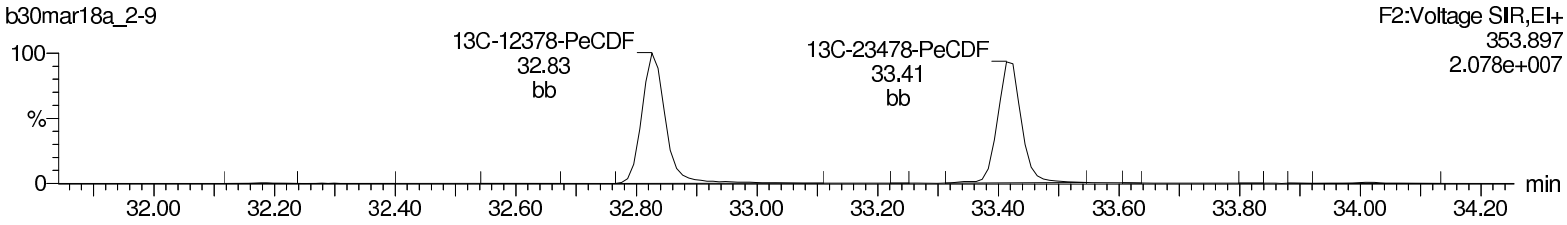
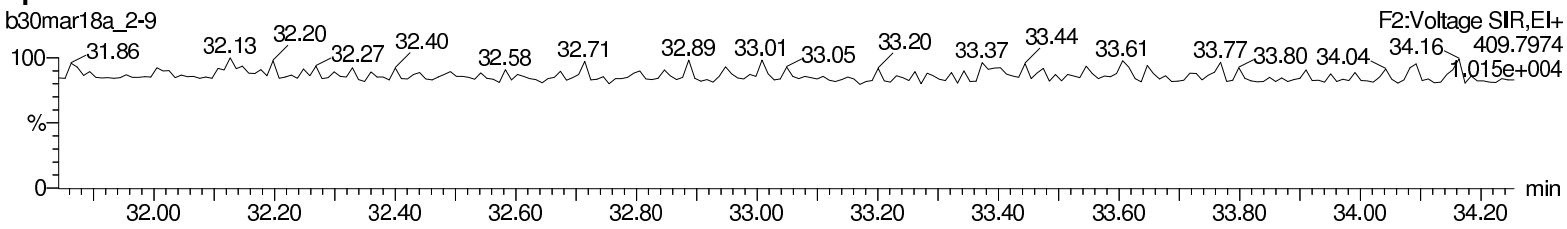
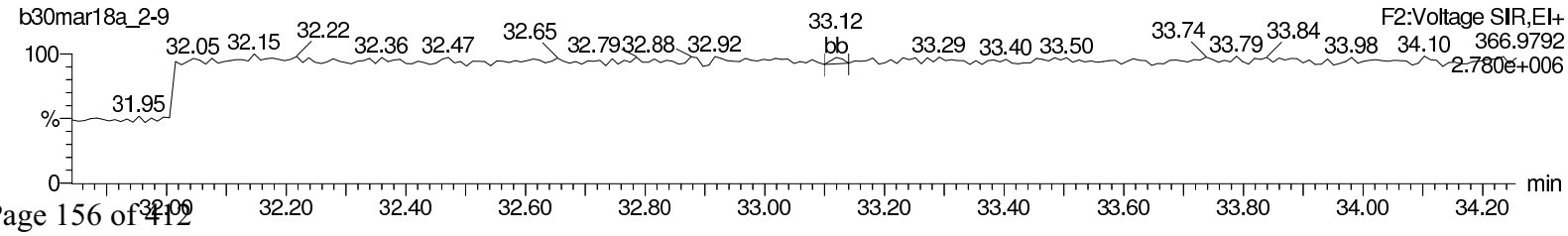


HpDPE



Lock Mass F2



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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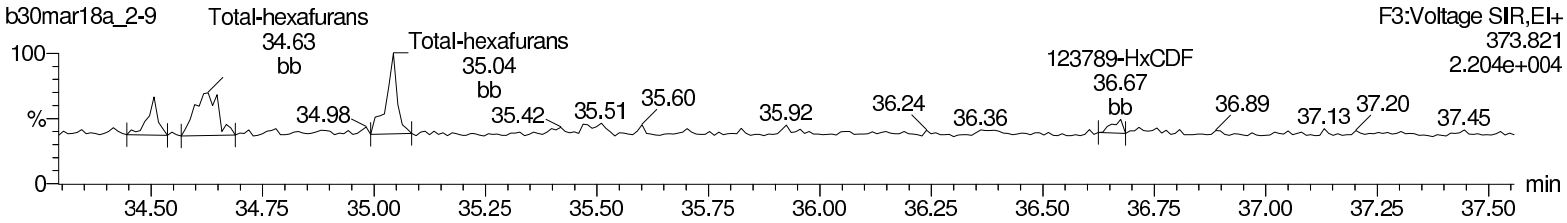
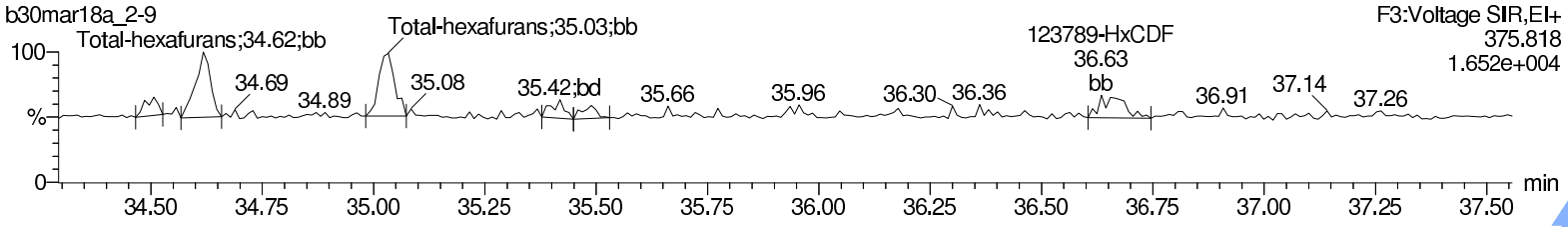
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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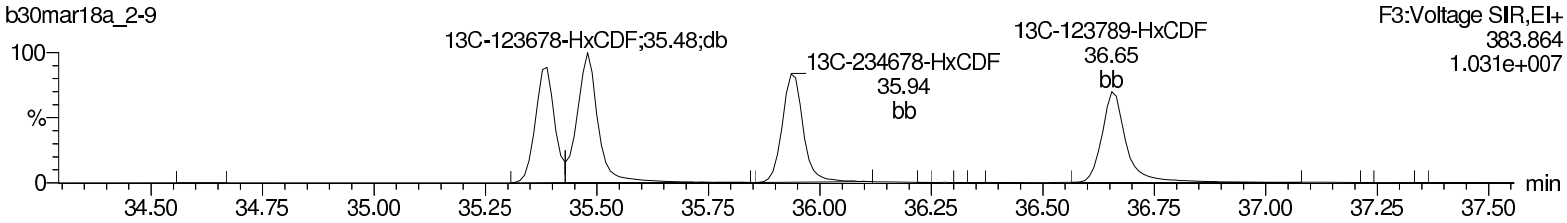

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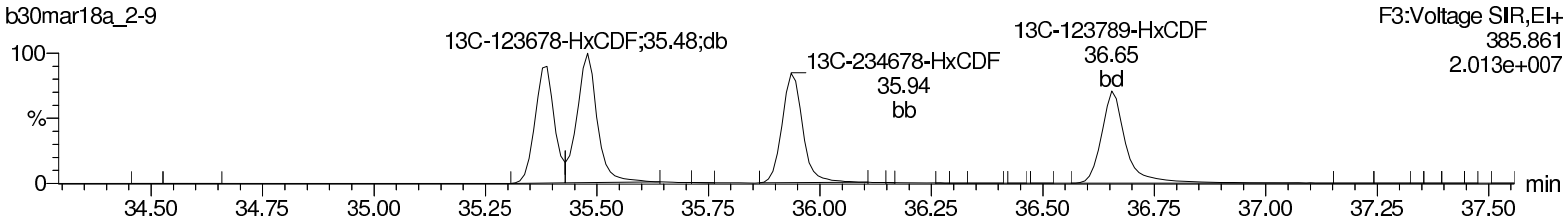
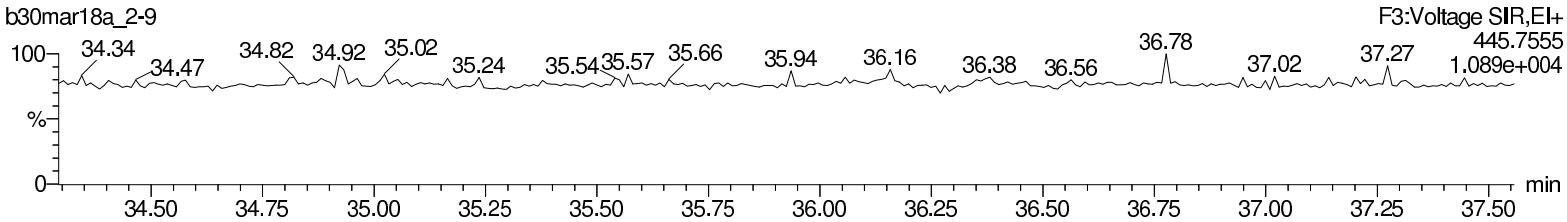
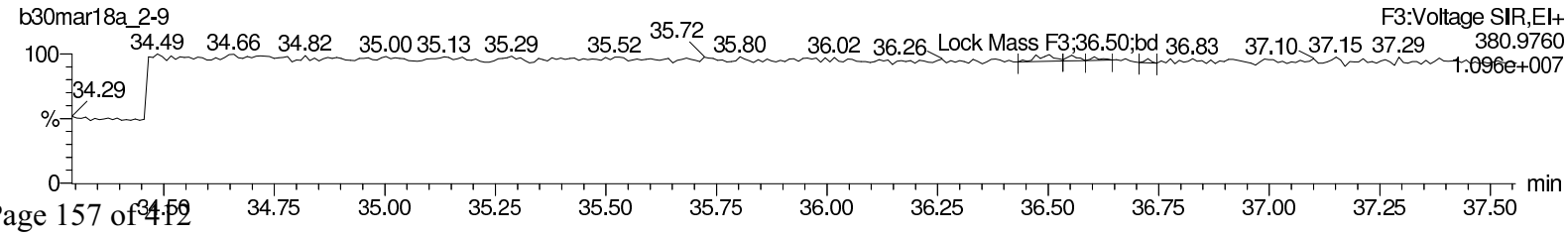


OcDPE



Lock Mass F3



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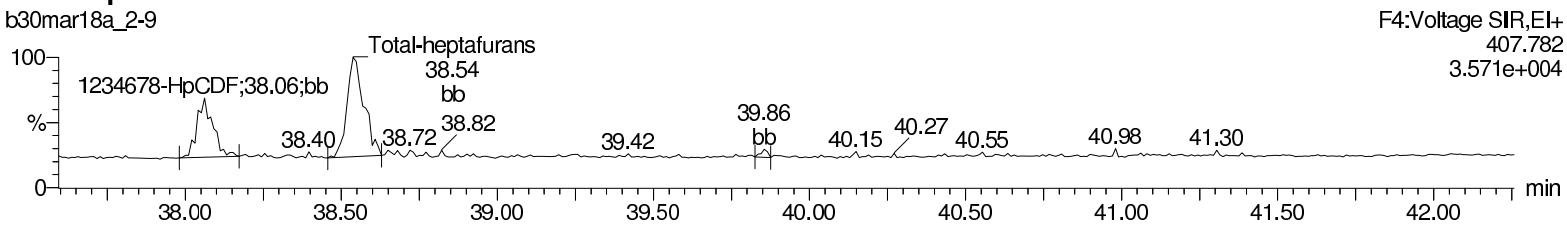
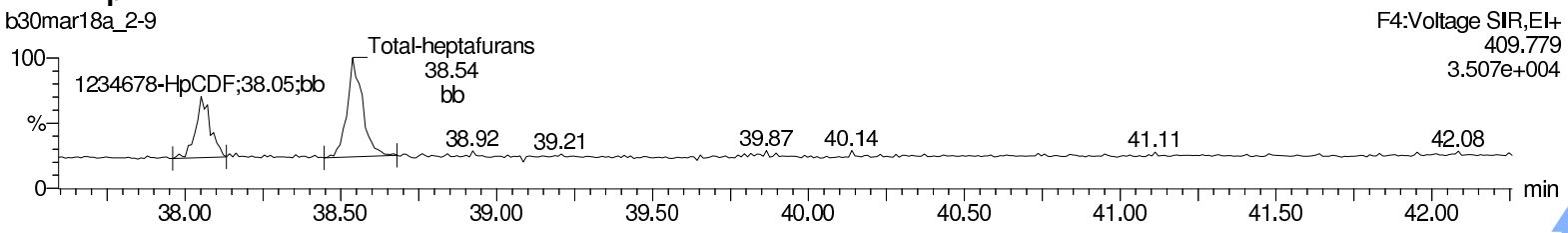
Name: b30mar18a_2-9, Date: 31-Mar-2018, Time: 01:03:50, ID: 13123006-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptafurans



Total-heptafurans



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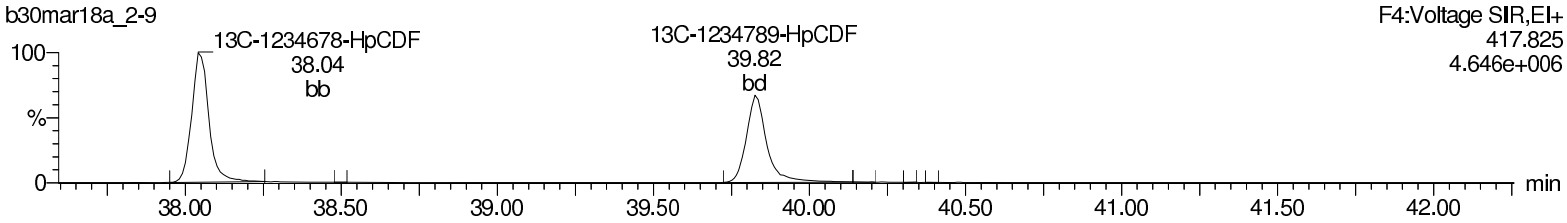

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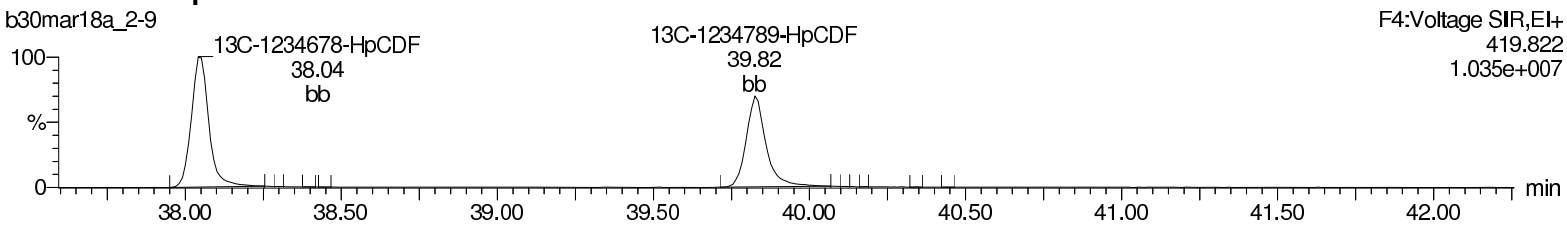

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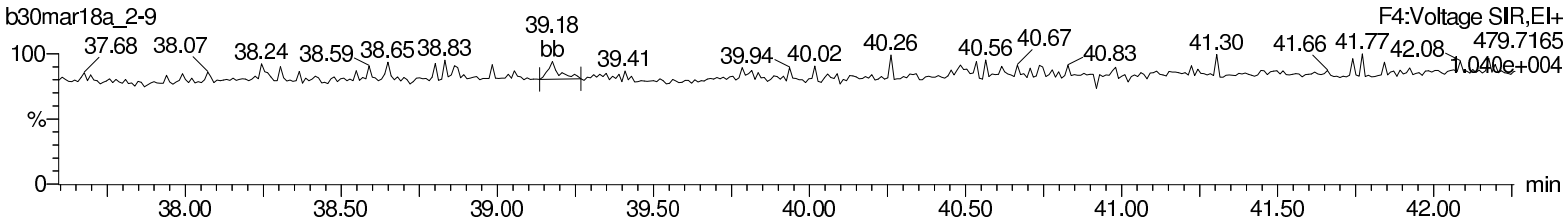
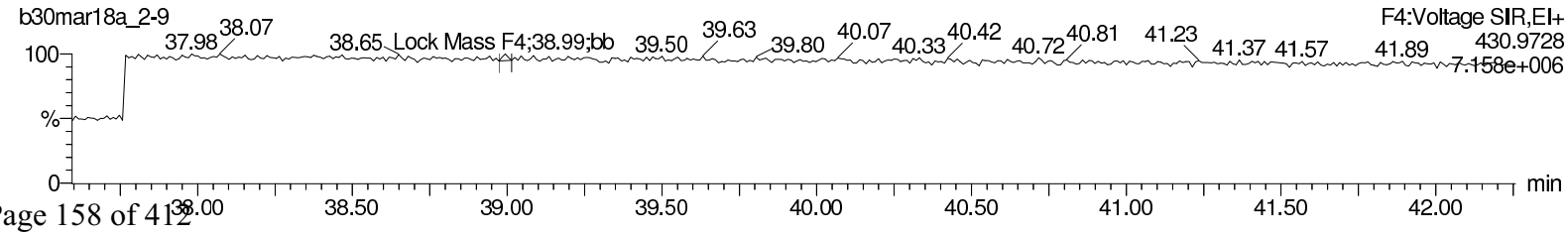


Lock Mass F4



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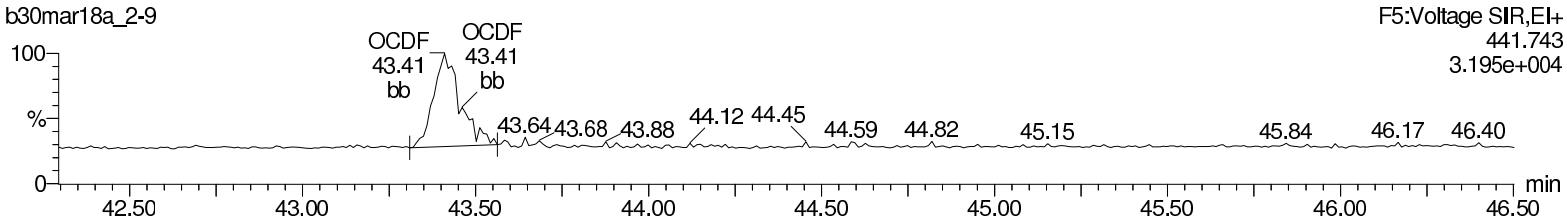
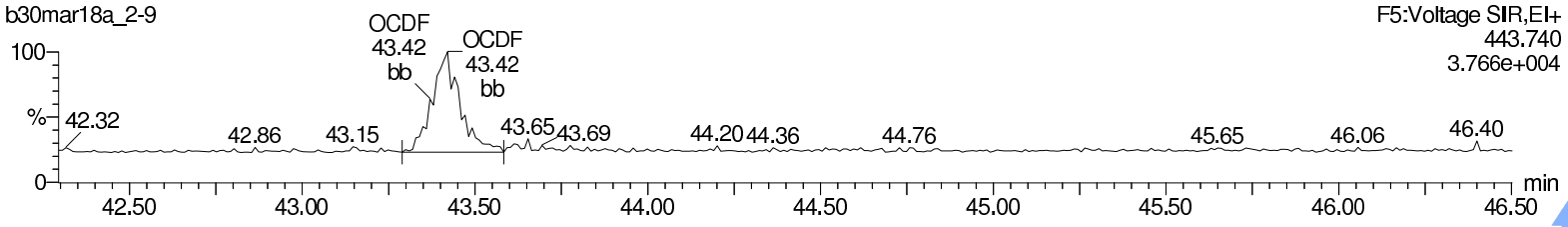
OCDF



OCDF



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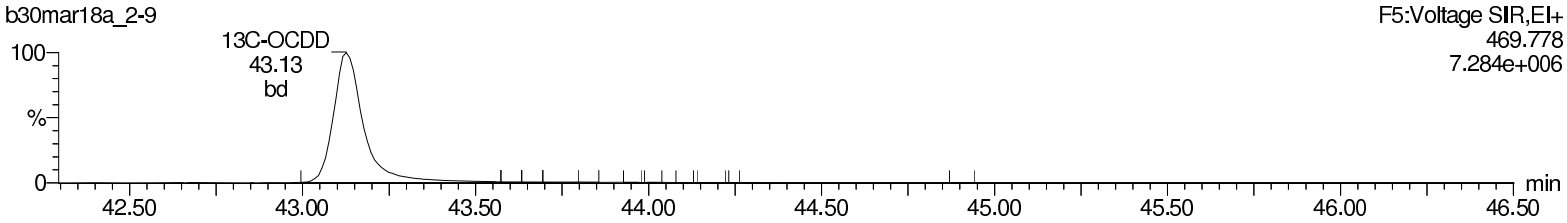
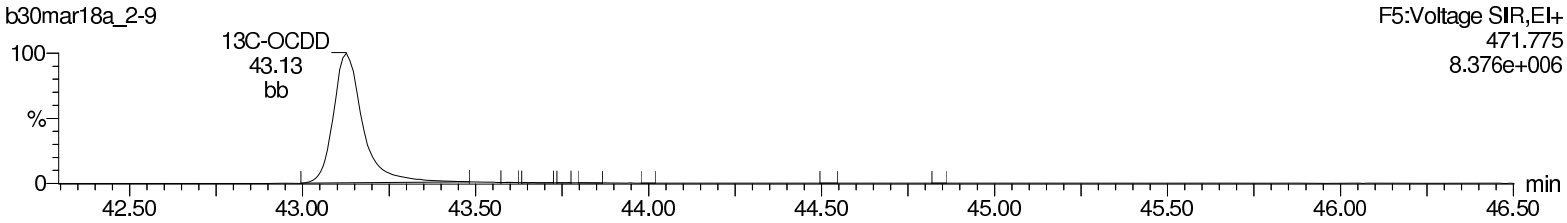
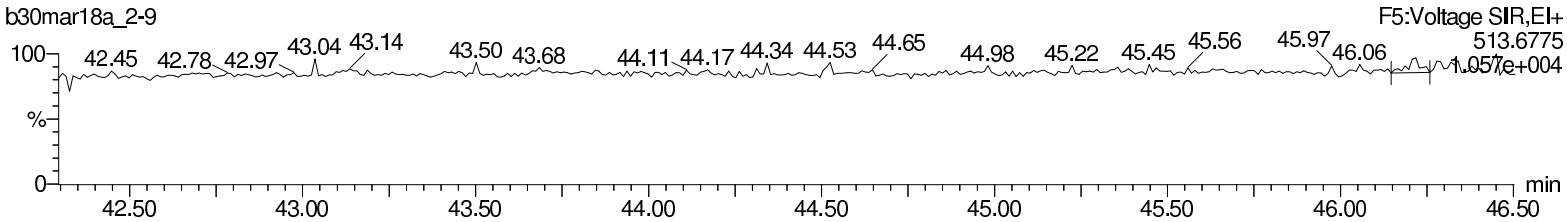


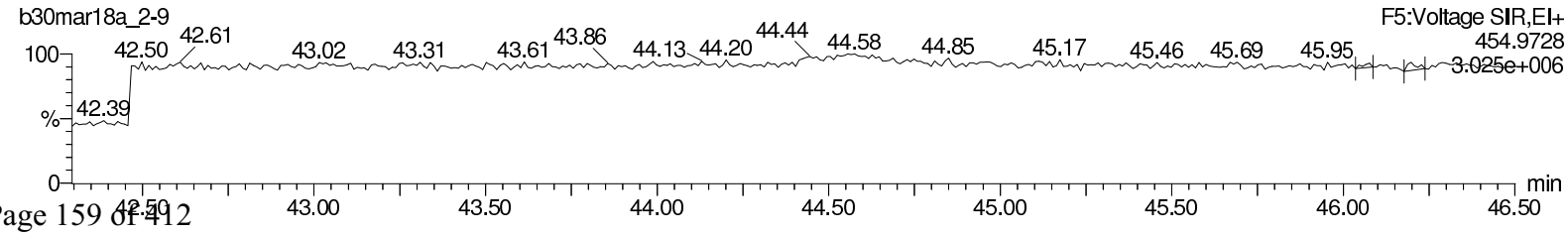
13C-OCDD



DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123007**	**Date Collected:**	**03/22/2018 14:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**FBQW1853Q001**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-10**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1060.8 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.00072	ng/L	0.00072	0.00943
40321-76-4	1,2,3,7,8-PeCDD	U	0.000494	ng/L	0.000494	0.0471
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000584	ng/L	0.000584	0.0471
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000552	ng/L	0.000552	0.0471
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000584	ng/L	0.000584	0.0471
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	0.000654	ng/L	0.000654	0.0471
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.00117	ng/L	0.00114	0.0943
51207-31-9	2,3,7,8-TCDF	U	0.000441	ng/L	0.000441	0.00943
57117-41-6	1,2,3,7,8-PeCDF	U	0.000322	ng/L	0.000322	0.0471
57117-31-4	2,3,4,7,8-PeCDF	U	0.000279	ng/L	0.000279	0.0471
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000341	ng/L	0.000341	0.0471
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.000354	ng/L	0.000354	0.0471
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.000358	ng/L	0.000358	0.0471
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.000773	ng/L	0.000469	0.0471
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	0.000394	ng/L	0.000394	0.0471
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.000586	ng/L	0.000586	0.0471
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.00112	ng/L	0.00112	0.0943
41903-57-5	Total TeCDD	U	0.00072	ng/L	0.00072	0.00943
36088-22-9	Total PeCDD	U	0.000494	ng/L	0.000494	0.0471
34465-46-8	Total HxCDD	JK	0.000603	ng/L	0.000552	0.0471
37871-00-4	Total HpCDD	U	0.000654	ng/L	0.000654	0.0471
30402-14-3	Total TeCDF	U	0.000441	ng/L	0.000441	0.00943
30402-15-4	Total PeCDF	U	0.000279	ng/L	0.000279	0.0471
55684-94-1	Total HxCDF	J	0.000773	ng/L	0.000341	0.0471
38998-75-3	Total HpCDF	U	0.000394	ng/L	0.000394	0.0471
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0000777	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.000901	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.25	1.89	ng/L	66.5	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.01	1.89	ng/L	53.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.07	1.89	ng/L	56.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.20	1.89	ng/L	63.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.19	1.89	ng/L	63.2	(23%-140%)
13C-OCDD		2.02	3.77	ng/L	53.6	(17%-157%)
13C-2,3,7,8-TCDF		1.27	1.89	ng/L	67.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.18	1.89	ng/L	62.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.14	1.89	ng/L	60.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.08	1.89	ng/L	57.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.13	1.89	ng/L	59.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.16	1.89	ng/L	61.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.22	1.89	ng/L	64.7	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**13123007**	**Date Collected:**	**03/22/2018 14:00**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**03/27/2018 10:20**		
Client ID:	**FBQW1853Q001**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/31/2018 01:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b30mar18a_2-10**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1060.8 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.05	1.89	ng/L	55.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.09	1.89	ng/L	57.8	(26%-138%)
37Cl-2,3,7,8-TCDD		0.122	0.189	ng/L	64.7	(35%-197%)

Comments:

J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:47:40 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:48:09 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	5.67e1	1.14e2	1.71e2	30.40	1.000	0.50	YES	0.014	0.0382	2.43e3	1076	2.3	3.14e3	991	3.2	bb	db
2	12378-PeCDD							NO		0.0262		1191			652			
3	123478-HxCDD							NO		0.0310		830			818			
4	123678-HxCDD							NO		0.0293		830			818			
5	123789-HxCDD							NO		0.0310		830			818			
6	1234678-HpCDD							NO		0.0347		568			616			
7	OCDD	1.42e2	1.47e2	2.89e2	43.15	1.001	0.97	NO	0.062	0.0605	2.17e3	542	4.0	2.67e3	599	4.5	MM	MM
8	2378-TCDF							NO		0.0234		601			1027			
9	12378-PeCDF	1.24e2	5.42e1	1.78e2	32.85	1.001	2.29	YES	0.015	0.0171	2.38e3	767	3.1	1.82e3	1046	1.7	bb	db
10	23478-PeCDF							NO		0.0148		767			1046			
11	123478-HxCDF							NO		0.0181		724			565			
12	123678-HxCDF							NO		0.0188		724			565			
13	234678-HxCDF							NO		0.0190		724			565			
14	123789-HxCDF	1.87e2	1.40e2	3.27e2	36.67	1.001	1.33	NO	0.041	0.0249	4.21e3	724	5.8	2.98e3	565	5.3	bb	MM
15	1234678-HpCDF							NO		0.0209		479			435			
16	1234789-HpCDF							NO		0.0311		479			435			
17	OCDF							NO		0.0596		447			692			
18	13C-2378-TCDD	6.03e5	7.92e5	1.40e6	30.39	1.025	0.76	NO	66.472	0.0700	6.57e6	3844	1708.4	8.55e6	2880	2970.2	bb	bb
19	13C-12378-PeCDD	5.83e5	3.67e5	9.50e5	33.60	1.133	1.59	NO	53.770	0.0467	1.37e7	1839	7425.9	8.62e6	1935	4455.0	bb	bb
20	13C-123478-HxCDD	4.19e5	3.42e5	7.61e5	36.05	0.991	1.23	NO	56.500	0.101	8.73e6	3596	2428.2	7.09e6	6163	1150.8	bd	bd
21	13C-123678-HxCDD	5.05e5	4.31e5	9.36e5	36.14	0.994	1.17	NO	63.523	0.0927	9.03e6	3596	2511.6	7.44e6	6163	1207.3	db	dd
22	13C-1234678-HpCDD	3.17e5	3.07e5	6.24e5	39.21	1.078	1.03	NO	63.163	0.111	4.32e6	4028	1071.5	4.13e6	3807	1083.7	bd	bb
23	13C-OCDD	4.77e5	5.42e5	1.02e6	43.12	1.186	0.88	NO	107.119	0.136	4.85e6	4892	991.6	5.49e6	4367	1257.9	bd	bd
24	13C-2378-TCDF	7.22e5	9.35e5	1.66e6	29.44	0.993	0.77	NO	67.464	0.0729	8.22e6	4565	1801.1	1.08e7	3629	2970.4	bd	bb
25	13C-12378-PeCDF	8.78e5	5.55e5	1.43e6	32.83	1.107	1.58	NO	62.742	0.107	1.97e7	5973	3297.3	1.24e7	5212	2370.0	bb	bb
26	13C-23478-PeCDF	8.36e5	5.31e5	1.37e6	33.41	1.127	1.57	NO	60.281	0.108	2.02e7	5973	3379.4	1.27e7	5212	2446.2	db	db
27	13C-123478-HxCDF	2.75e5	5.49e5	8.24e5	35.38	0.973	0.50	NO	57.156	0.125	5.94e6	6509	913.2	1.16e7	6362	1829.4	bd	bd
28	13C-123678-HxCDF	3.36e5	6.63e5	1.00e6	35.47	0.975	0.51	NO	59.916	0.108	6.18e6	6509	948.8	1.24e7	6362	1956.1	db	db
29	13C-234678-HxCDF	2.91e5	5.76e5	8.67e5	35.92	0.988	0.51	NO	61.283	0.127	5.52e6	6509	847.9	1.10e7	6362	1733.0	bb	bb
30	13C-123789-HxCDF	2.78e5	5.60e5	8.37e5	36.65	1.008	0.50	NO	64.680	0.139	4.50e6	6509	691.3	8.95e6	6362	1406.9	bd	bd
31	13C-1234678-HpCDF	1.86e5	4.37e5	6.23e5	38.04	1.046	0.43	NO	55.928	0.0943	2.98e6	3233	921.7	6.80e6	4272	1592.1	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:47:40 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:48:09 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	1.54e5	3.58e5	5.12e5	39.81	1.095	0.43	NO	57.822	0.119	2.00e6	3233	617.7	4.61e6	4272	1079.2	bd	bd
33	13C-1234-TCDD	8.01e5	1.04e6	1.84e6	29.65	0.000	0.77	NO	100.000	0.0799	9.17e6	3844	2385.2	1.21e7	2880	4211.4	bb	bb
34	13C-123789-HxCDD	6.92e5	6.20e5	1.31e6	36.36	0.000	1.12	NO	100.000	0.104	1.23e7	3596	3433.5	1.01e7	6163	1642.7	bb	dd
35	37Cl-2378-TCDD	1.38e5		1.38e5	30.40	1.025			6.471	0.0118	1.52e6	1154	1316.8				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:47:40 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:48:09 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	5.67e1	1.14e2	1.71e2	30.40	0.50	YES	0.014	0.0382	2.43e3	1076	2.3	3.14e3	991	3.2	bb	db

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentadioxins	1.01e2	7.91e1	1.80e2	32.84	1.28	YES	0.024	0.0262	1.99e3	1191	1.7	2.09e3	652	3.2	bb	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-hexadioxins	1.42e2	8.30e1	2.25e2	35.94	1.72	YES	0.032	0.0304	2.88e3	830	3.5	2.14e3	818	2.6	bb	MM
2	Total-hexadioxins	2.09e2	8.99e1	2.99e2	35.48	2.32	YES	0.042	0.0304	3.98e3	830	4.8	1.82e3	818	2.2	db	MM
3	Total-hexadioxins	1.98e2	5.57e1	2.53e2	35.38	3.55	YES	0.036	0.0304	3.62e3	830	4.4	1.38e3	818	1.7	bd	bb

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptadioxins	2.44e2	7.20e1	3.16e2	39.83	3.39	YES	0.051	0.0347	7.09e3	568	12.5	1.57e3	616	2.6	MM	MM
2	Total-heptadioxins	2.52e2	1.02e2	3.54e2	38.03	2.47	YES	0.057	0.0347	4.70e3	568	8.3	2.38e3	616	3.9	bb	MM

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-tetrafurans	1.42e2	6.31e1	2.05e2	29.65	2.25	YES	0.013	0.0234	1.61e3	601	2.7	2.02e3	1027	2.0	bb	db
2	Total-tetrafurans	6.70e1	8.59e1	1.53e2	28.29	0.78	NO	0.010	0.0234	1.46e3	601	2.4	5.12e3	1027	5.0	bb	bb

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	7.39e2	5.92e1	7.98e2	30.16	12.47	YES	0.065	0.0178	9.26e3	769	12.0	2.23e3	1263	1.8	bb	bd

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Wednesday, April 04, 2018 11:47:40 Eastern Standard Time
Printed: Wednesday, April 04, 2018 11:48:09 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDF	1.24e2	5.42e1	1.78e2	32.85	2.29	YES	0.015	0.0171	2.38e3	767	3.1	1.82e3	1046	1.7	bb	db

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDF	1.87e2	1.40e2	3.27e2	36.67	1.33	NO	0.041	0.0249	4.21e3	724	5.8	2.98e3	565	5.3	bb	MM

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1																	

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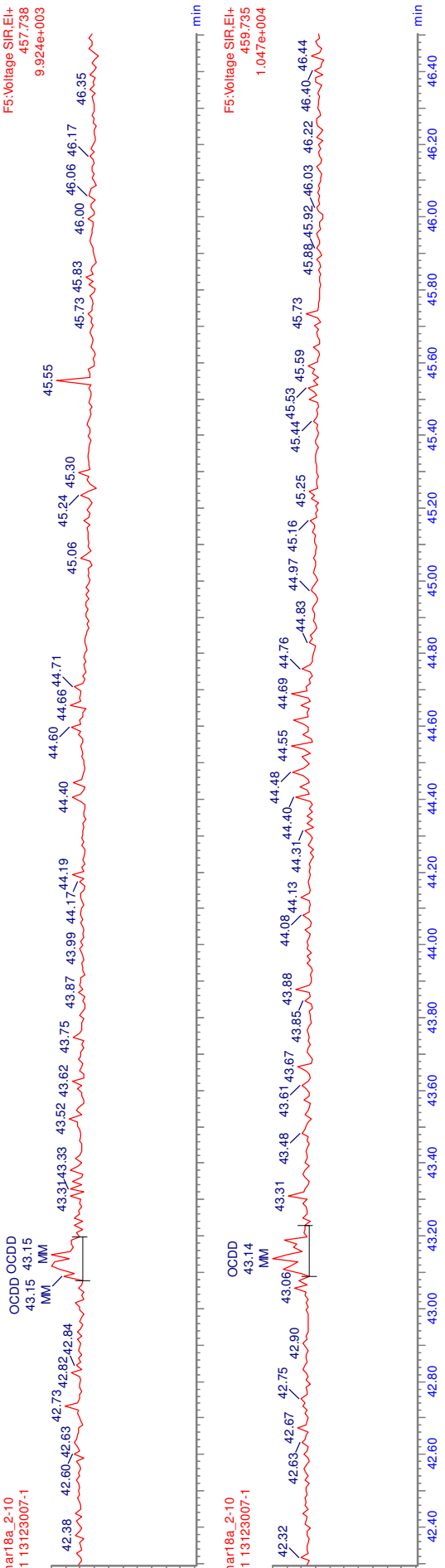
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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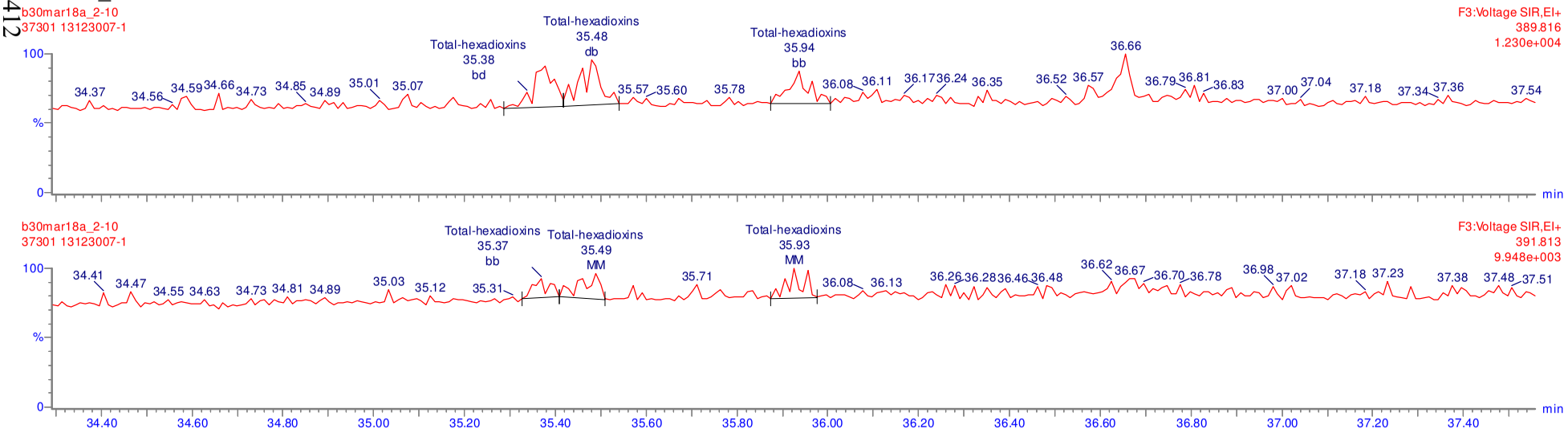
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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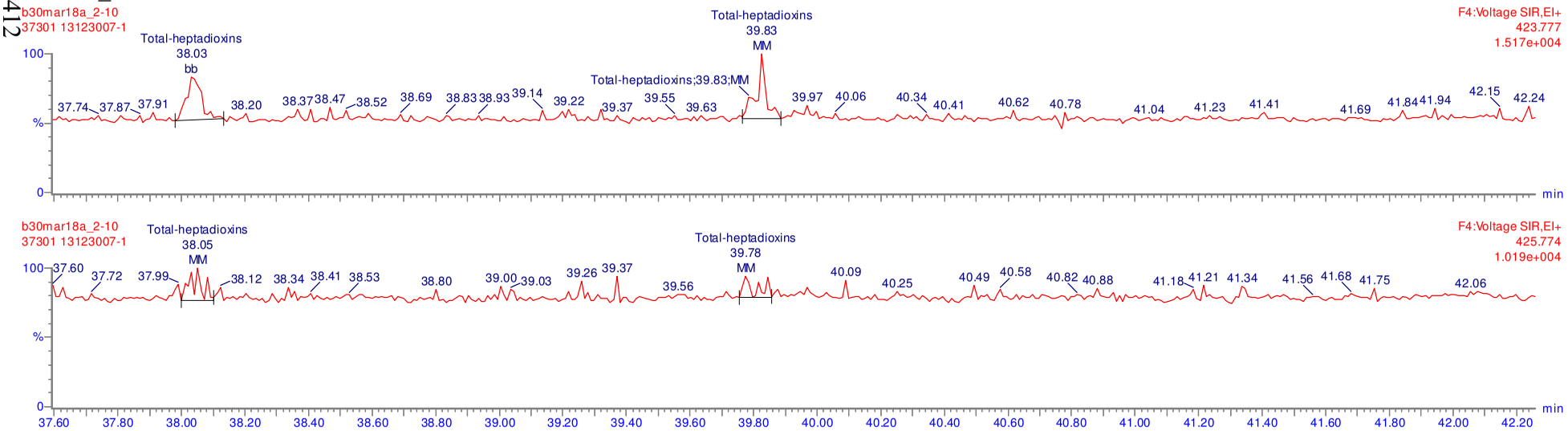
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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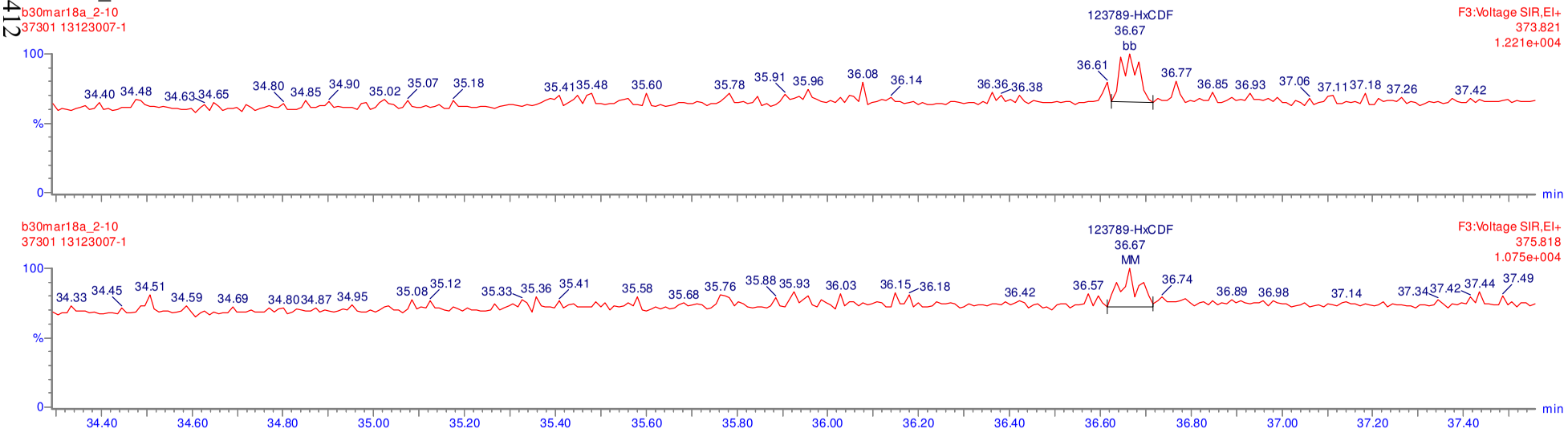
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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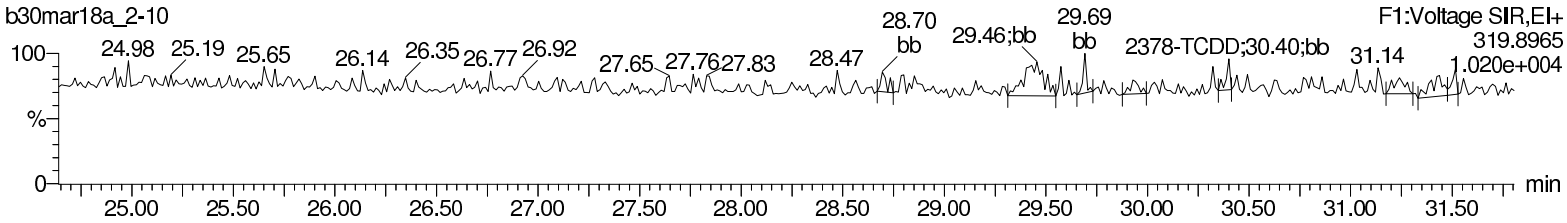
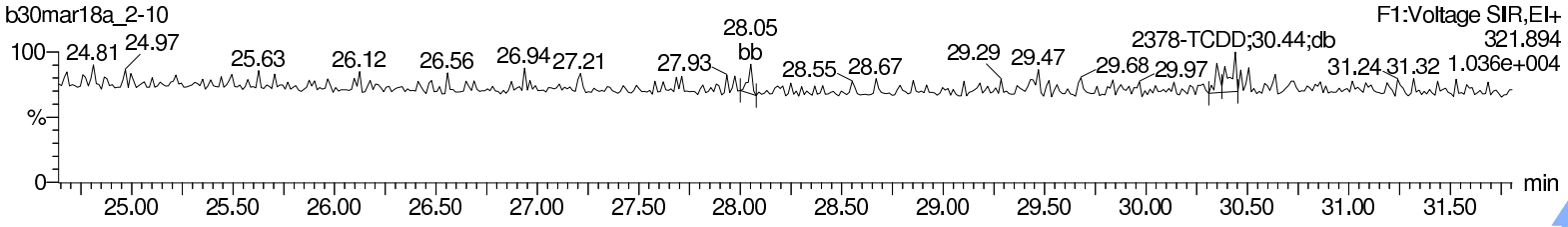
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-tetradioxins



Total-tetradioxins



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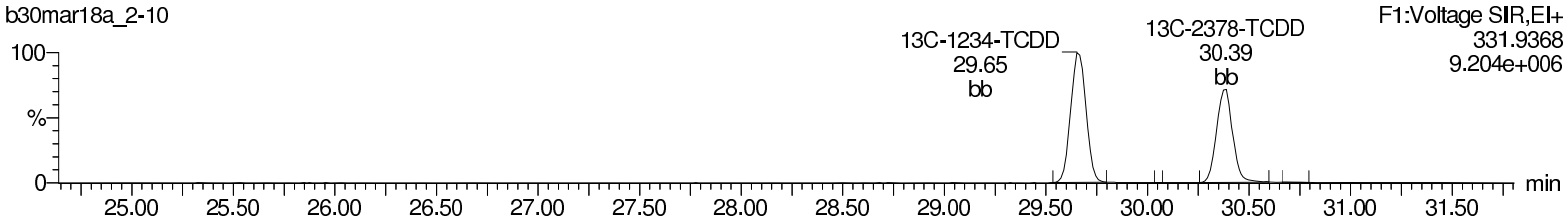

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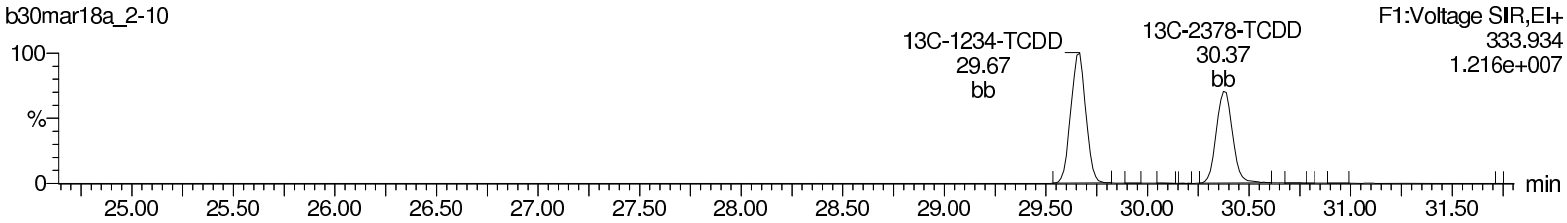

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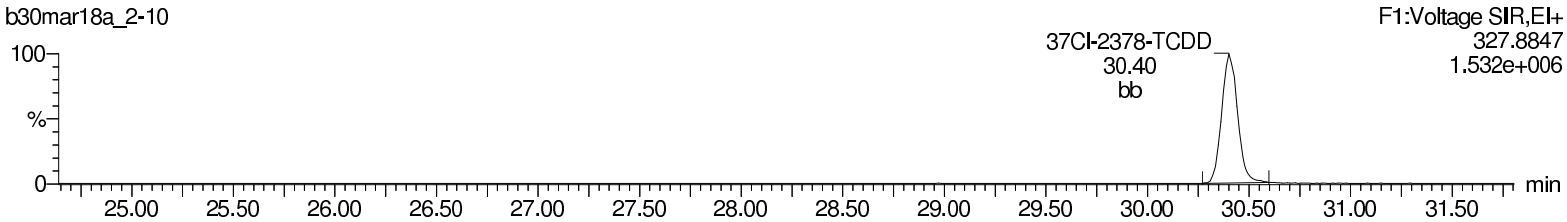

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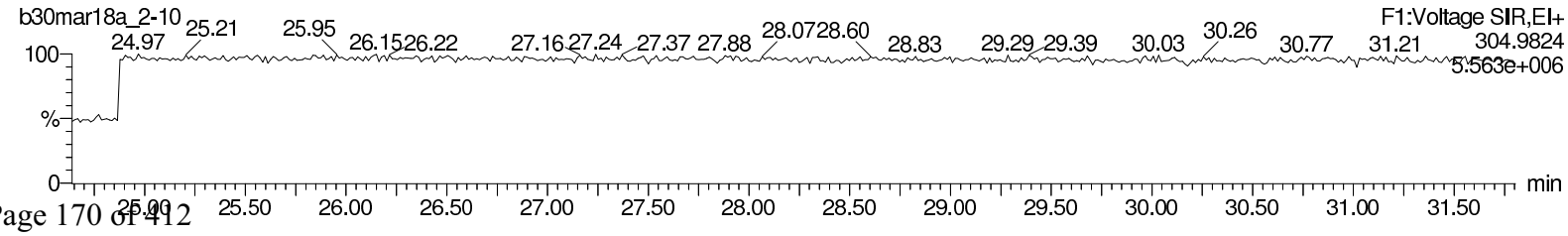

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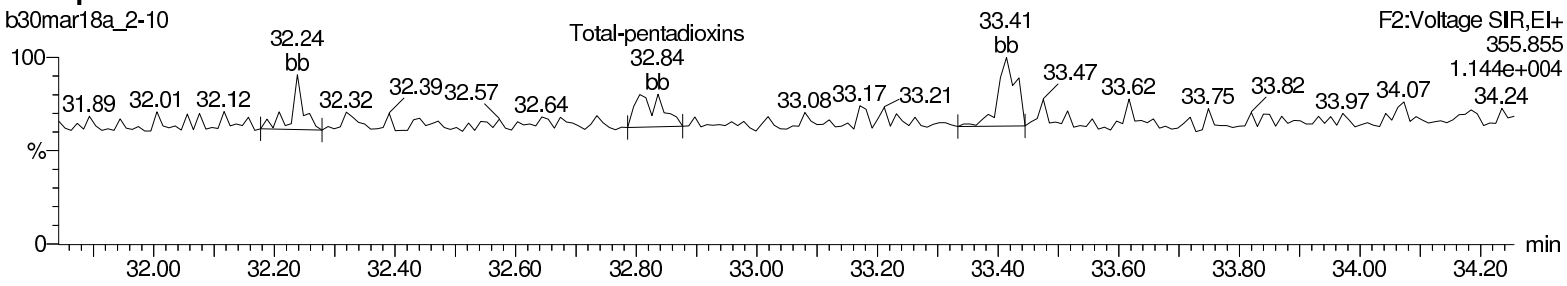
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentadioxins



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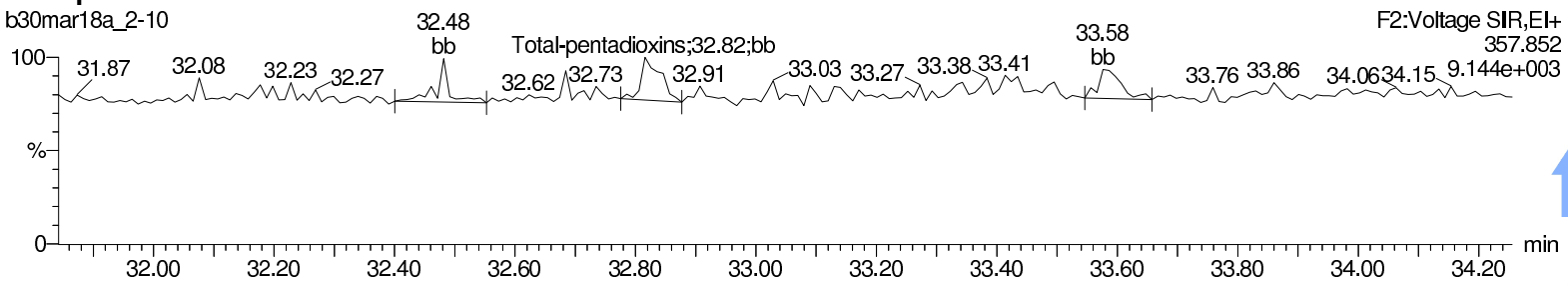

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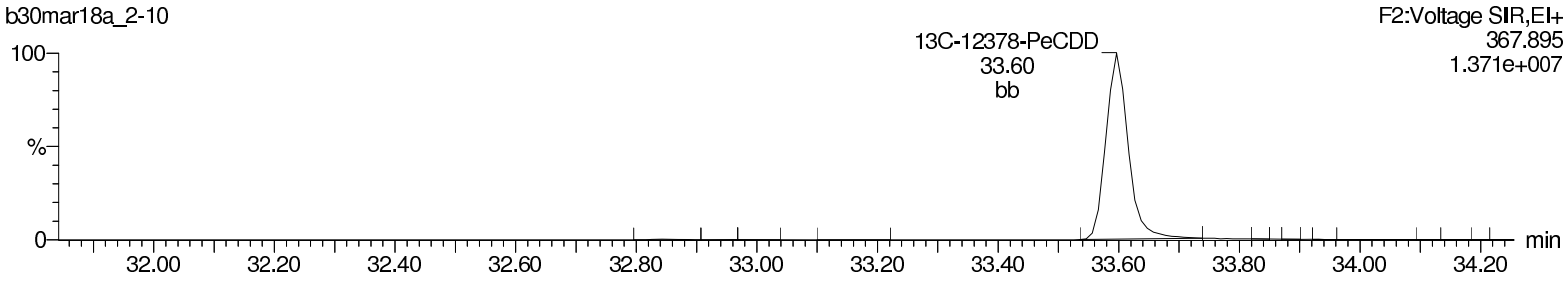

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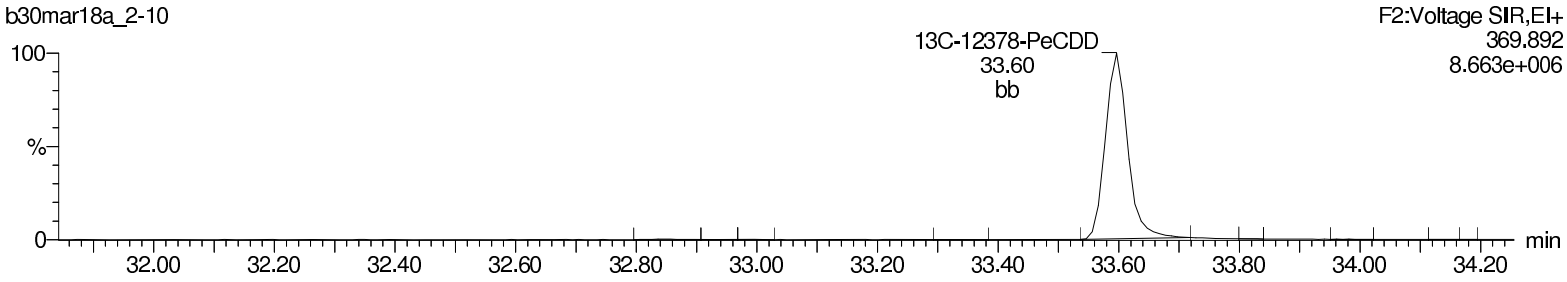

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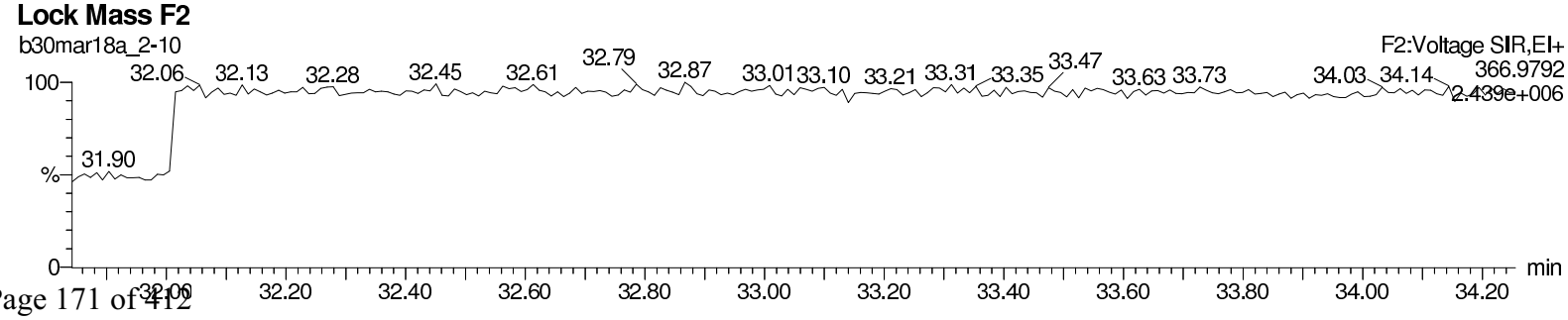

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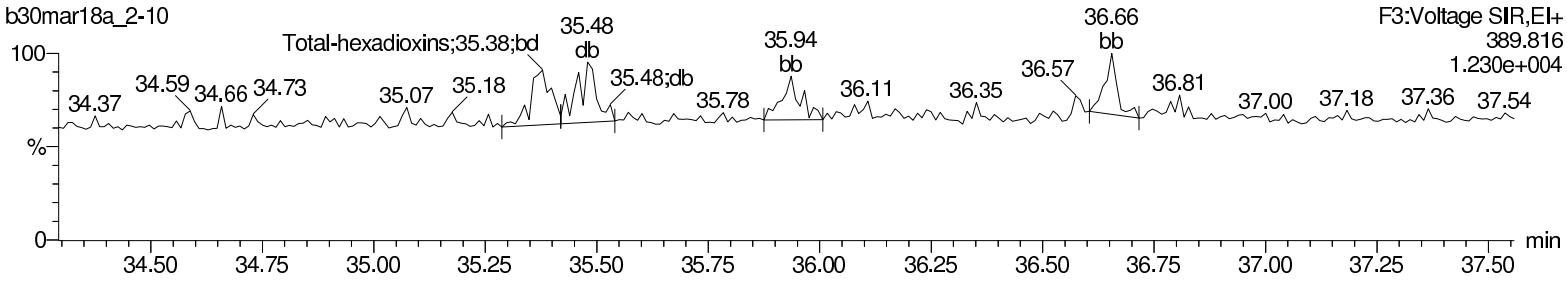
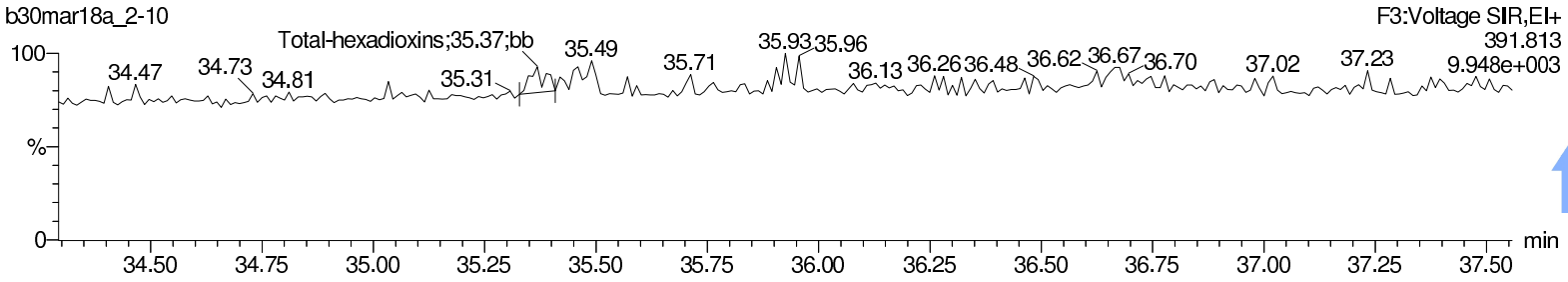
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

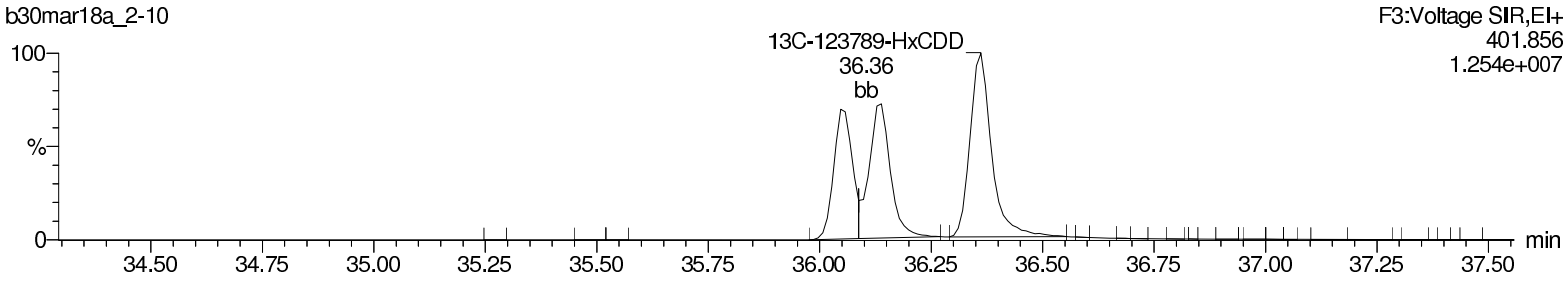
Total-hexadioxins



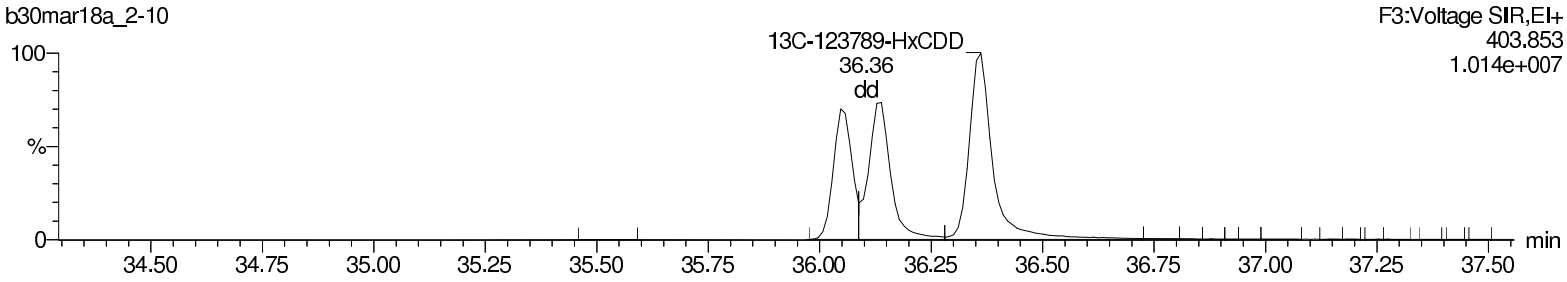
Total-hexadioxins



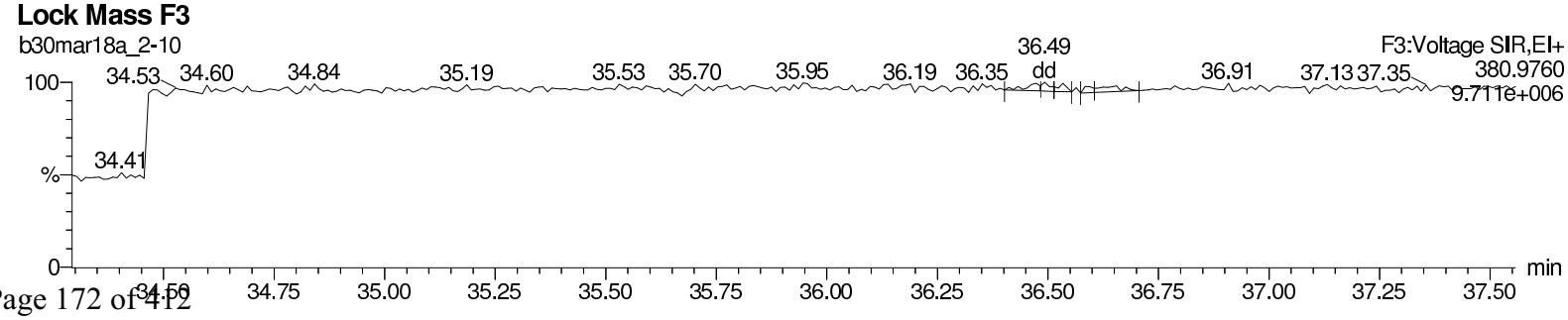
13C-123478-HxCDD



13C-123478-HxCDD



Lock Mass F3

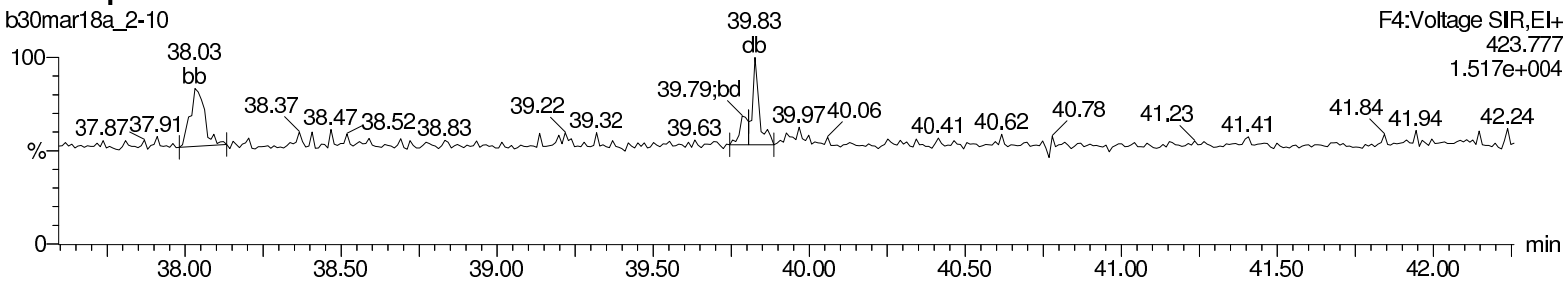


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

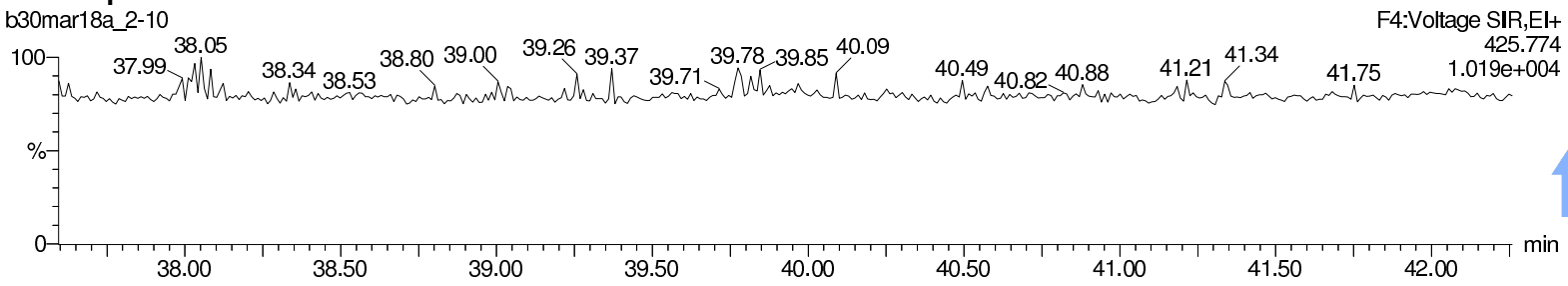
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

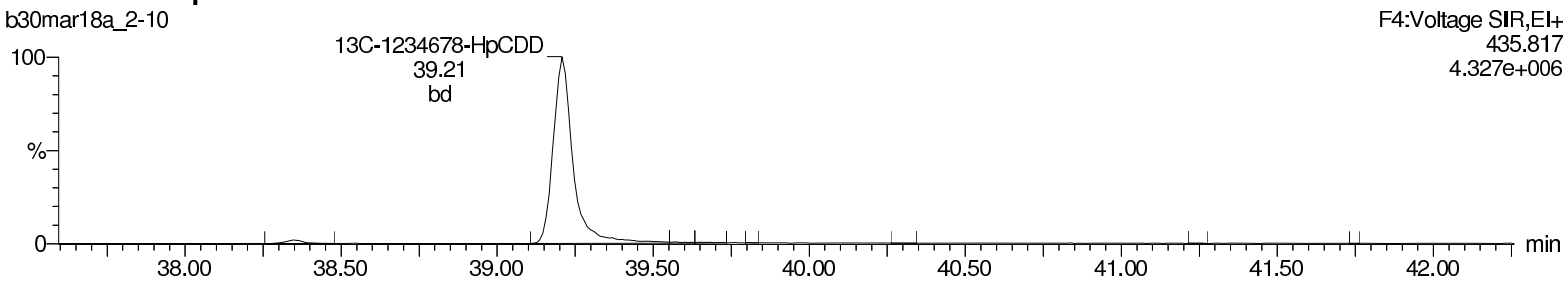
Total-heptadioxins



Total-heptadioxins



13C-1234678-HpCDD



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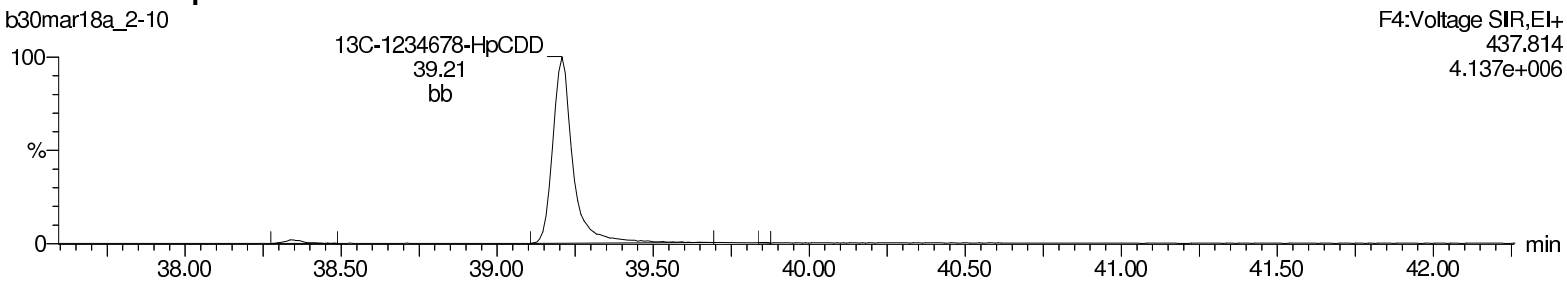

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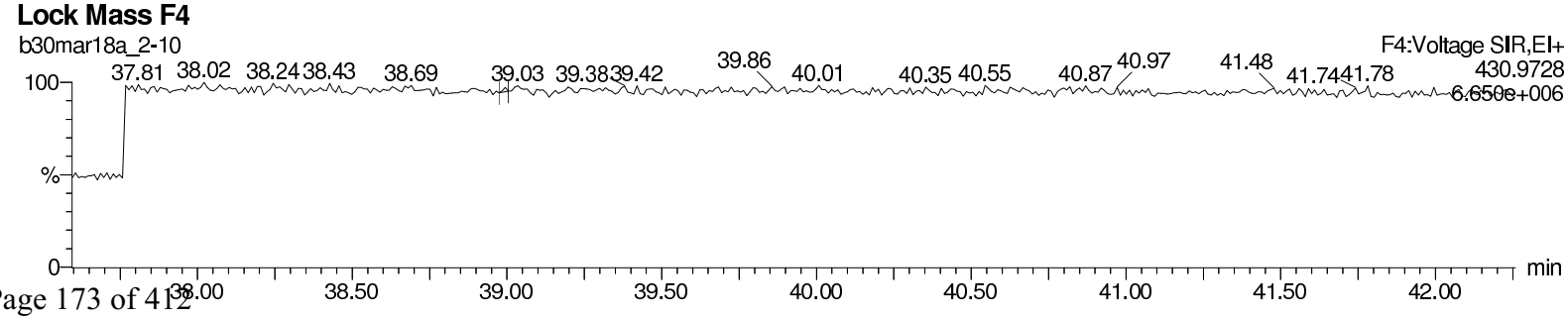

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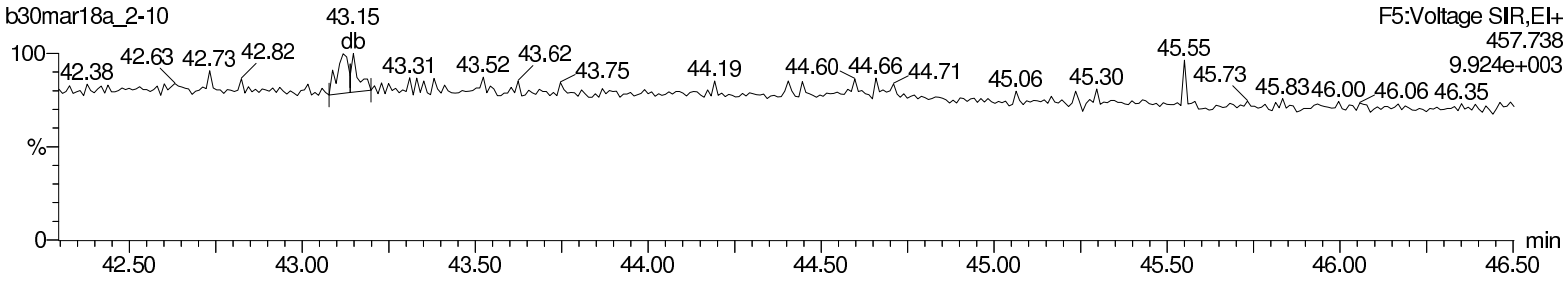
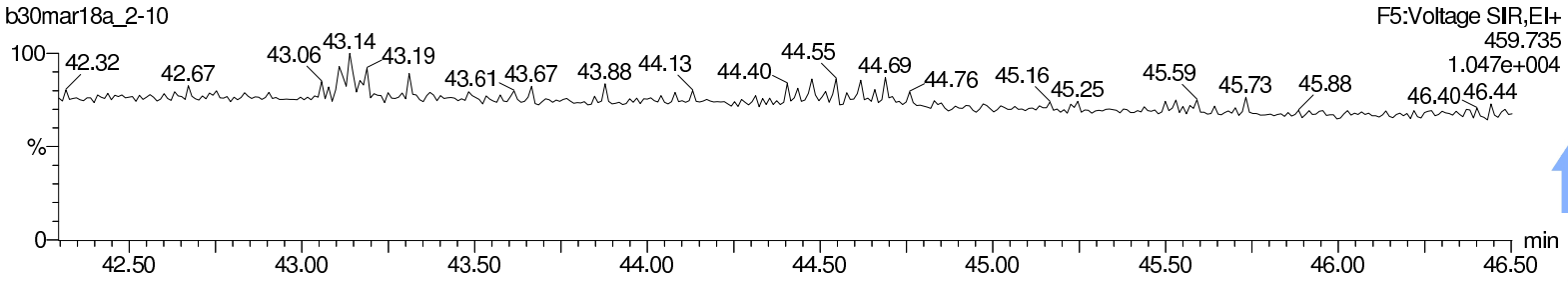
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

OCDD



OCDD



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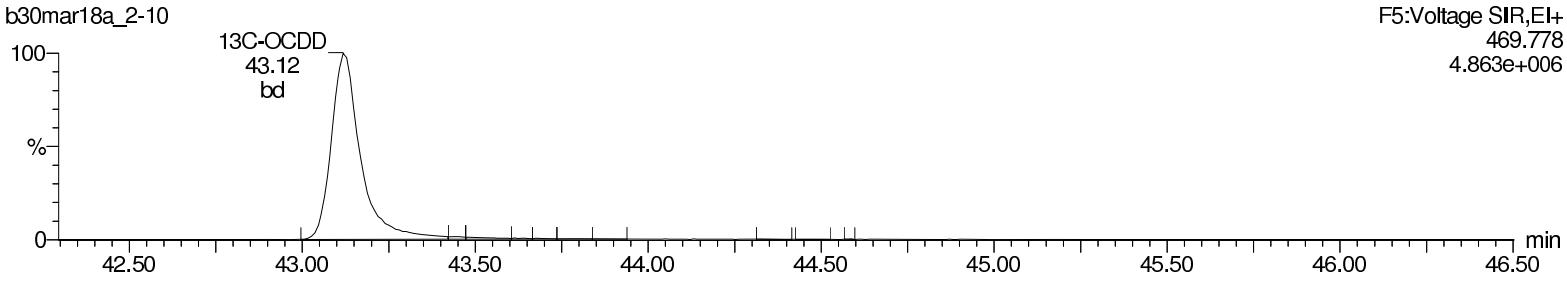
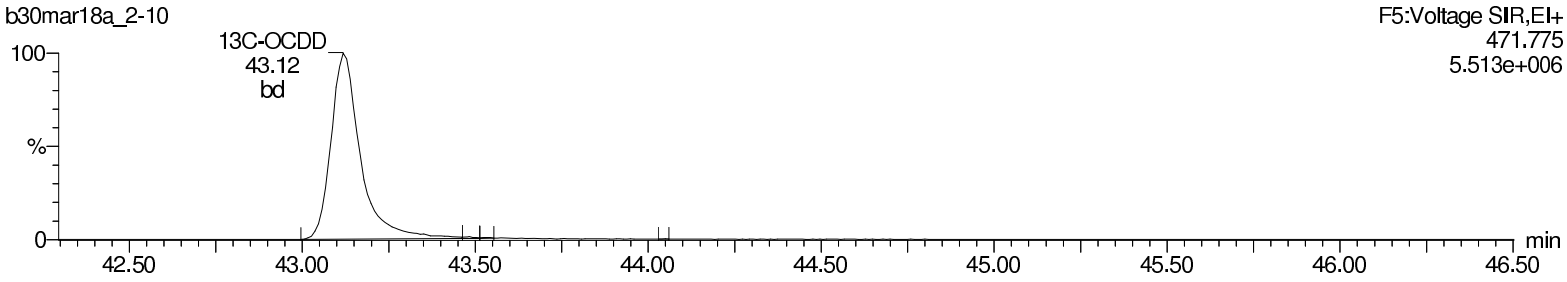
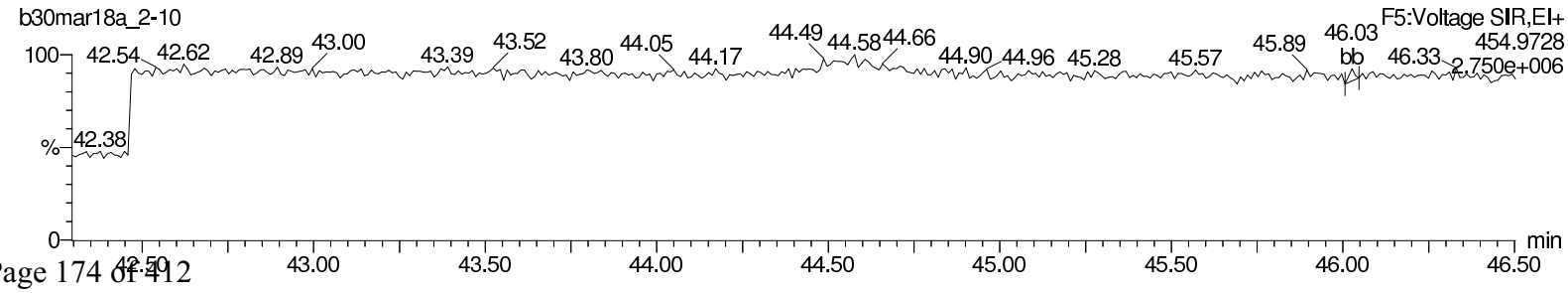


13C-OCDD



Lock Mass F5



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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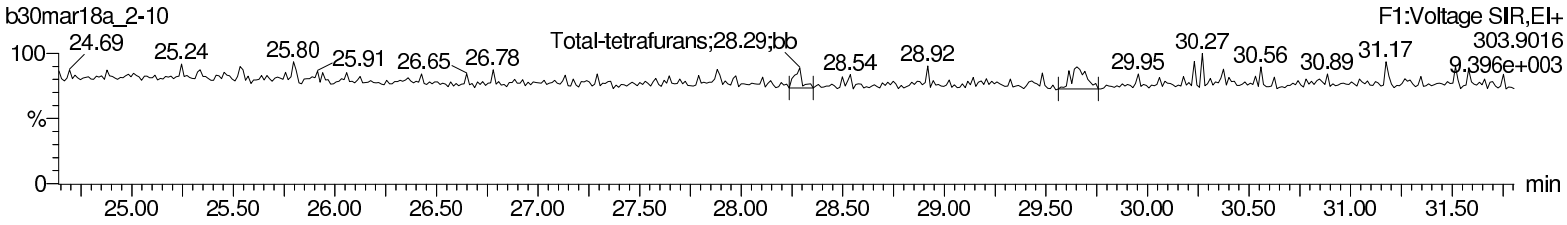
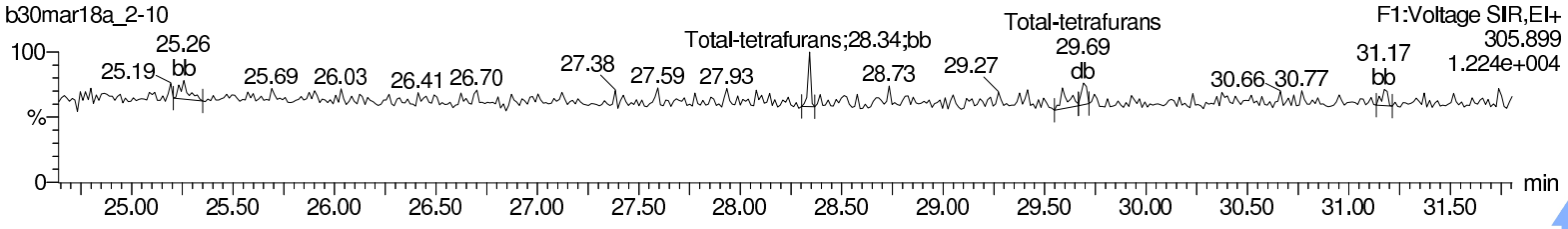
Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

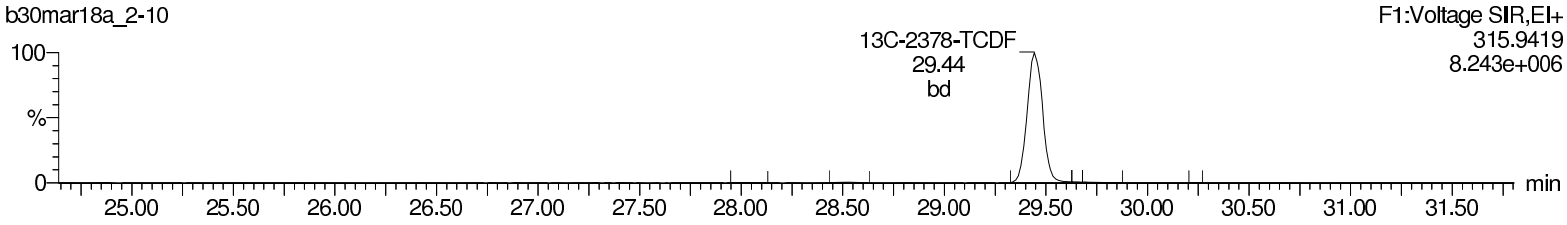
Total-tetrafurans



Total-tetrafurans



13C-2378-TCDF



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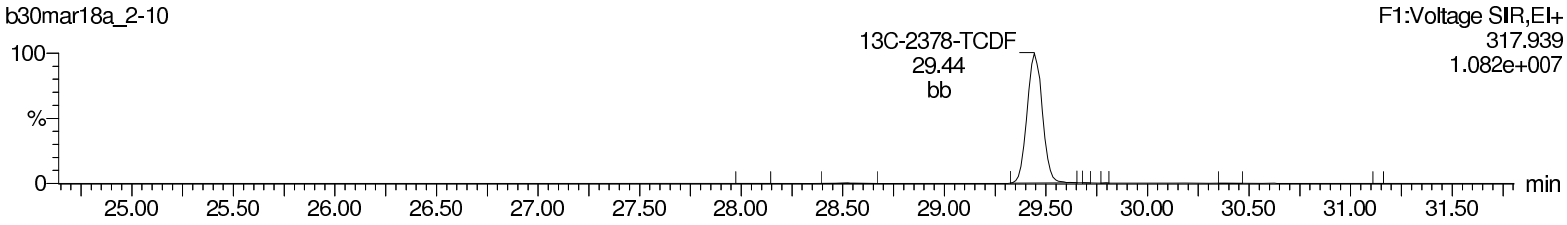
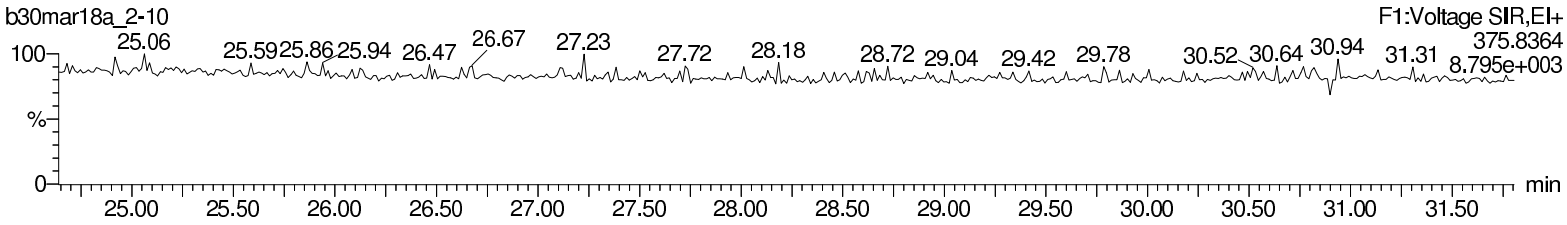
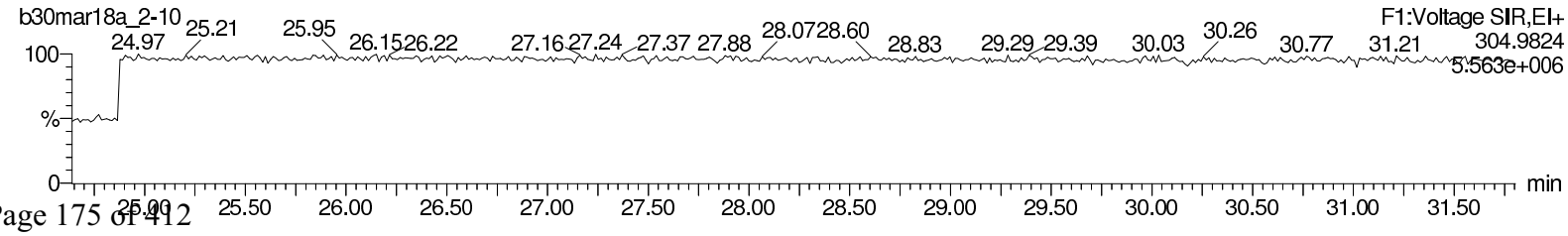


HxDPE



Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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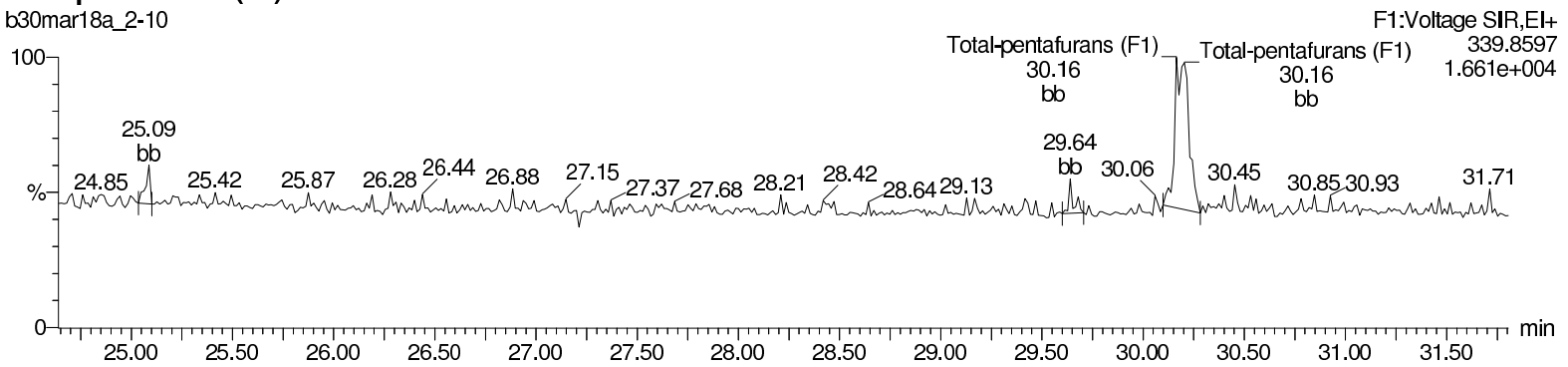
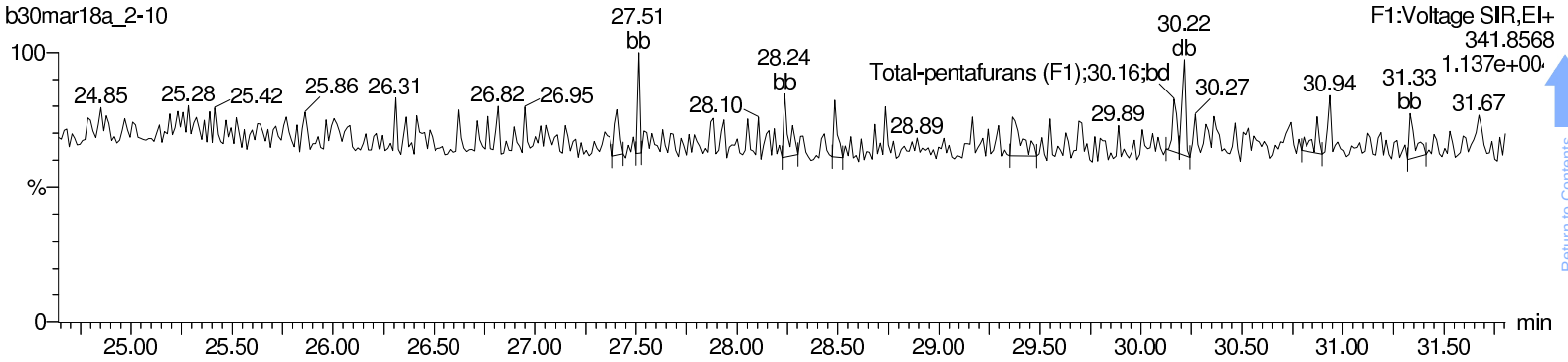
Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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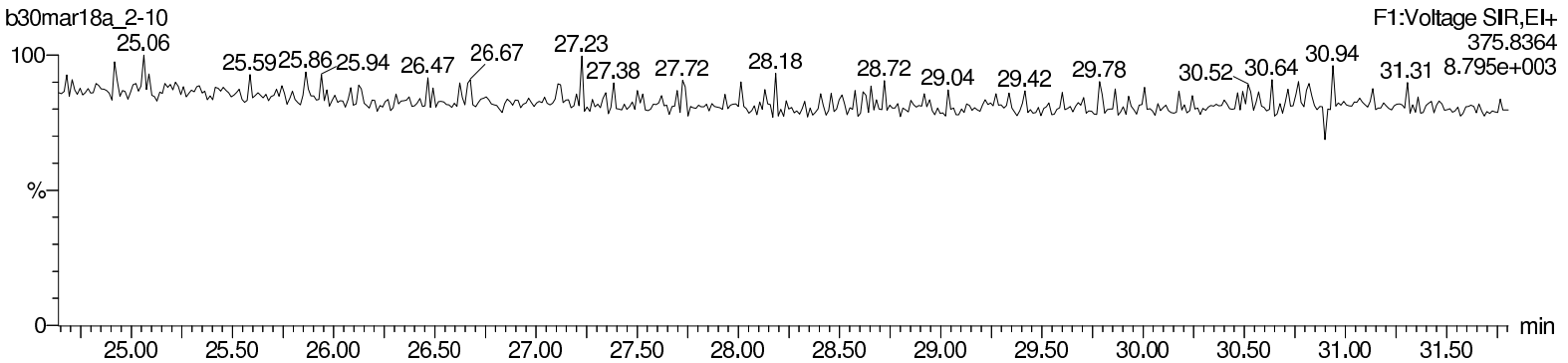
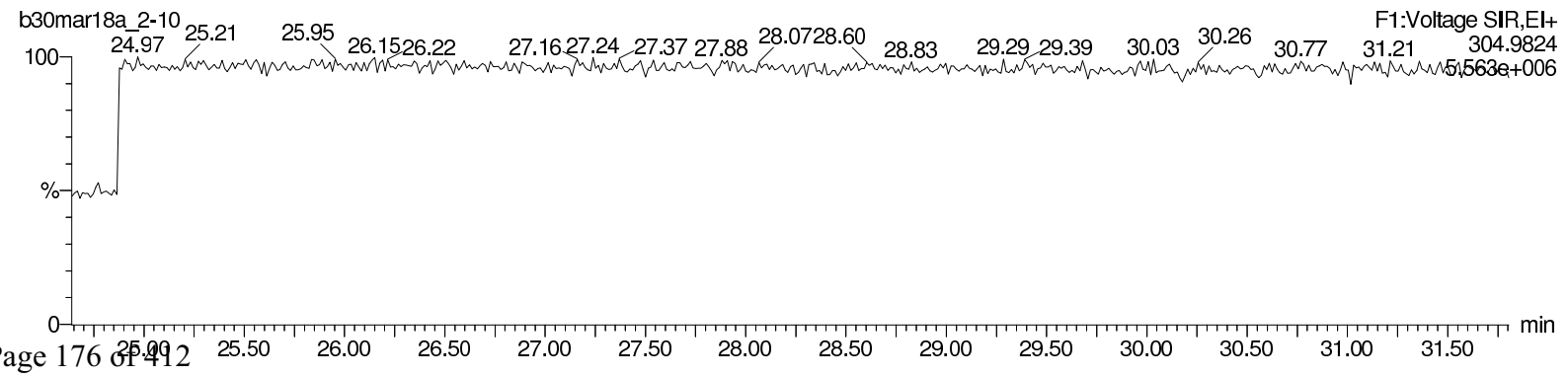


Lock Mass F1



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Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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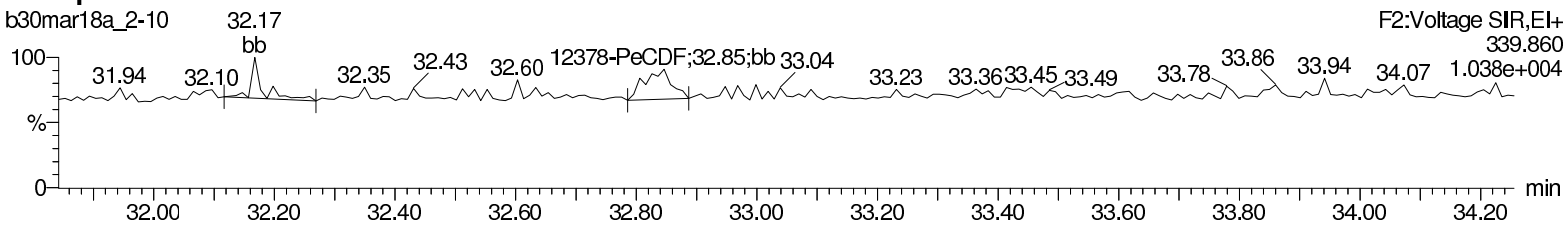
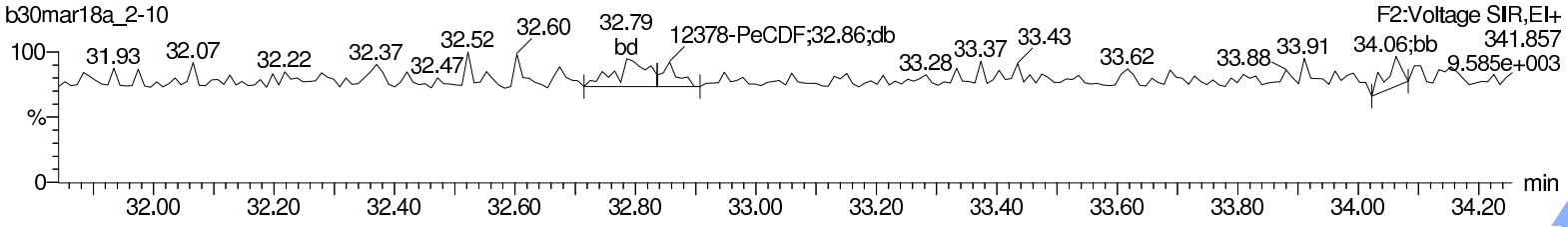
Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

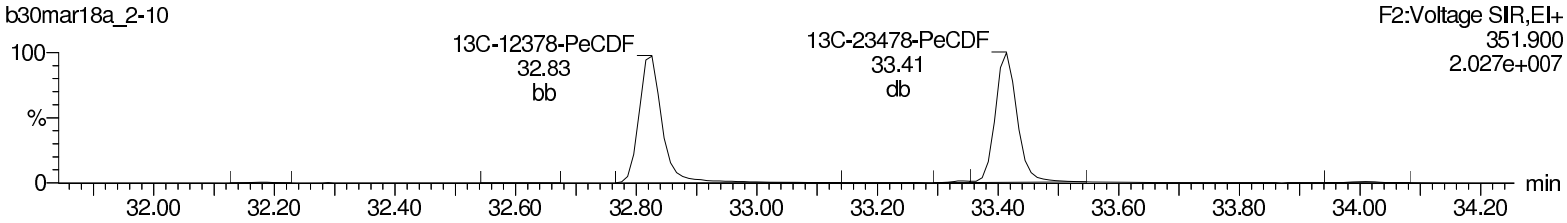
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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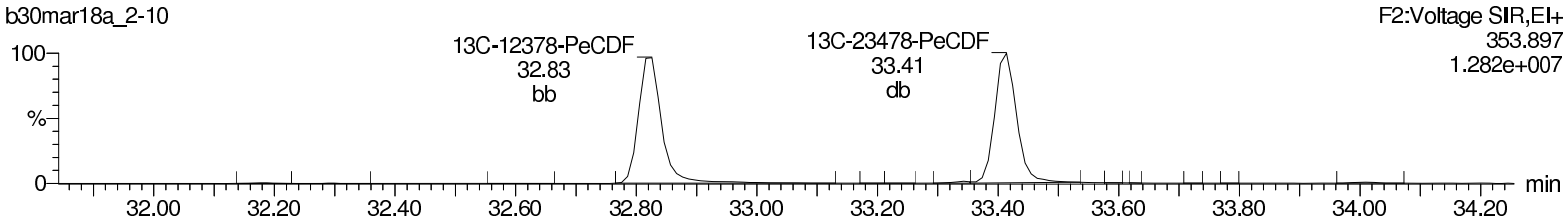

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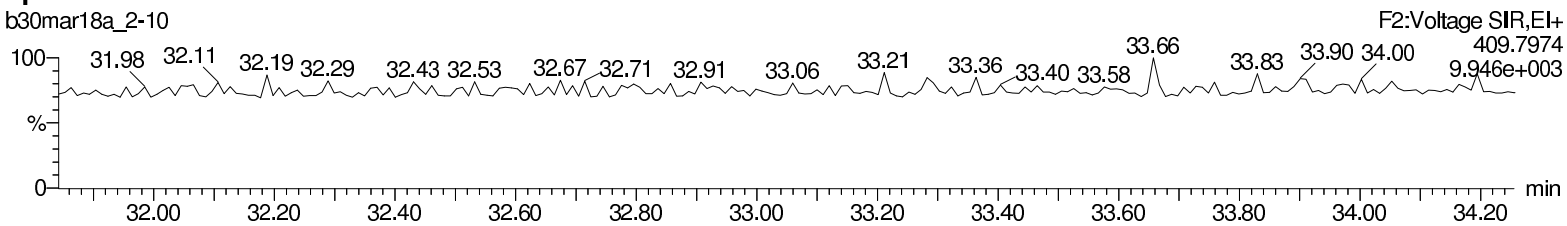
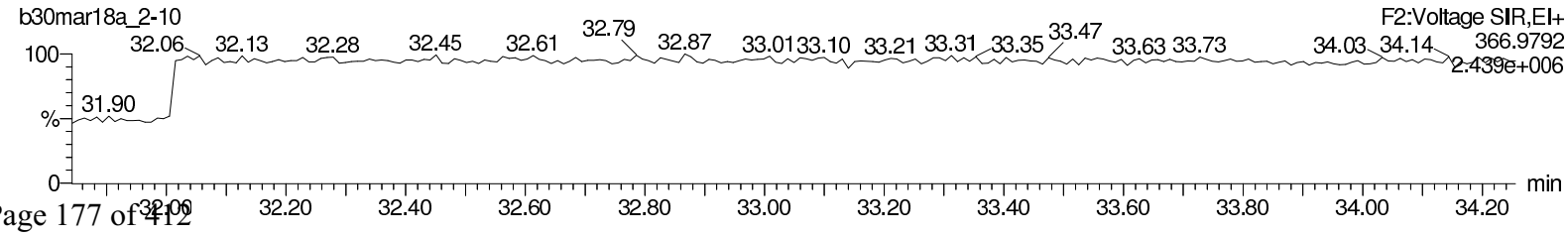


Lock Mass F2

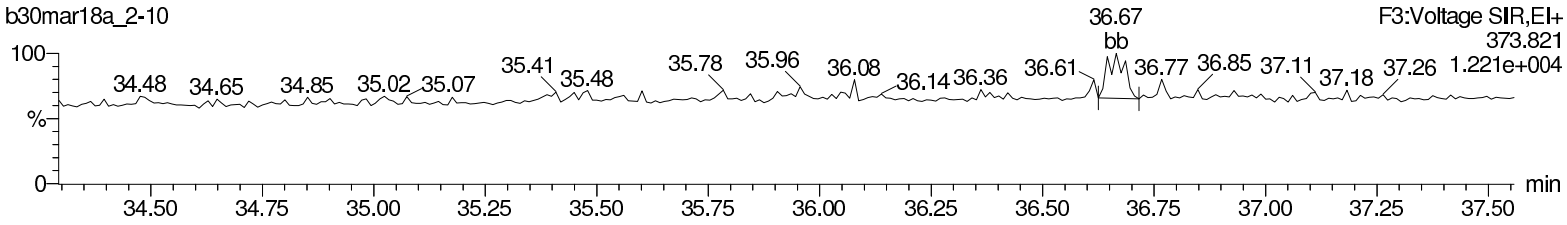


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

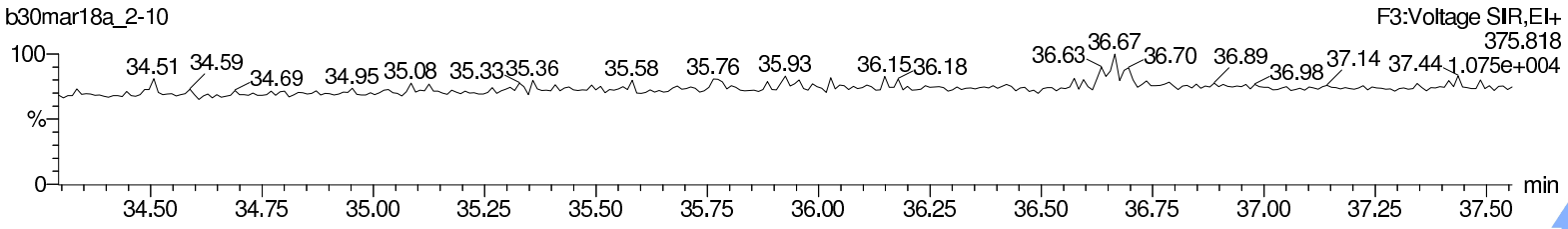
Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
Printed: Monday, April 02, 2018 10:12:47 Eastern Standard Time

Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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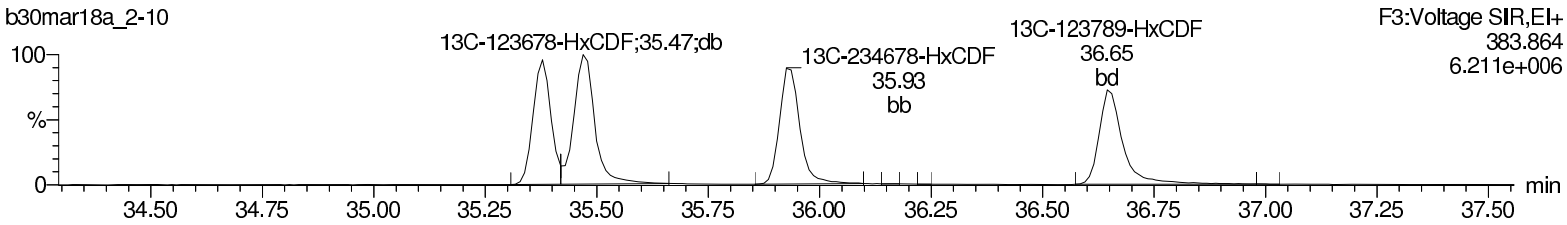

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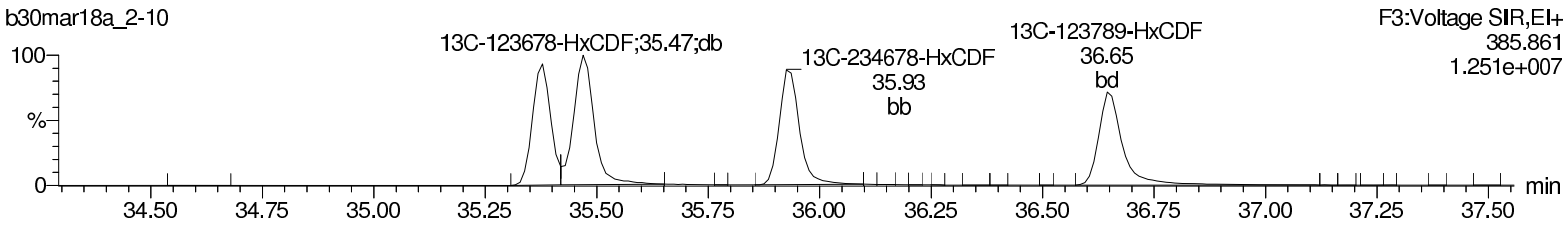
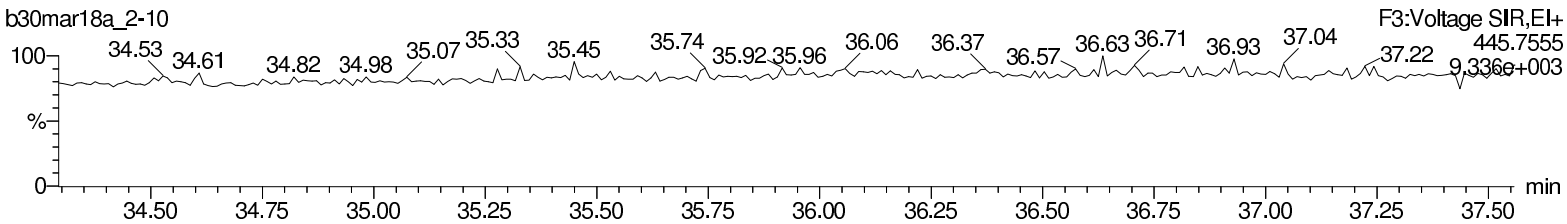
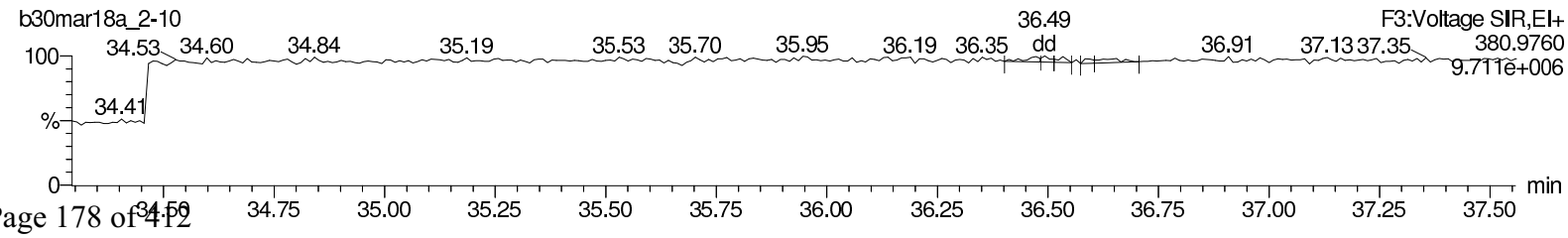


OcDPE



Lock Mass F3



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

Last Altered: Monday, April 02, 2018 10:11:06 Eastern Standard Time
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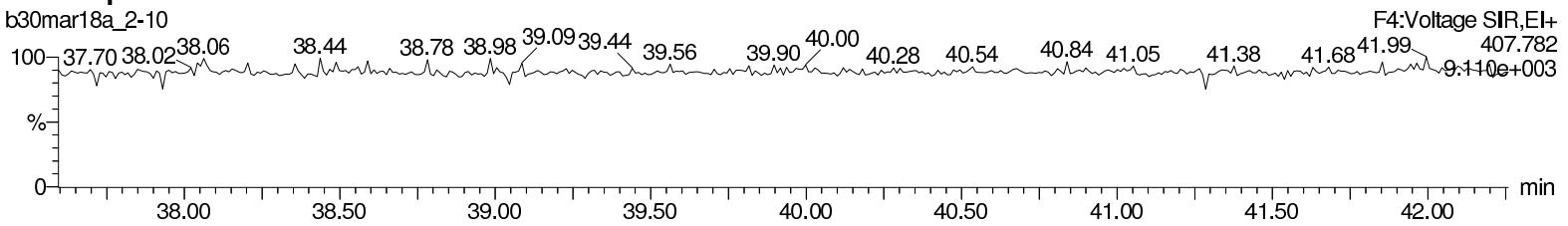
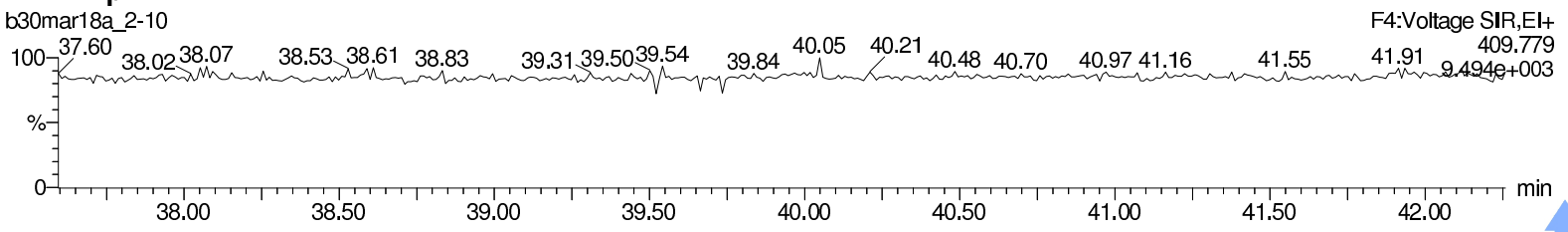
Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

Total-heptafurans



Total-heptafurans



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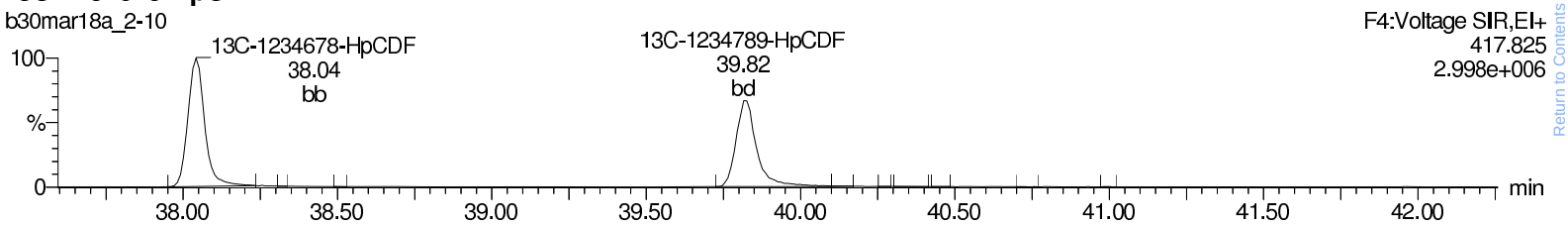

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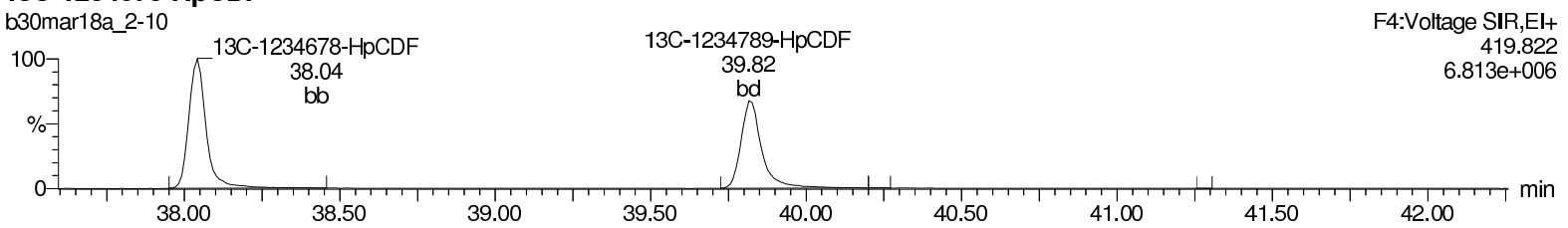
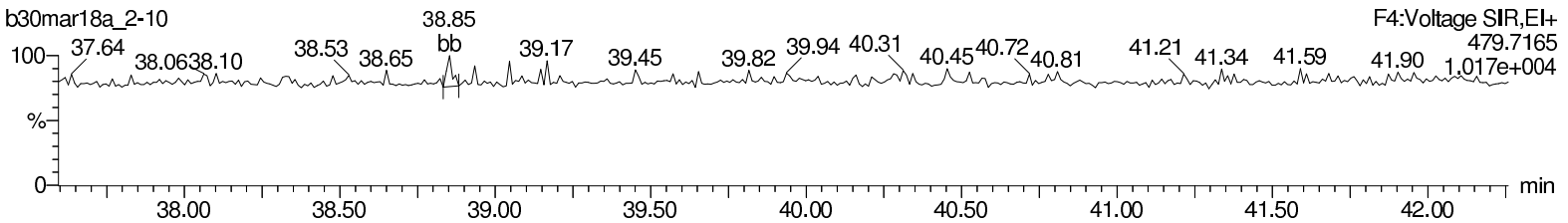
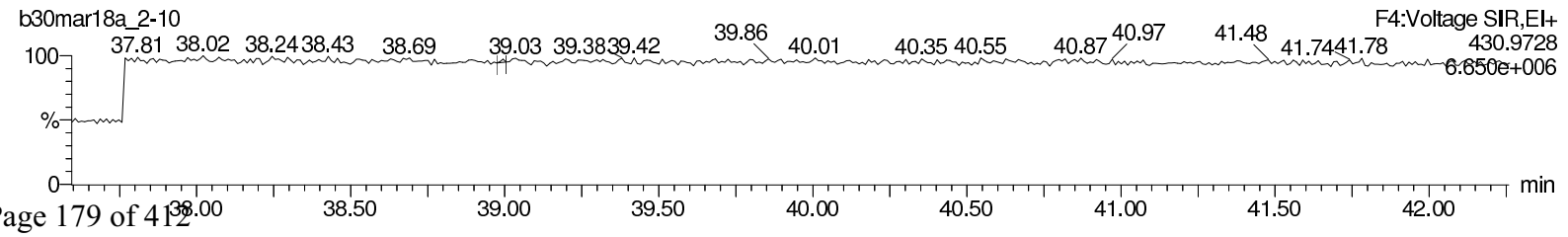


NoDPE



Lock Mass F4



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b30mar18a_2.qld

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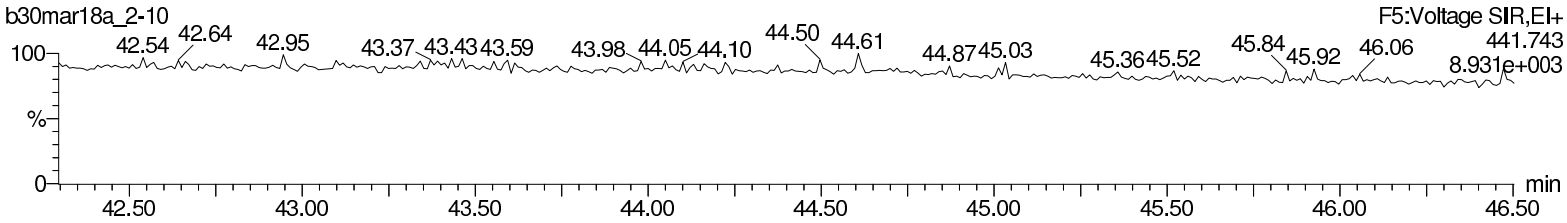
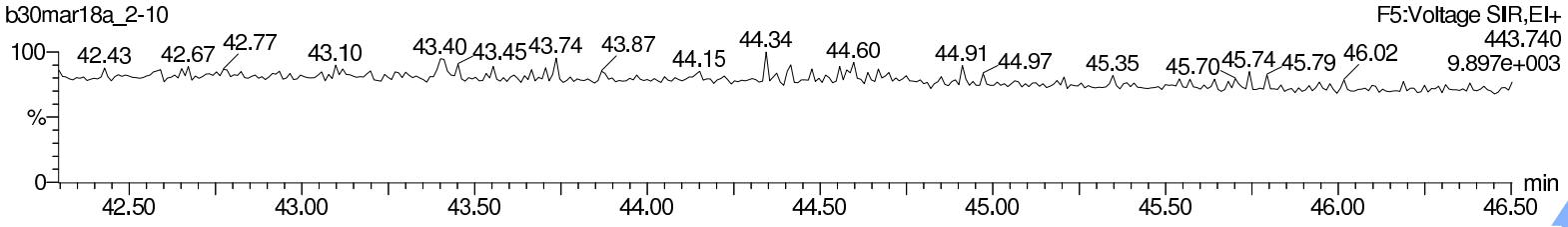
Name: b30mar18a_2-10, Date: 31-Mar-2018, Time: 01:52:23, ID: 13123007-1, Description: 37301, Job: HSM1613_1L, Task: HRP763_1, User: CLP

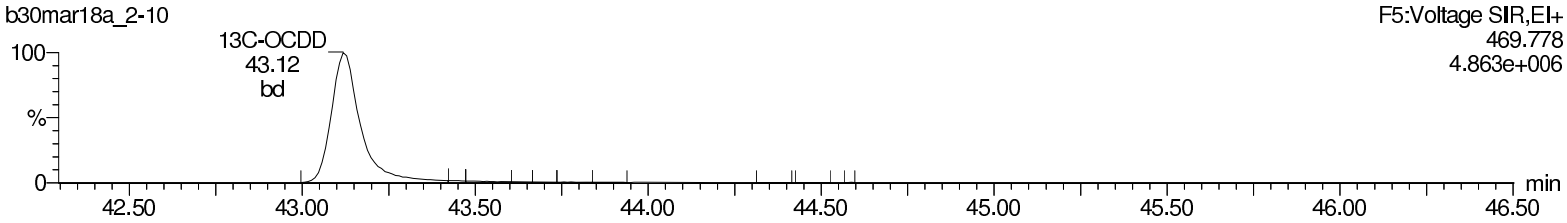
OCDF



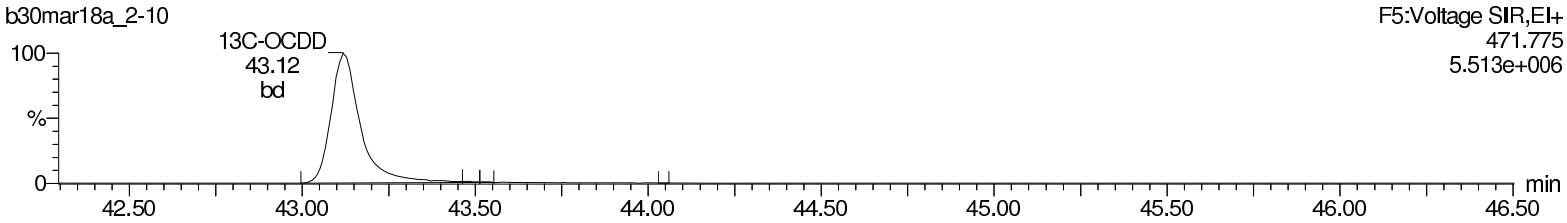
OCDF



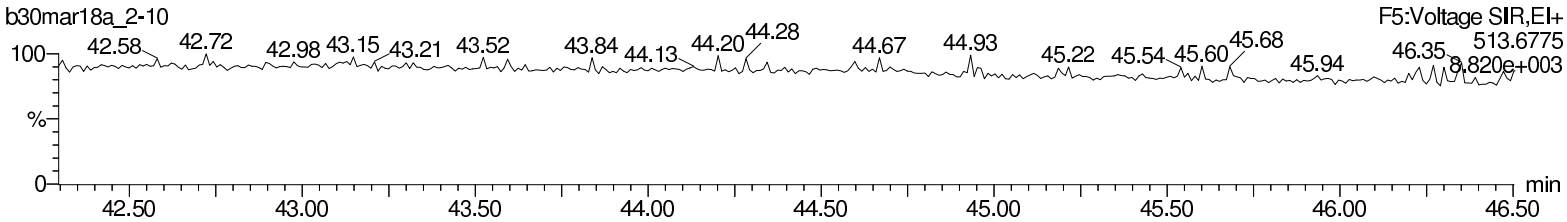
13C-OCDD



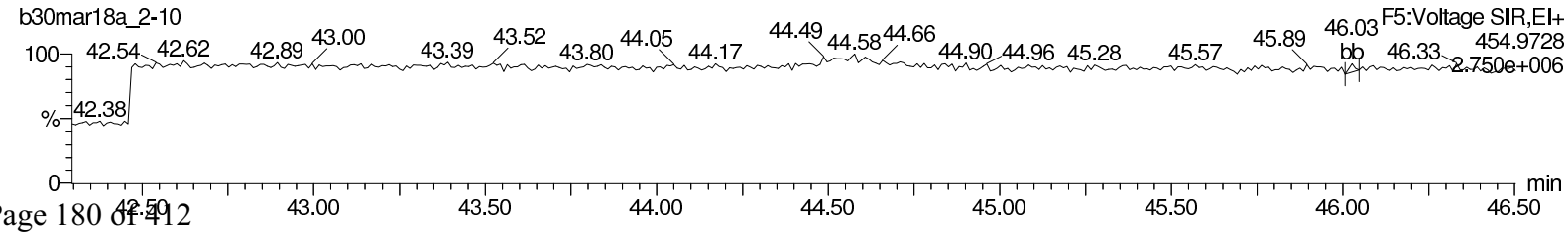
13C-OCDD



DeDPE



Lock Mass F5



Quality Control Raw Data

Return to Contents

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**12020981**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 37284**				
Client ID:	**MB for batch 37284**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/29/2018 22:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b28mar18b_4-3**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.000736	ng/L	0.000736	0.010
40321-76-4	1,2,3,7,8-PeCDD	U	0.000476	ng/L	0.000476	0.050
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.000774	ng/L	0.000774	0.050
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.000758	ng/L	0.000758	0.050
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.000788	ng/L	0.000788	0.050
35822-46-9	1,2,3,4,6,7,8-HpCDD	JK	0.00076	ng/L	0.000616	0.050
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.00126	ng/L	0.00094	0.100
51207-31-9	2,3,7,8-TCDF	U	0.000468	ng/L	0.000468	0.010
57117-41-6	1,2,3,7,8-PeCDF	JK	0.00078	ng/L	0.000306	0.050
57117-31-4	2,3,4,7,8-PeCDF	JK	0.00056	ng/L	0.00026	0.050
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.000404	ng/L	0.000404	0.050
57117-44-9	1,2,3,6,7,8-HxCDF	JK	0.00052	ng/L	0.000406	0.050
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.00068	ng/L	0.00042	0.050
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.00078	ng/L	0.000554	0.050
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.00058	ng/L	0.000382	0.050
55673-89-7	1,2,3,4,7,8,9-HpCDF	JK	0.00066	ng/L	0.00055	0.050
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.00103	ng/L	0.00103	0.100
41903-57-5	Total TeCDD	U	0.000736	ng/L	0.000736	0.010
36088-22-9	Total PeCDD	U	0.000476	ng/L	0.000476	0.050
34465-46-8	Total HxCDD	U	0.000758	ng/L	0.000758	0.050
37871-00-4	Total HpCDD	JK	0.00076	ng/L	0.000616	0.050
30402-14-3	Total TeCDF	U	0.000468	ng/L	0.000468	0.010
30402-15-4	Total PeCDF	JK	0.00134	ng/L	0.00026	0.050
55684-94-1	Total HxCDF	JK	0.00198	ng/L	0.000404	0.050
38998-75-3	Total HpCDF	JK	0.00124	ng/L	0.000382	0.050
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00041	ng/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.00118	ng/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.71	2.00	ng/L	85.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1.57	2.00	ng/L	78.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1.59	2.00	ng/L	79.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1.67	2.00	ng/L	83.4	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1.77	2.00	ng/L	88.7	(23%-140%)
13C-OCDD		3.21	4.00	ng/L	80.2	(17%-157%)
13C-2,3,7,8-TCDF		1.83	2.00	ng/L	91.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		1.82	2.00	ng/L	90.9	(24%-185%)
13C-2,3,4,7,8-PeCDF		1.78	2.00	ng/L	88.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1.62	2.00	ng/L	81.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1.68	2.00	ng/L	83.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1.68	2.00	ng/L	84.2	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1.75	2.00	ng/L	87.3	(29%-147%)

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Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**12020981**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 37284**				
Client ID:	**MB for batch 37284**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/29/2018 22:52**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b28mar18b_4-3**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1.62	2.00	ng/L	80.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1.72	2.00	ng/L	85.9	(26%-138%)
37Cl-2,3,7,8-TCDD		0.176	0.200	ng/L	88.1	(35%-197%)

Comments:

J **Value is estimated**
K **Estimated Maximum Possible Concentration**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, April 06, 2018 14:51:30 Eastern Standard Time
Printed: Friday, April 06, 2018 14:52:05 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD							NO		0.0368		1339			893			
2	12378-PeCDD	1.63e2	1.52e2	3.16e2	33.61	1.000	1.07	YES	0.031	0.0238	2.86e3	1329	2.2	3.42e3	730	4.7	MM	bb
3	123478-HxCDD	9.34e1	8.03e1	1.74e2	36.08	1.000	1.16	NO	0.019	0.0387	3.50e3	1613	2.2	2.40e3	1113	2.2	bd	bd
4	123678-HxCDD	1.27e2	1.02e2	2.29e2	36.17	1.001	1.24	NO	0.022	0.0379	3.76e3	1613	2.3	3.03e3	1113	2.7	db	dd
5	123789-HxCDD	1.68e2	8.30e1	2.51e2	36.39	1.007	2.02	YES	0.026	0.0394	2.80e3	1613	1.7	2.64e3	1113	2.4	bb	bb
6	1234678-HpCDD	1.51e2	1.89e2	3.39e2	39.25	1.001	0.80	YES	0.038	0.0308	3.32e3	849	3.9	3.41e3	688	5.0	bb	bb
7	OCDD	2.06e2	2.35e2	4.41e2	43.15	1.000	0.88	NO	0.063	0.0470	3.81e3	526	7.2	4.63e3	854	5.4	MM	bb
8	2378-TCDF	6.27e1	6.95e1	1.32e2	29.43	0.999	0.90	YES	0.007	0.0234	2.67e3	726	3.7	1.50e3	1105	1.4	bb	bd
9	12378-PeCDF	3.22e2	2.84e2	6.06e2	32.85	1.000	1.14	YES	0.039	0.0153	7.67e3	848	9.0	5.77e3	1174	4.9	MM	bb
10	23478-PeCDF	2.16e2	2.58e2	4.75e2	33.44	1.001	0.84	YES	0.028	0.0130	7.03e3	848	8.3	6.24e3	1174	5.3	MM	bb
11	123478-HxCDF	2.01e2	9.39e1	2.94e2	35.40	1.000	2.14	YES	0.025	0.0202	5.83e3	1083	5.4	1.94e3	821	2.4	bd	bd
12	123678-HxCDF	1.70e2	1.79e2	3.49e2	35.48	1.000	0.95	YES	0.026	0.0203	3.28e3	1083	3.0	2.99e3	821	3.6	db	MM
13	234678-HxCDF	2.39e2	1.91e2	4.30e2	35.97	1.001	1.25	NO	0.034	0.0210	4.80e3	1083	4.4	4.40e3	821	5.4	MM	MM
14	123789-HxCDF	2.35e2	1.93e2	4.28e2	36.67	1.000	1.22	NO	0.039	0.0277	5.51e3	1083	5.1	3.83e3	821	4.7	bb	MM
15	1234678-HpCDF	1.46e2	1.42e2	2.87e2	38.06	1.000	1.03	NO	0.029	0.0191	2.10e3	669	3.1	2.57e3	581	4.4	bb	bb
16	1234789-HpCDF	1.72e2	1.09e2	2.80e2	39.83	1.000	1.58	YES	0.033	0.0275	5.59e3	669	8.4	1.94e3	581	3.3	bb	bb
17	OCDF	1.63e2	1.74e2	3.36e2	43.42	1.007	0.94	NO	0.047	0.0516	2.26e3	663	3.4	4.10e3	873	4.7	MM	MM
18	13C-2378-TCDD	7.16e5	9.29e5	1.64e6	30.39	1.024	0.77	NO	85.251	0.0789	7.41e6	3521	2104.7	9.53e6	2767	3445.5	bb	bb
19	13C-12378-PeCDD	7.82e5	4.95e5	1.28e6	33.61	1.133	1.58	NO	78.612	0.0869	1.68e7	2915	5753.9	1.05e7	2911	3606.9	bb	bb
20	13C-123478-HxCDD	5.98e5	4.84e5	1.08e6	36.07	0.992	1.24	NO	79.282	0.104	1.16e7	5111	2277.1	9.35e6	4543	2057.6	bd	bd
21	13C-123678-HxCDD	6.85e5	5.59e5	1.24e6	36.15	0.994	1.23	NO	83.371	0.0952	1.18e7	5111	2304.8	9.60e6	4543	2112.4	db	db
22	13C-1234678-HpCDD	4.51e5	4.37e5	8.88e5	39.22	1.078	1.03	NO	88.682	0.132	6.31e6	4443	1421.2	6.04e6	4517	1337.2	bb	bb
23	13C-OCDD	7.26e5	8.20e5	1.55e6	43.13	1.186	0.88	NO	160.391	0.140	7.57e6	4586	1651.0	8.51e6	4605	1848.1	bd	bd
24	13C-2378-TCDF	9.08e5	1.16e6	2.07e6	29.46	0.993	0.78	NO	91.742	0.0926	9.30e6	5364	1733.8	1.19e7	3274	3632.8	bb	bb
25	13C-12378-PeCDF	1.17e6	7.41e5	1.91e6	32.83	1.107	1.57	NO	90.886	0.127	2.45e7	7334	3343.8	1.57e7	3646	4293.8	bd	bd
26	13C-23478-PeCDF	1.13e6	7.23e5	1.85e6	33.42	1.127	1.56	NO	88.871	0.128	2.57e7	7334	3501.5	1.64e7	3646	4501.7	bb	bb
27	13C-123478-HxCDF	3.99e5	7.86e5	1.18e6	35.39	0.973	0.51	NO	81.149	0.150	7.93e6	7386	1073.2	1.58e7	7468	2116.3	bd	bd
28	13C-123678-HxCDF	4.90e5	9.27e5	1.42e6	35.48	0.975	0.53	NO	83.876	0.129	8.66e6	7386	1172.8	1.68e7	7468	2256.2	db	db
29	13C-234678-HxCDF	4.04e5	8.04e5	1.21e6	35.94	0.988	0.50	NO	84.247	0.152	7.34e6	7386	993.5	1.45e7	7468	1946.0	bb	bb
30	13C-123789-HxCDF	3.95e5	7.50e5	1.14e6	36.67	1.008	0.53	NO	87.303	0.167	6.21e6	7386	840.7	1.18e7	7468	1586.7	bd	bb
31	13C-1234678-HpCDF	2.75e5	6.37e5	9.12e5	38.05	1.046	0.43	NO	80.843	0.117	4.51e6	3854	1170.6	1.02e7	5139	1984.8	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, April 06, 2018 14:51:30 Eastern Standard Time
Printed: Friday, April 06, 2018 14:52:05 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.32e5	5.39e5	7.71e5	39.83	1.095	0.43	NO	85.946	0.147	3.08e6	3854	800.4	6.85e6	5139	1333.2	bb	bd
33	13C-1234-TCDD	7.35e5	9.54e5	1.69e6	29.67	0.000	0.77	NO	100.000	0.0901	7.59e6	3521	2156.7	9.72e6	2767	3512.4	bb	bb
34	13C-123789-HxCDD	7.39e5	5.90e5	1.33e6	36.37	0.000	1.25	NO	100.000	0.107	1.25e7	5111	2455.4	1.02e7	4543	2249.3	bd	bb
35	37Cl-2378-TCDD	1.73e5		1.73e5	30.40	1.025			8.807	0.0140	1.71e6	1133	1511.0				bb	

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, April 06, 2018 14:51:30 Eastern Standard Time
Printed: Friday, April 06, 2018 14:52:05 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

TD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1																	

PD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	12378-PeCDD	1.63e2	1.52e2	3.16e2	33.61	1.07	YES	0.031	0.0238	2.86e3	1329	2.2	3.42e3	730	4.7	MM	bb

HD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	123789-HxCDD	1.68e2	8.30e1	2.51e2	36.39	2.02	YES	0.026	0.0394	2.80e3	1613	1.7	2.64e3	1113	2.4	bb	bb
2	123678-HxCDD	1.27e2	1.02e2	2.29e2	36.17	1.24	NO	0.022	0.0379	3.76e3	1613	2.3	3.03e3	1113	2.7	db	dd
3	123478-HxCDD	9.34e1	8.03e1	1.74e2	36.08	1.16	NO	0.019	0.0387	3.50e3	1613	2.2	2.40e3	1113	2.2	bd	bd
4	Total-hexadioxins	3.00e2	5.70e1	3.57e2	35.94	5.27	YES	0.037	0.0387	6.30e3	1613	3.9	2.16e3	1113	1.9	bb	MM
5	Total-hexadioxins	2.53e2	9.69e1	3.50e2	35.48	2.61	YES	0.036	0.0387	5.24e3	1613	3.2	2.32e3	1113	2.1	db	db
6	Total-hexadioxins	2.65e2	7.13e1	3.36e2	35.38	3.72	YES	0.035	0.0387	5.09e3	1613	3.2	1.30e3	1113	1.2	bd	bd

HPD

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-heptadioxins	4.26e2	1.94e2	6.19e2	39.84	2.20	YES	0.070	0.0308	6.91e3	849	8.1	2.55e3	688	3.7	MM	MM
2	1234678-HpCDD	1.51e2	1.89e2	3.39e2	39.25	0.80	YES	0.038	0.0308	3.32e3	849	3.9	3.41e3	688	5.0	bb	bb
3	Total-heptadioxins	4.41e2	2.23e2	6.64e2	38.05	1.98	YES	0.075	0.0308	9.47e3	849	11.2	4.53e3	688	6.6	bb	bb

TF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDF	6.27e1	6.95e1	1.32e2	29.43	0.90	YES	0.007	0.0234	2.67e3	726	3.7	1.50e3	1105	1.4	bb	bd

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Quantify Totals Report MassLynx 4.1
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, April 06, 2018 14:51:30 Eastern Standard Time
Printed: Friday, April 06, 2018 14:52:05 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

PF1

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	Total-pentafurans (F1)	6.32e1	5.16e1	1.15e2	29.19	1.23	YES	0.007	0.0131	1.11e3	711	1.6	1.22e3	1169	1.0	bb	bb

PF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	23478-PeCDF	2.16e2	2.58e2	4.75e2	33.44	0.84	YES	0.028	0.0130	7.03e3	848	8.3	6.24e3	1174	5.3	MM	bb
2	12378-PeCDF	3.22e2	2.84e2	6.06e2	32.85	1.14	YES	0.039	0.0153	7.67e3	848	9.0	5.77e3	1174	4.9	MM	bb

HF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	234678-HxCDF	2.39e2	1.91e2	4.30e2	35.97	1.25	NO	0.034	0.0210	4.80e3	1083	4.4	4.40e3	821	5.4	MM	MM
2	123678-HxCDF	1.70e2	1.79e2	3.49e2	35.48	0.95	YES	0.026	0.0203	3.28e3	1083	3.0	2.99e3	821	3.6	db	MM
3	123478-HxCDF	2.01e2	9.39e1	2.94e2	35.40	2.14	YES	0.025	0.0202	5.83e3	1083	5.4	1.94e3	821	2.4	bd	bd
4	123789-HxCDF	2.35e2	1.93e2	4.28e2	36.67	1.22	NO	0.039	0.0277	5.51e3	1083	5.1	3.83e3	821	4.7	bb	MM

HPF

	Name	Ion1Area	Ion2Area	Response	RT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	1234789-HpCDF	1.72e2	1.09e2	2.80e2	39.83	1.58	YES	0.033	0.0275	5.59e3	669	8.4	1.94e3	581	3.3	bb	bb
2	1234678-HpCDF	1.46e2	1.42e2	2.87e2	38.06	1.03	NO	0.029	0.0191	2.10e3	669	3.1	2.57e3	581	4.4	bb	bb

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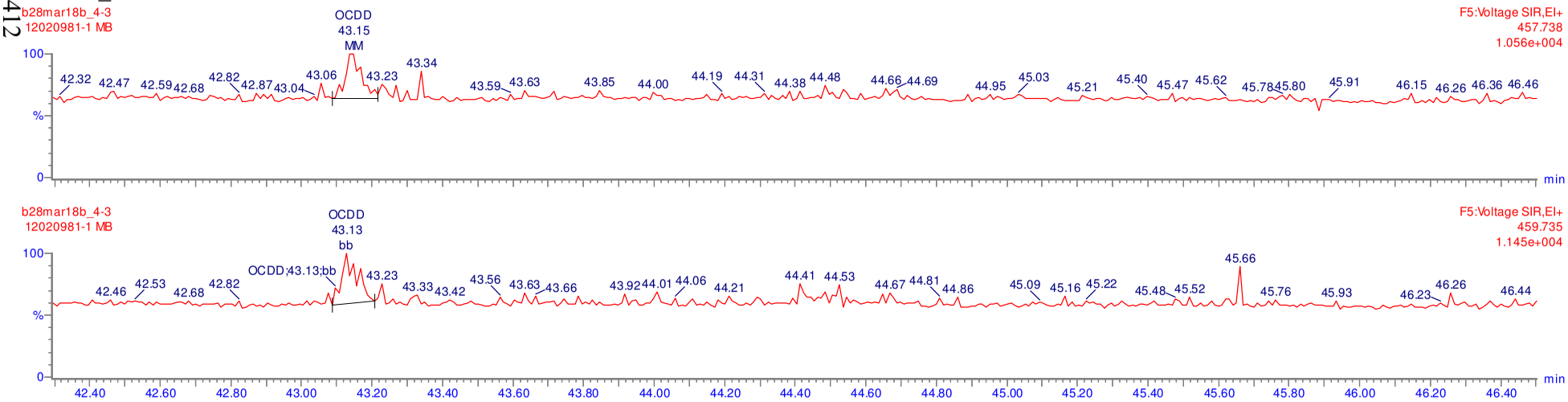
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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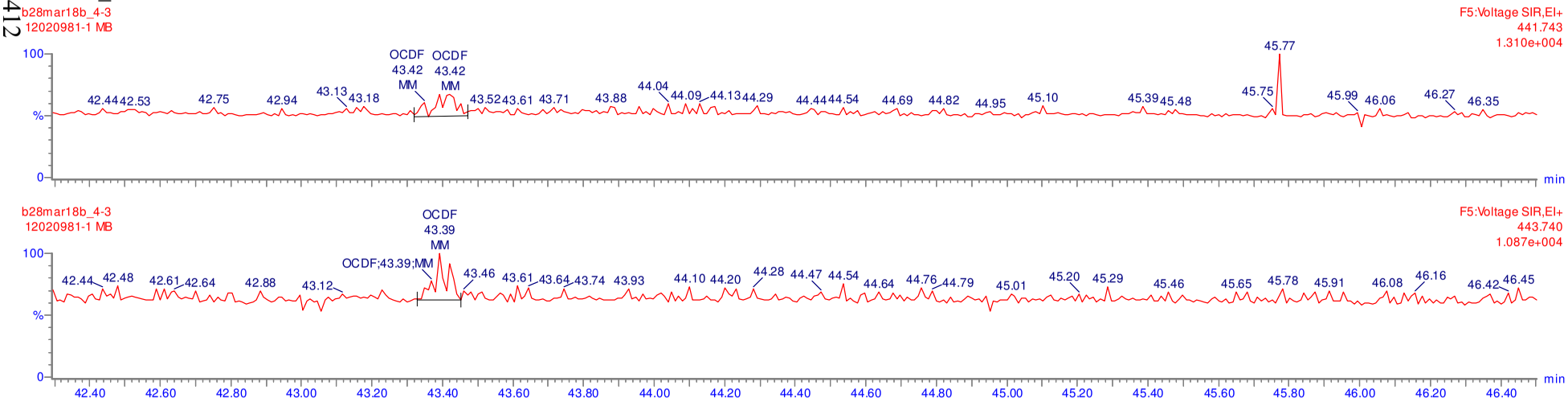
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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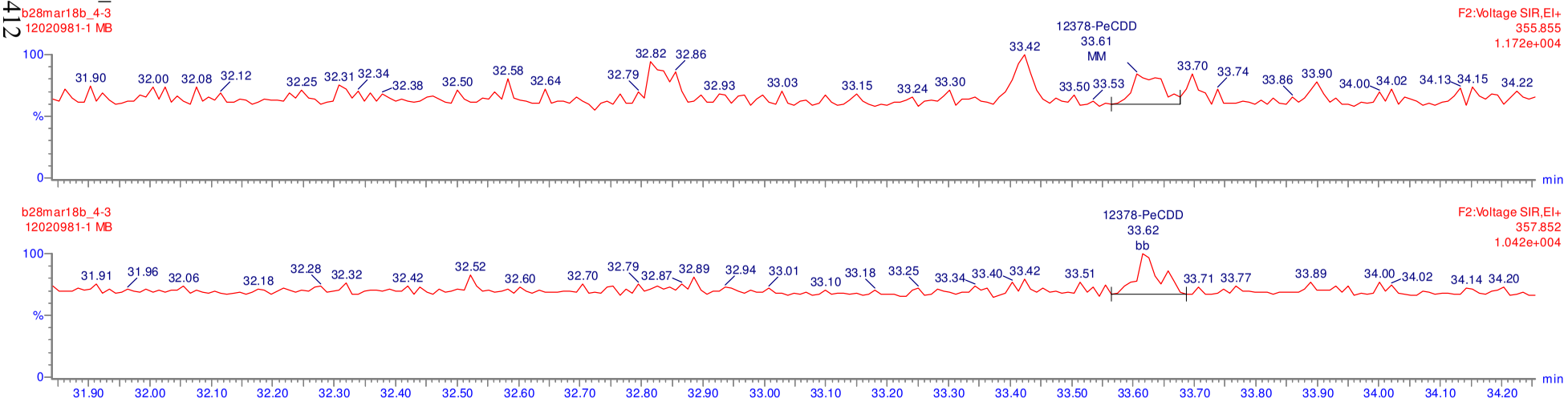
MANUAL INTEGRATION
METHOD 1613
HRP763_1



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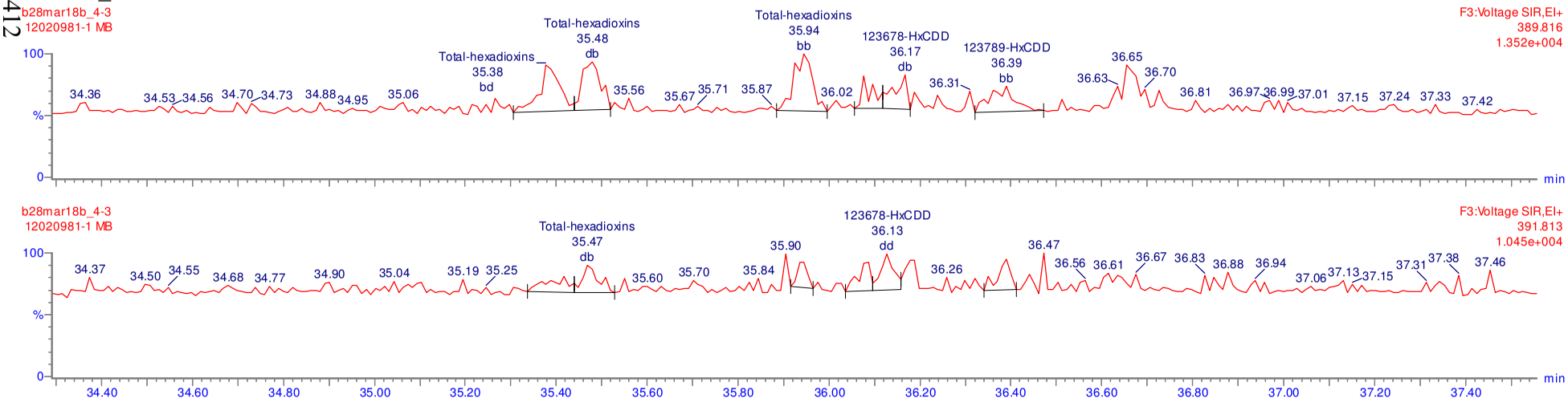
METHOD 1613
HRP763_1



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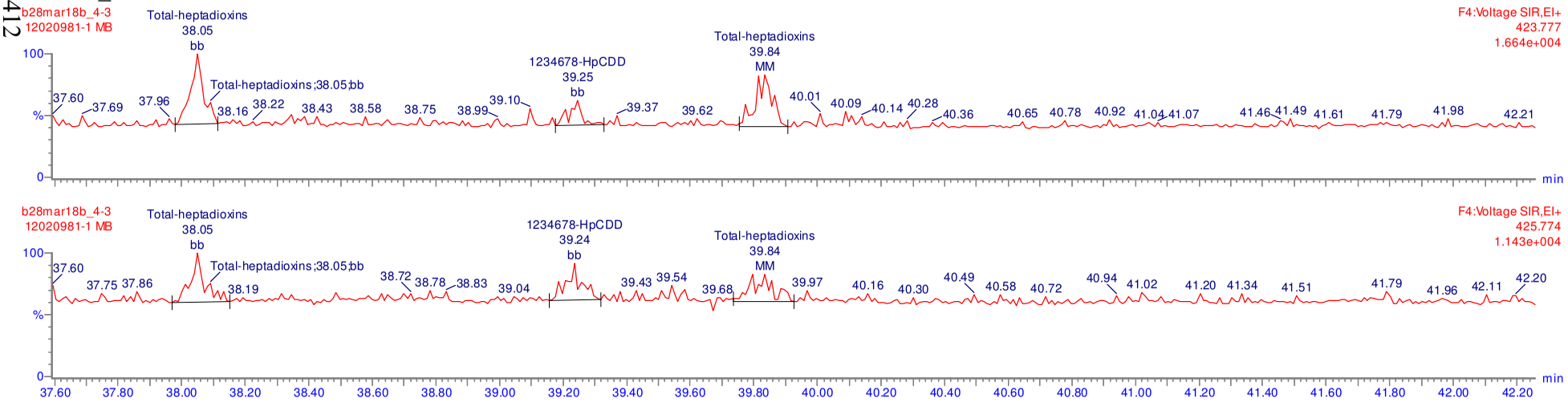
METHOD 1613
HRP763_1



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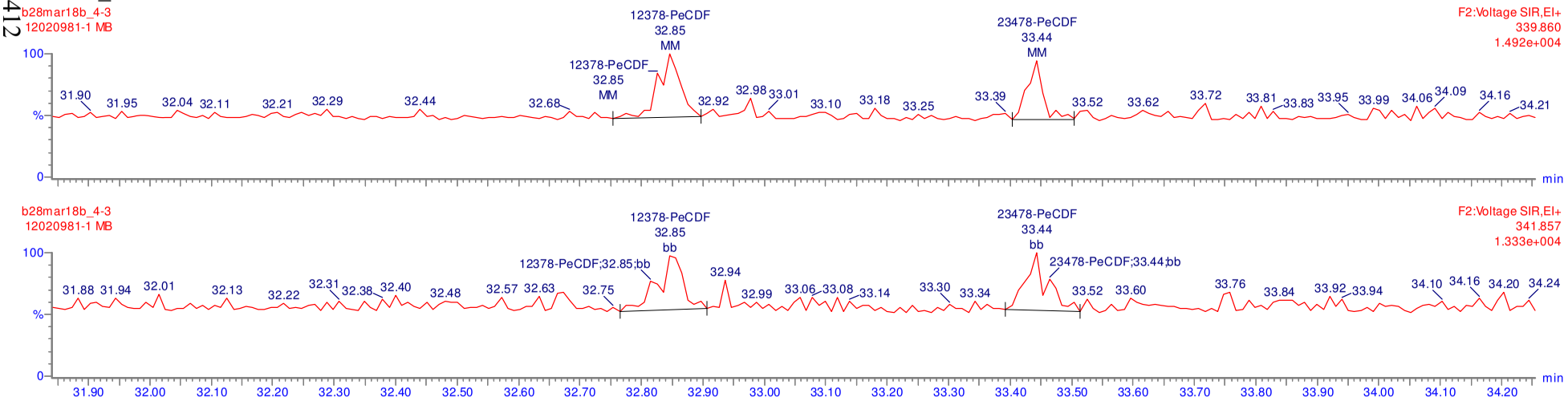
METHOD 1613
HRP763_1



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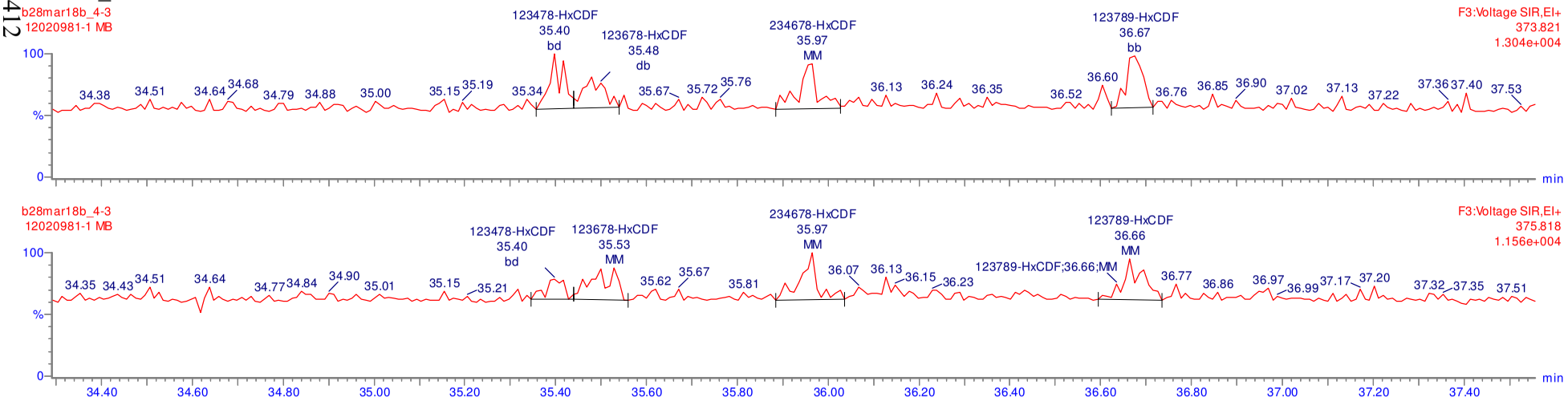
METHOD 1613
HRP763_1



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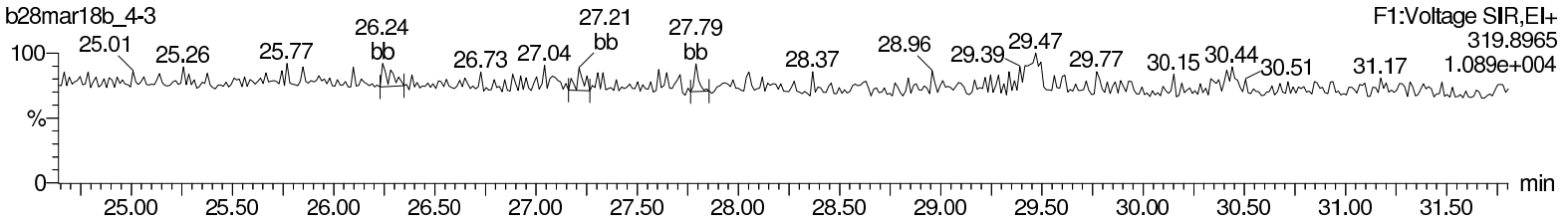
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

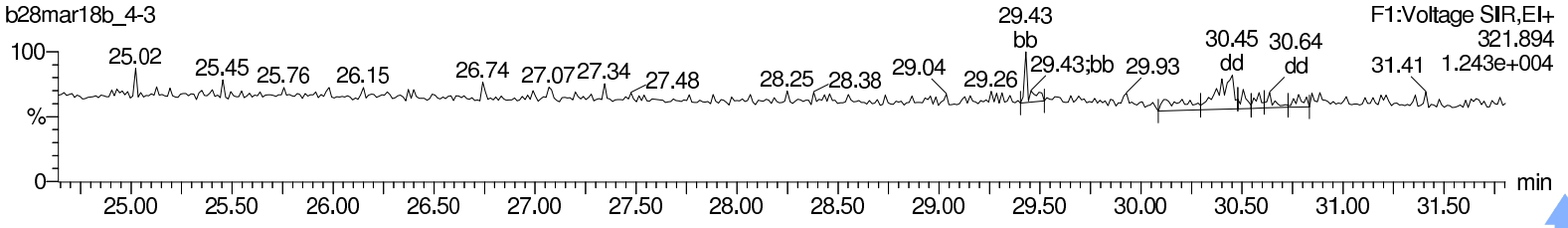
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-tetradioxins



Total-tetradioxins



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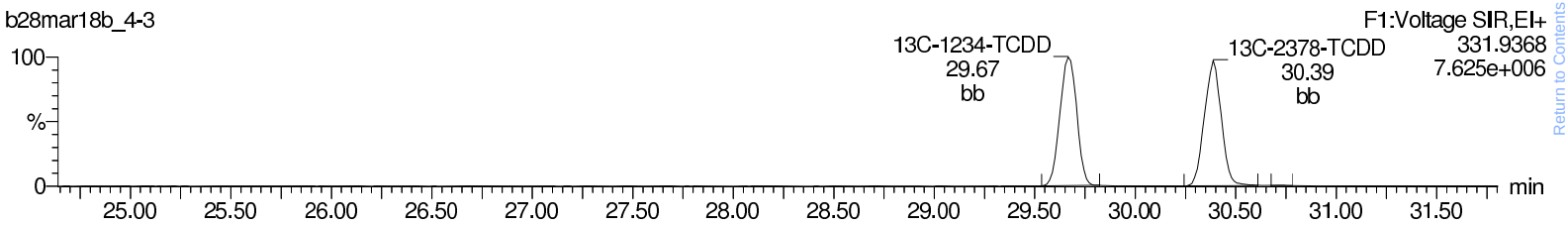

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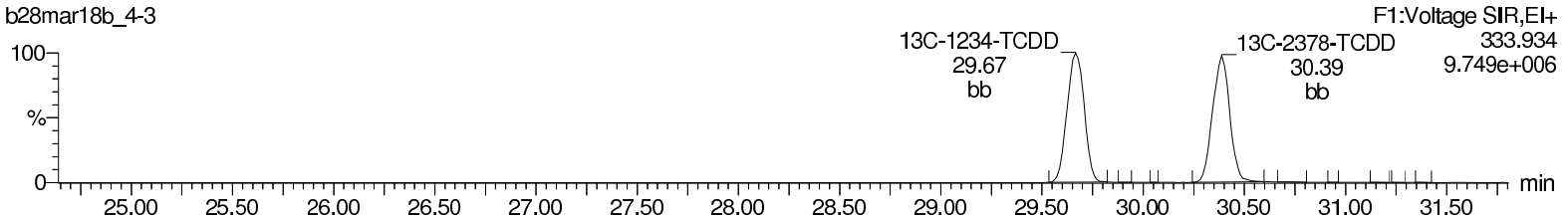

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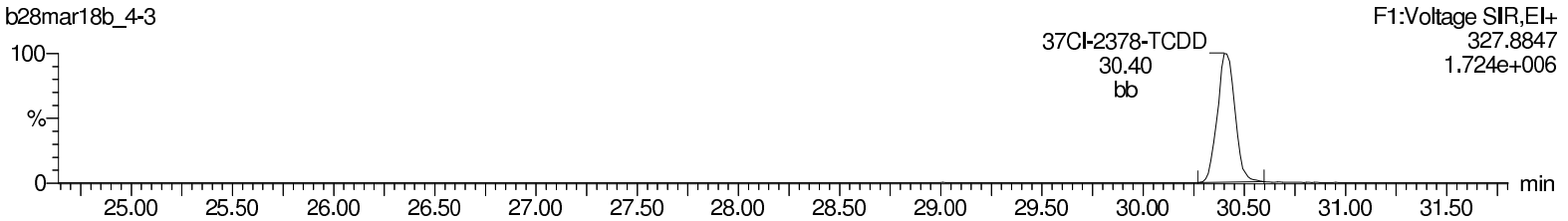
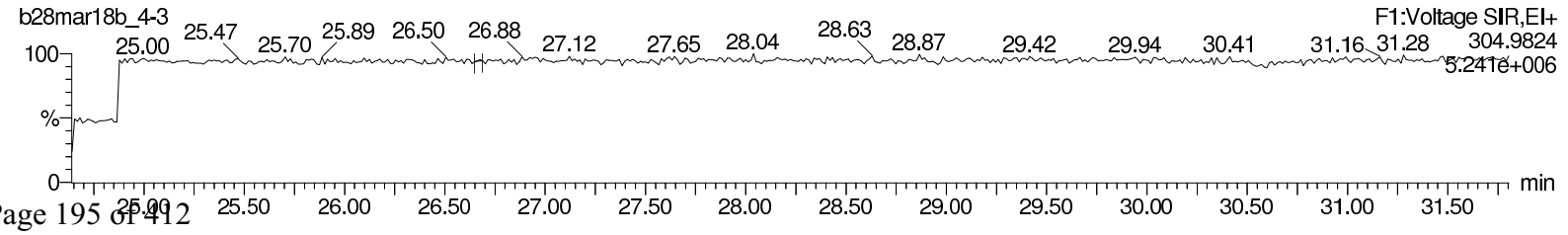


Lock Mass F1



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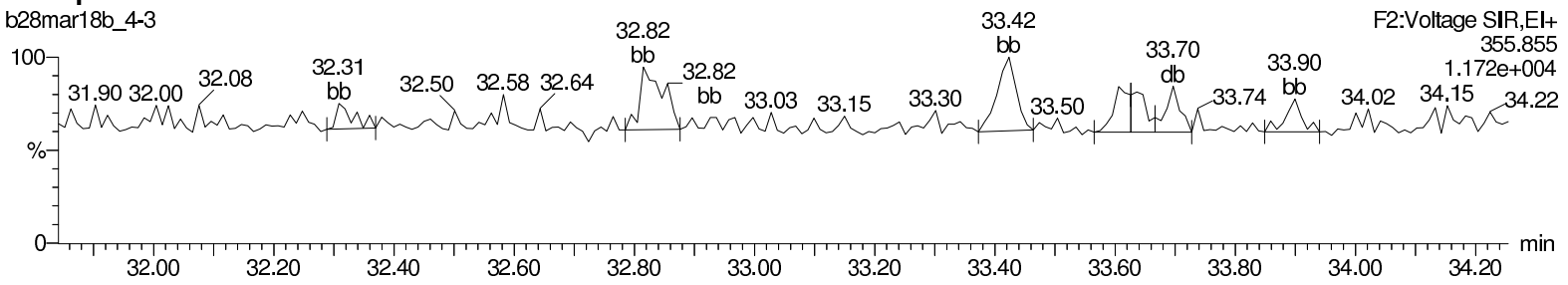
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

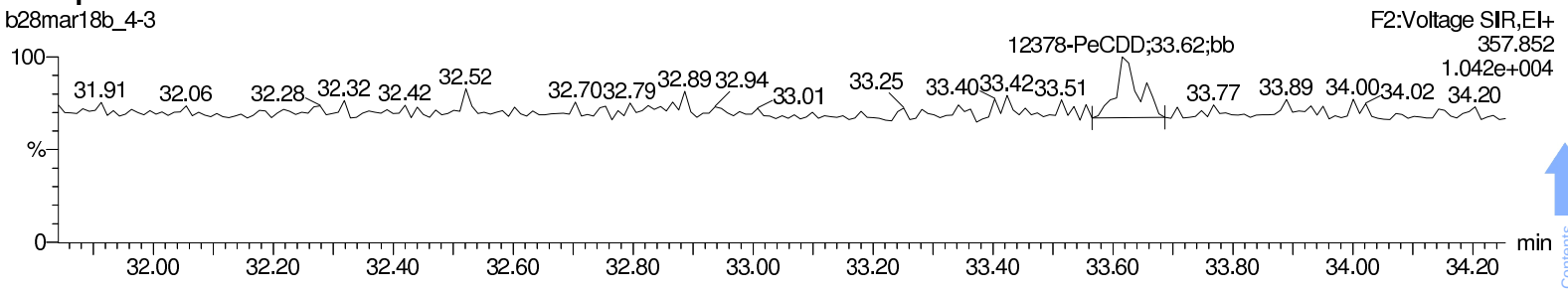
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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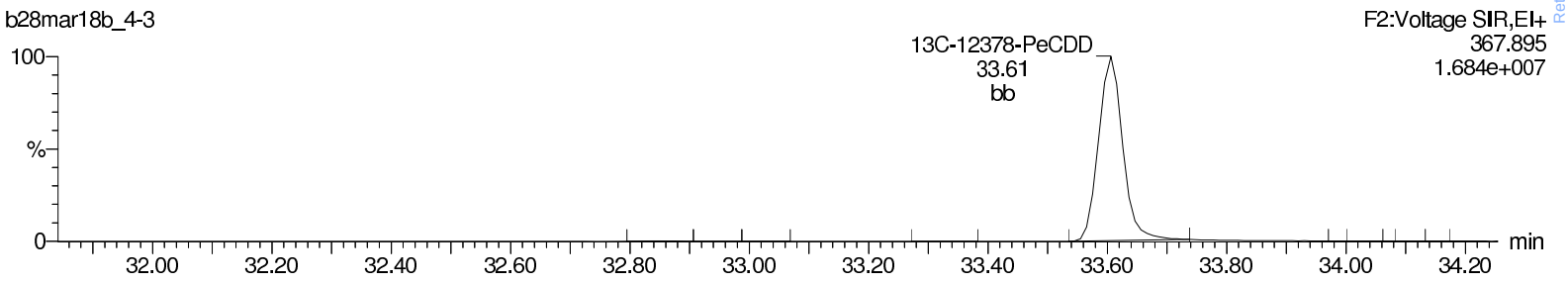

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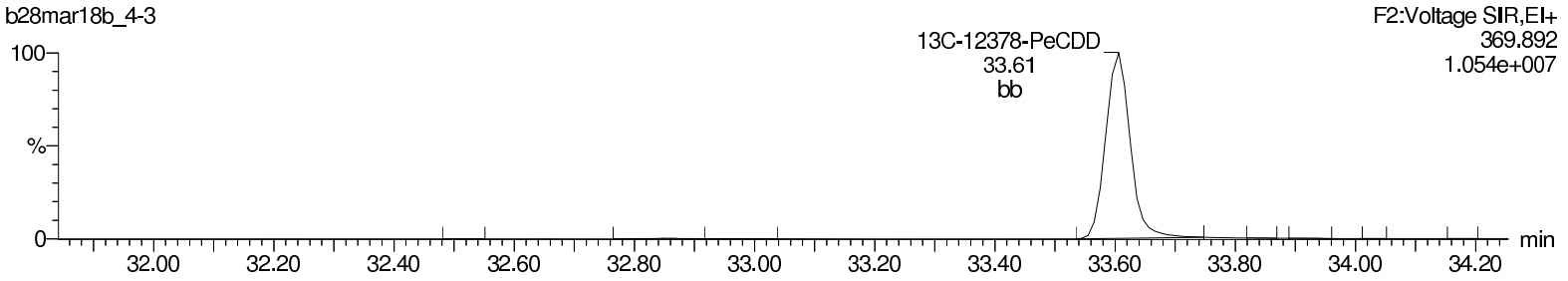
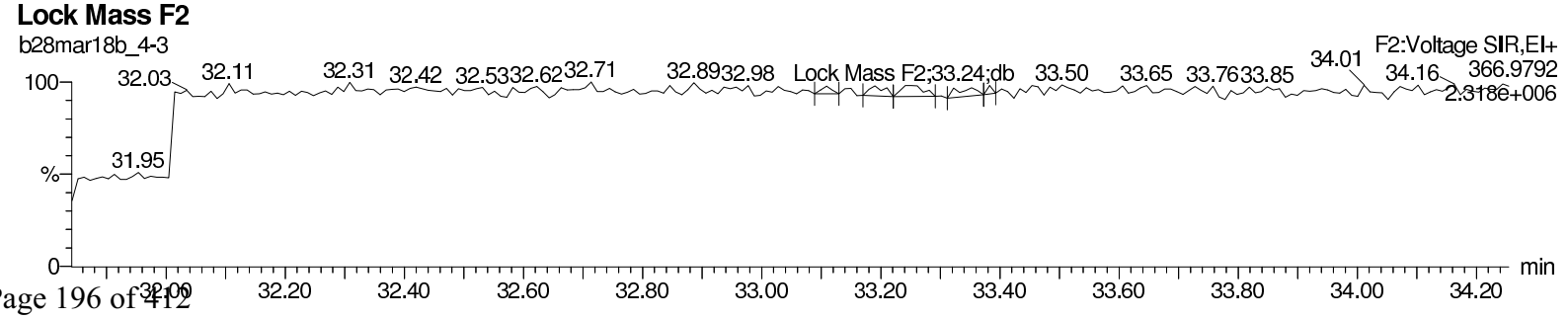


Lock Mass F2



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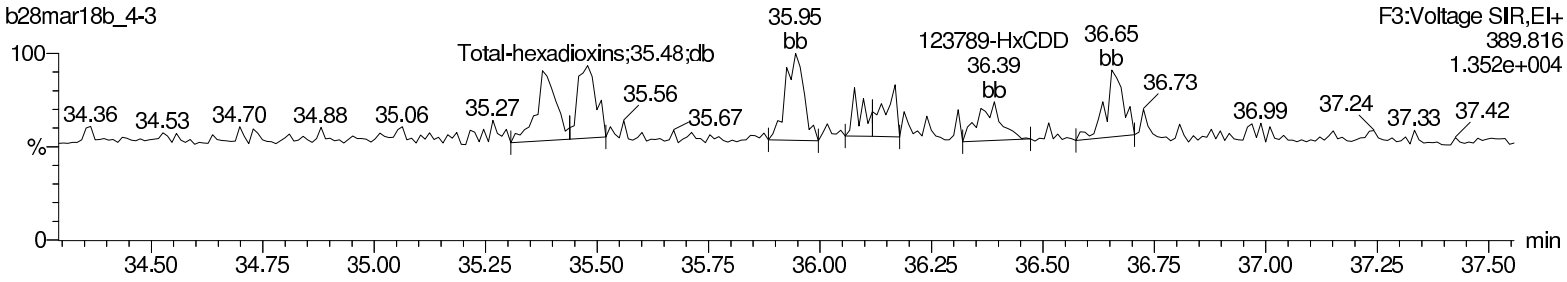
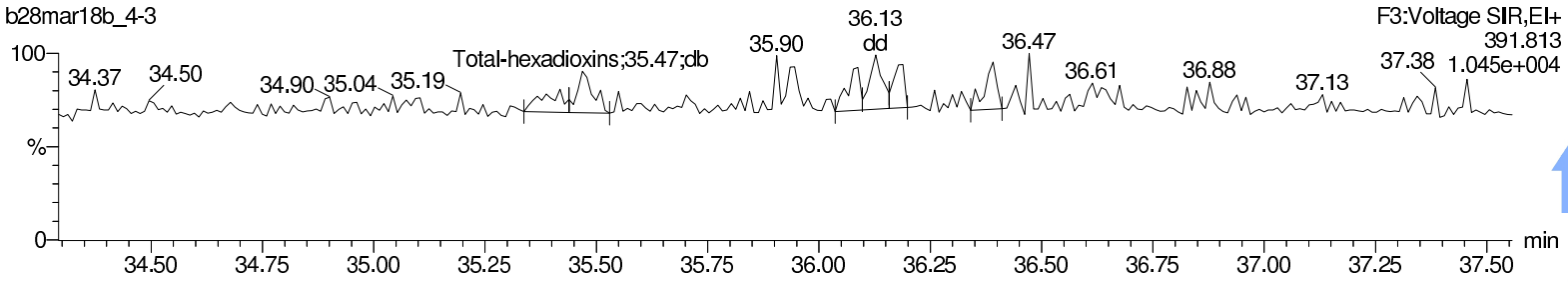
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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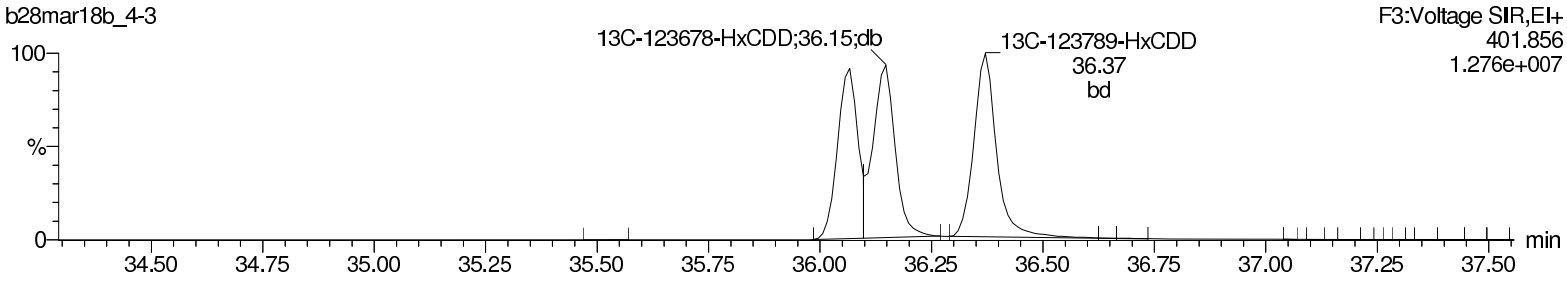

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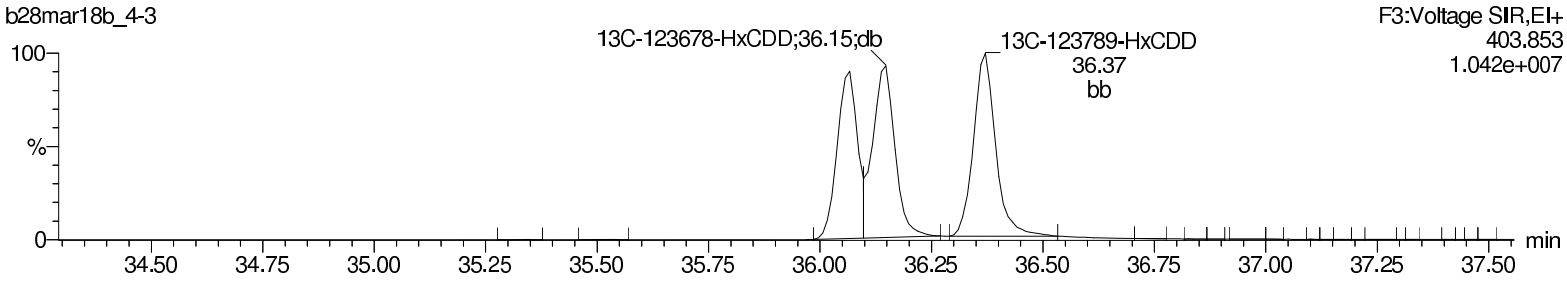

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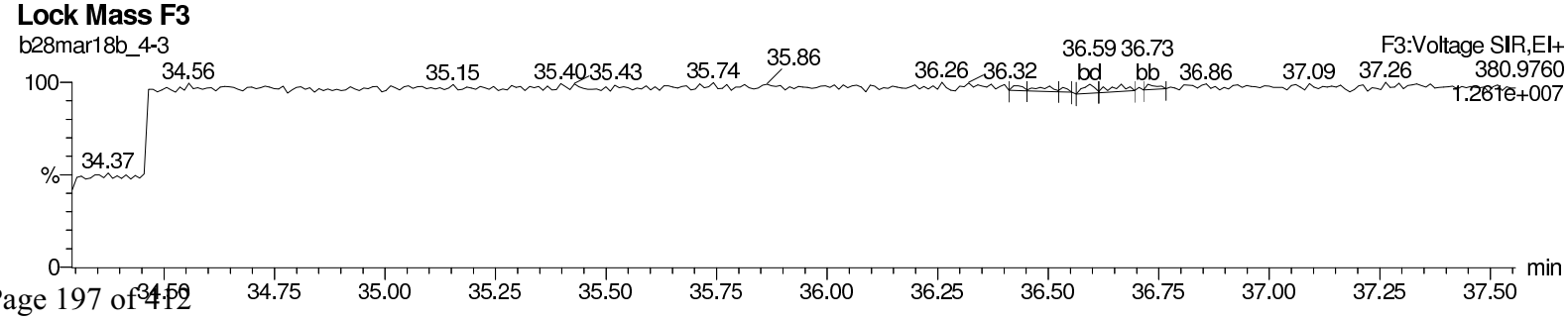

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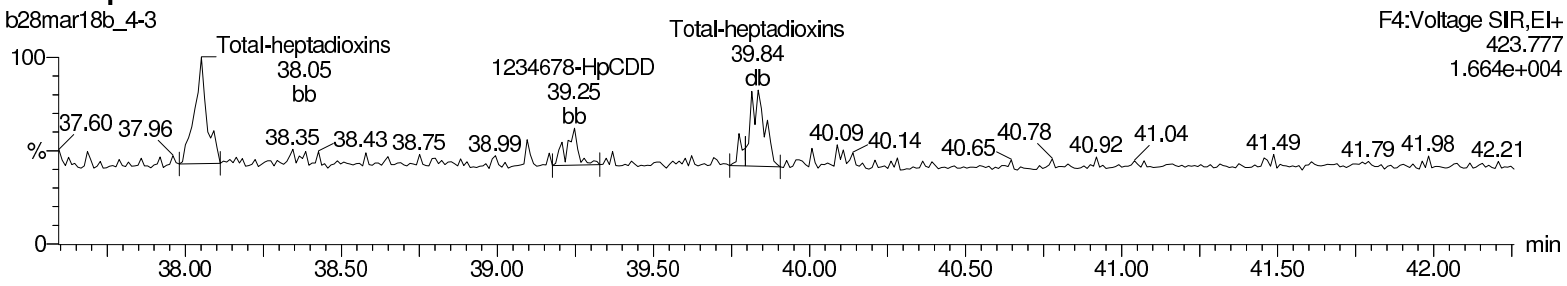
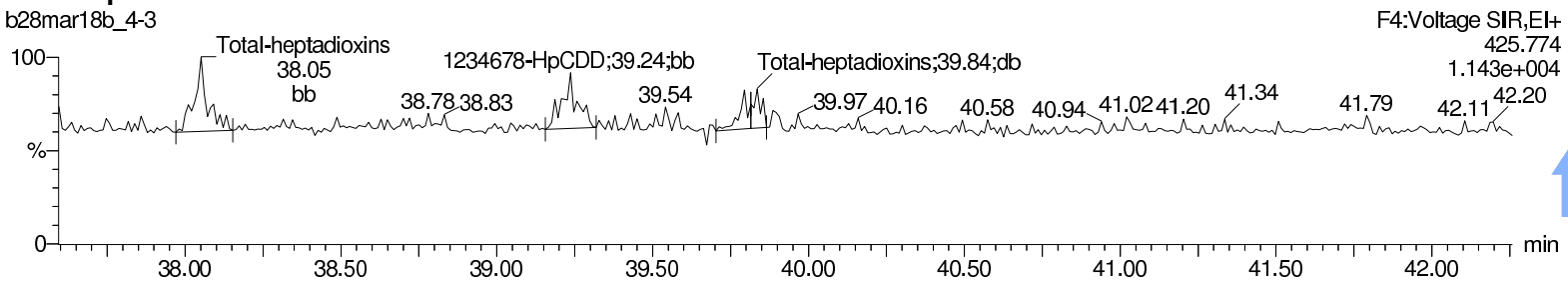
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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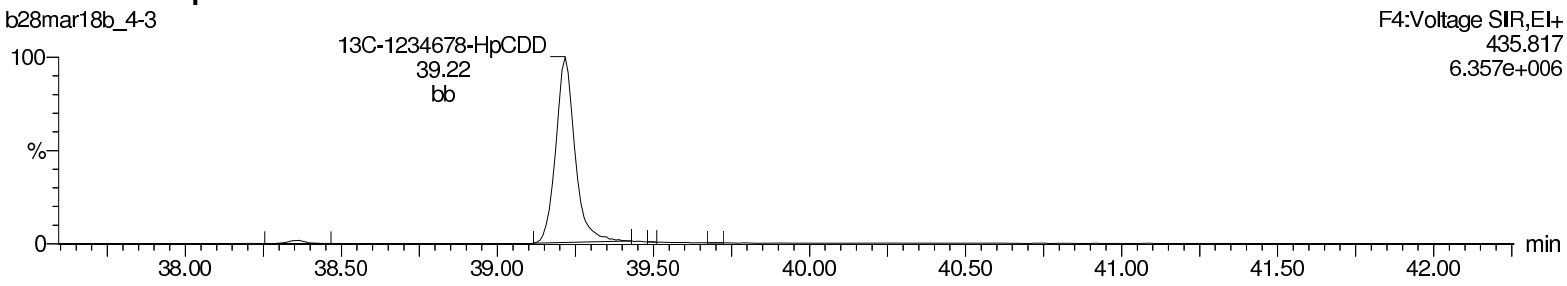

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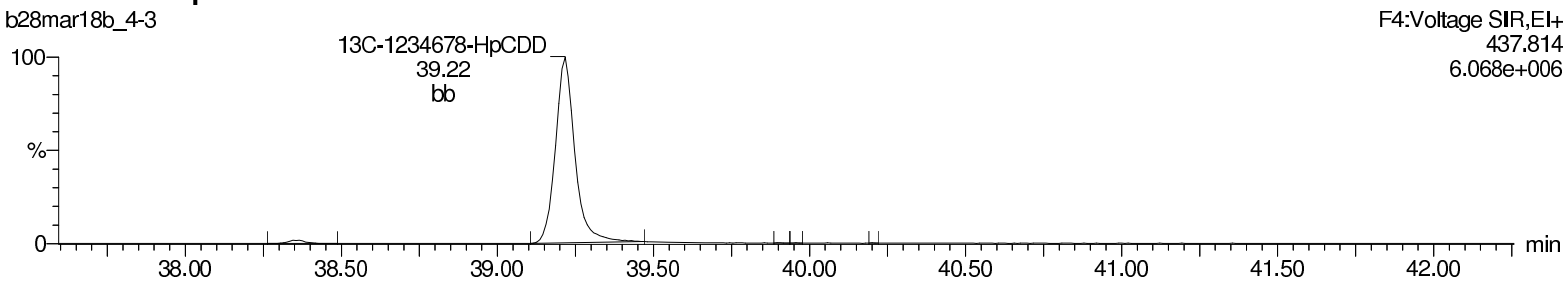

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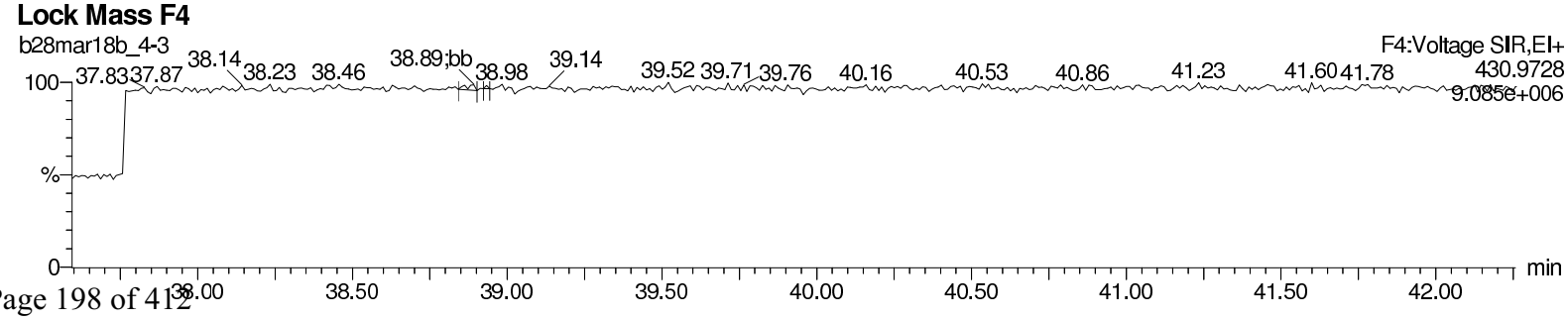

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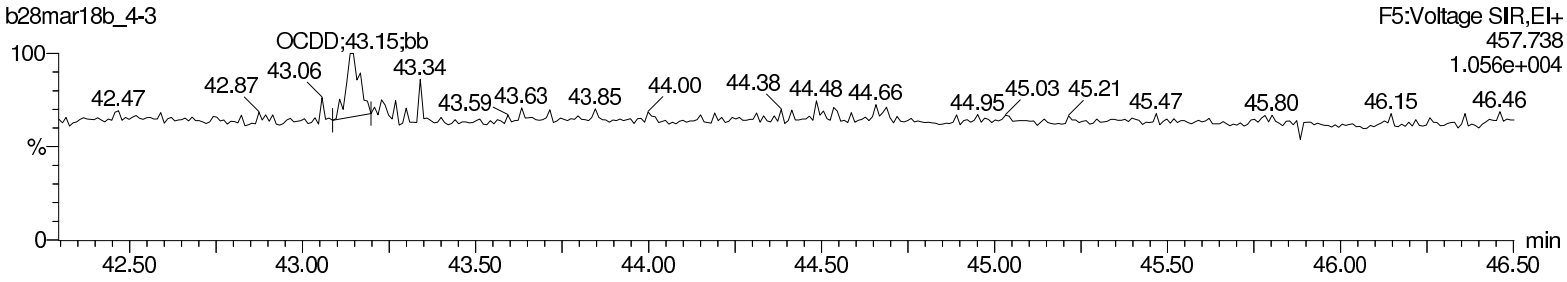
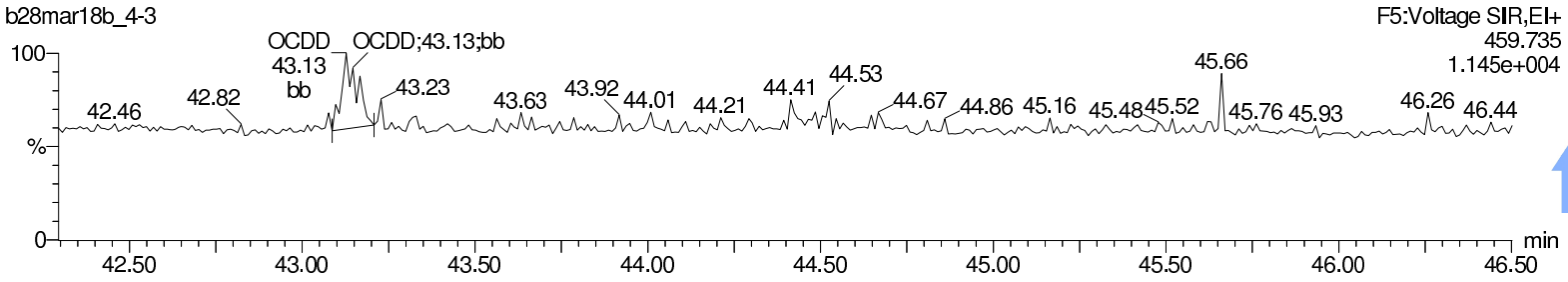


OCDD



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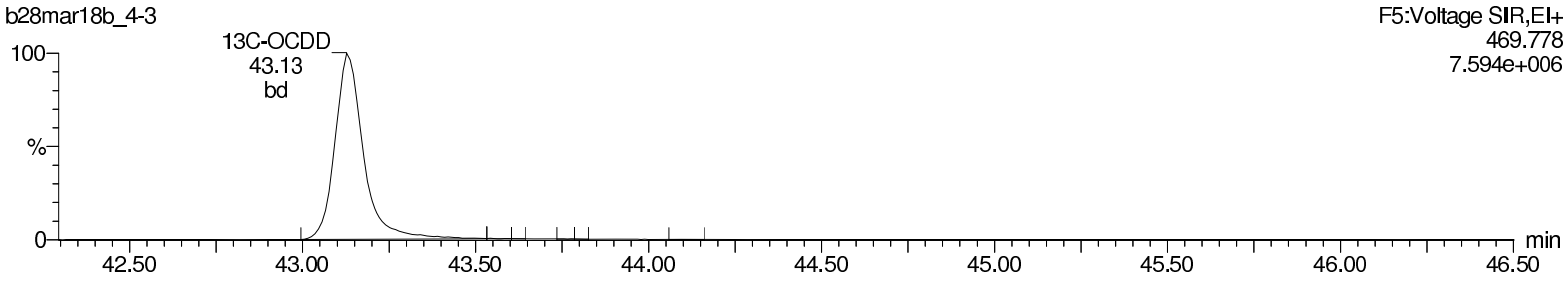

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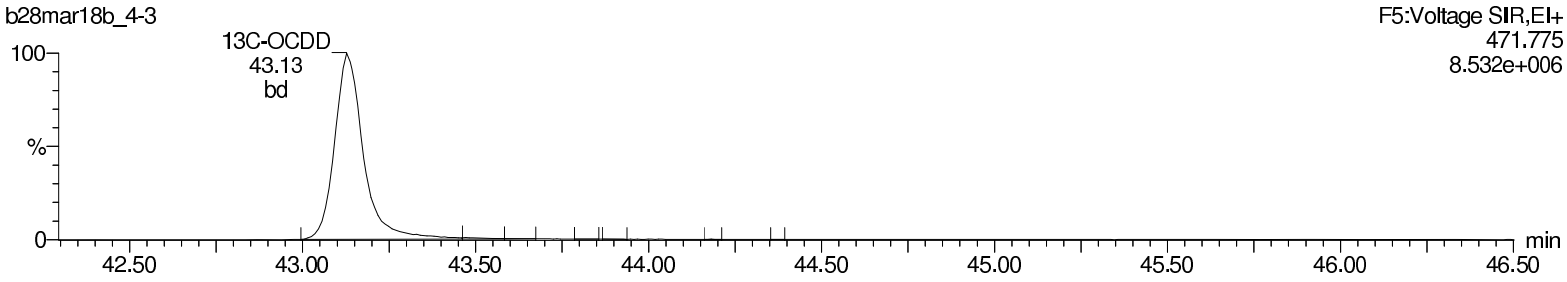

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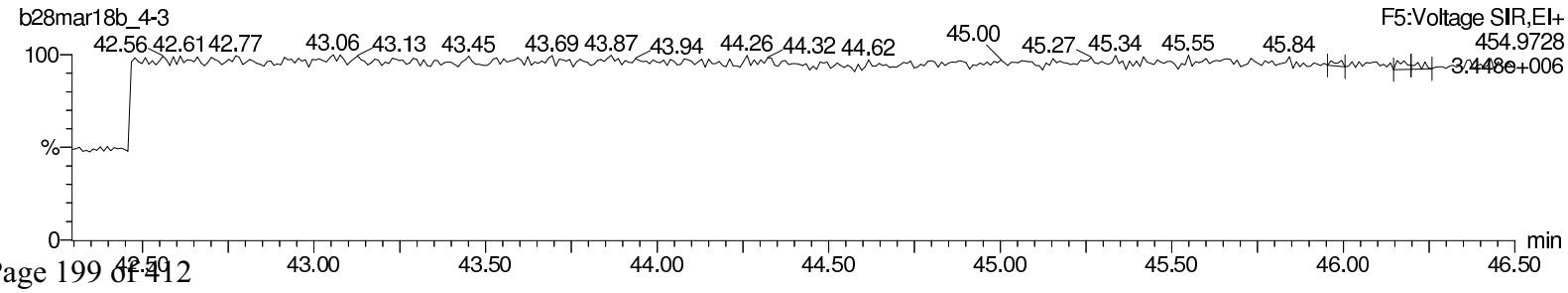

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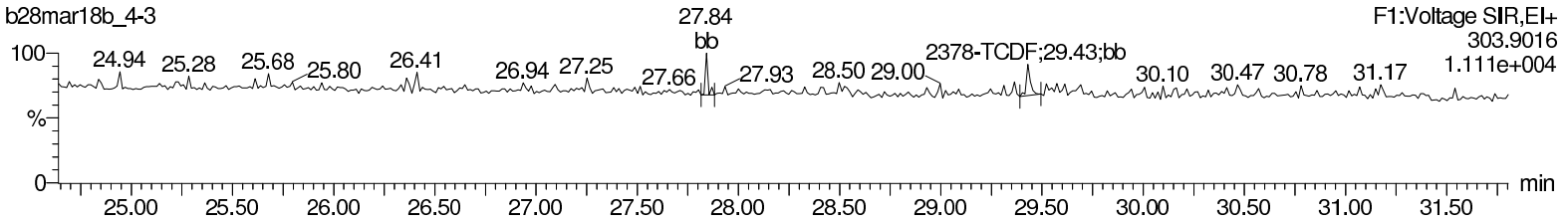
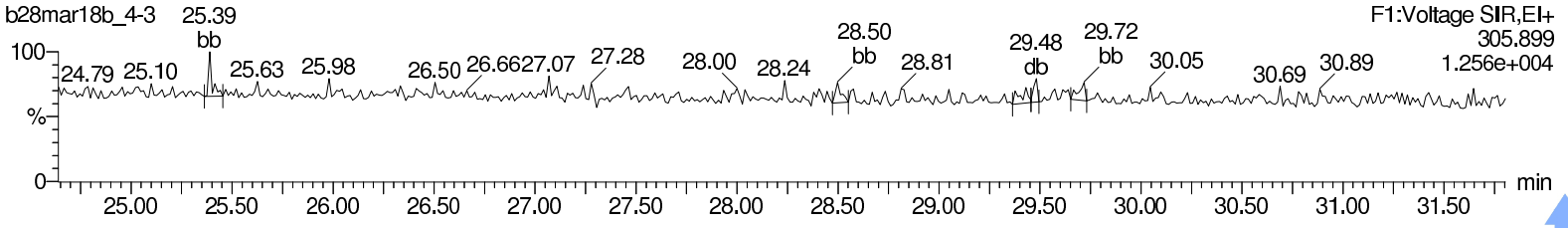
Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

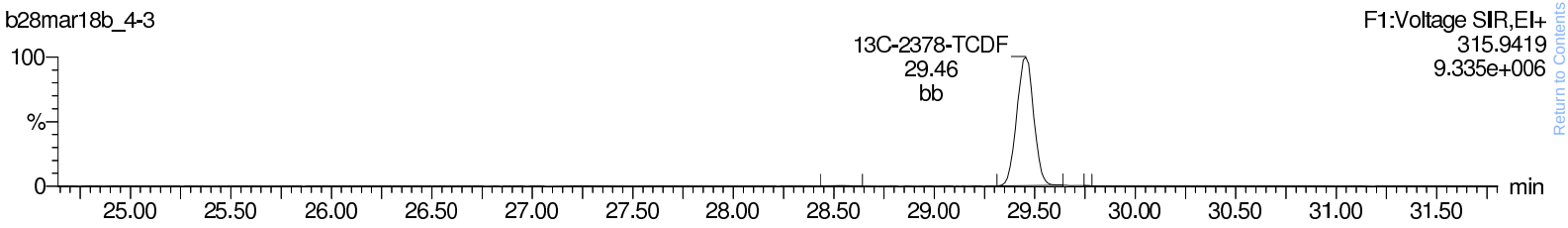
Total-tetrafurans



Total-tetrafurans



13C-2378-TCDF



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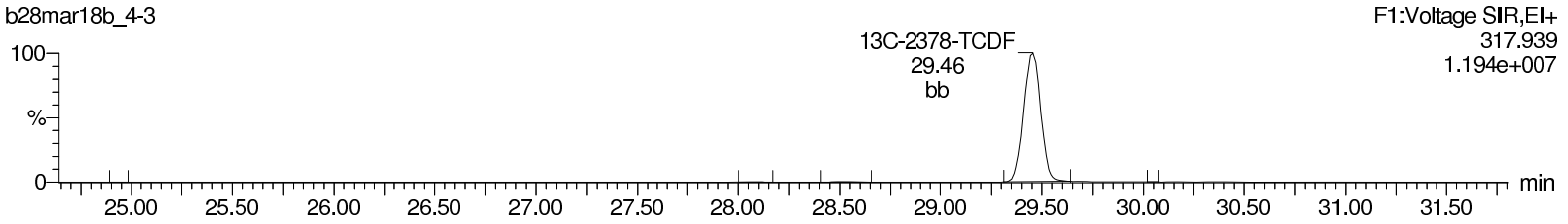

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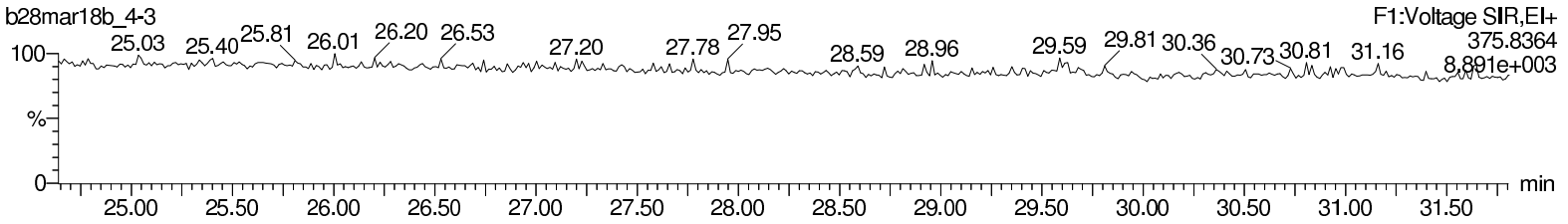
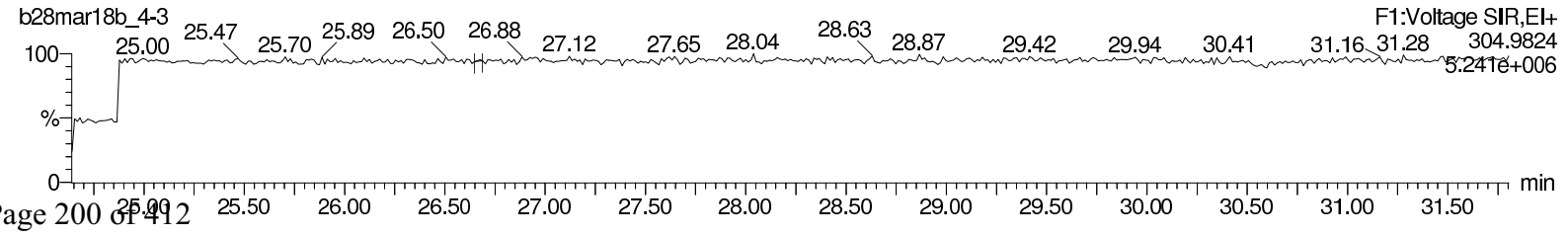


Lock Mass F1



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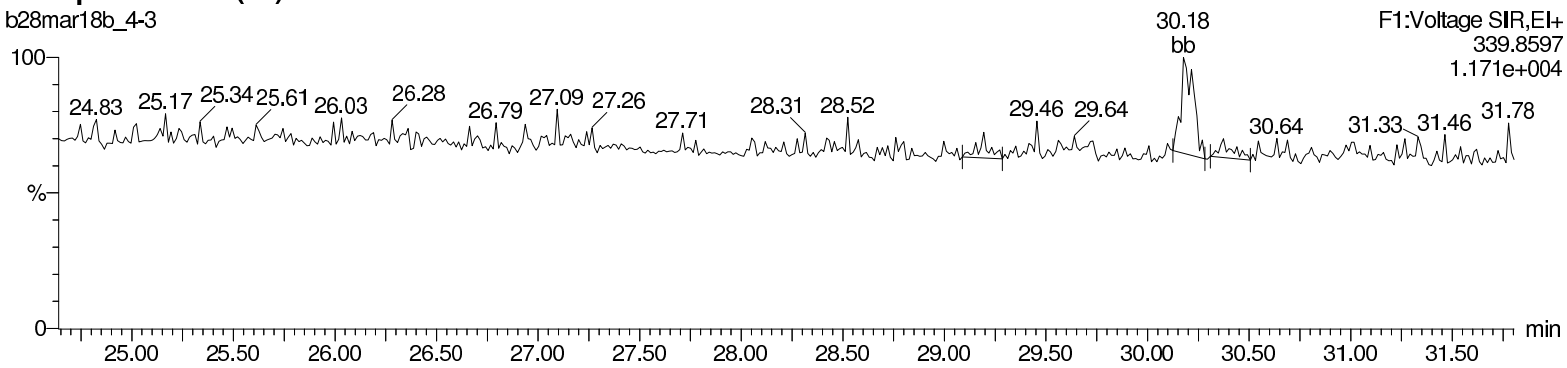
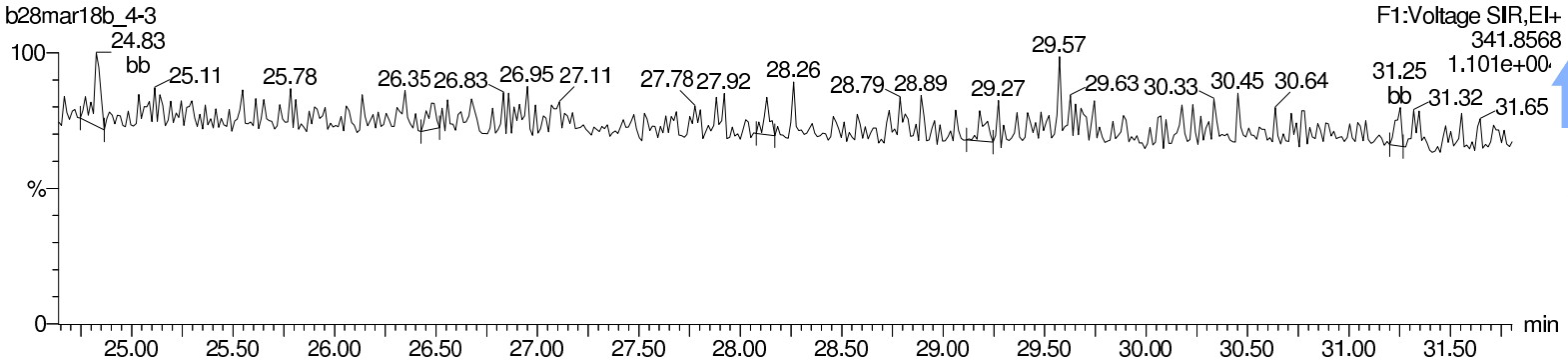
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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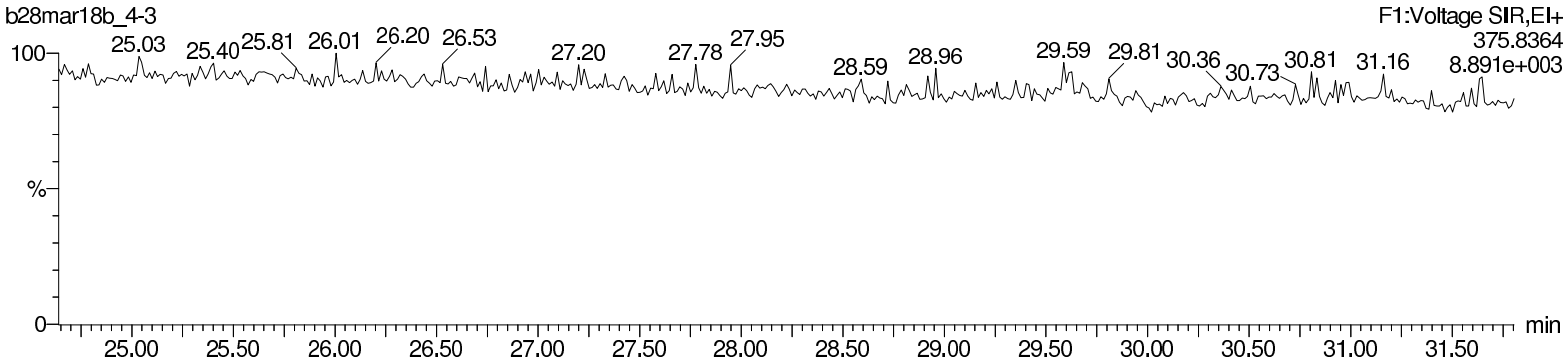
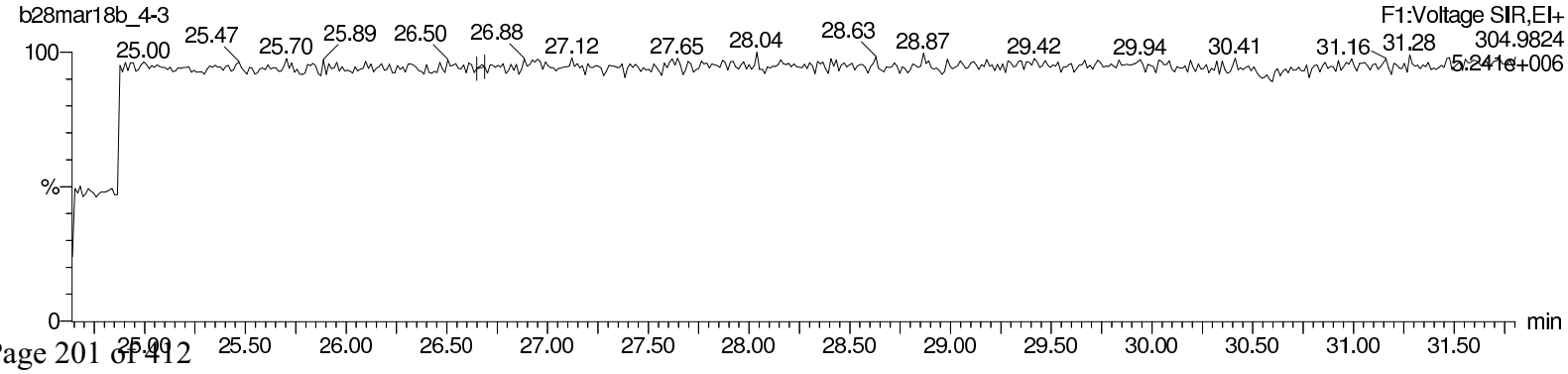


Lock Mass F1



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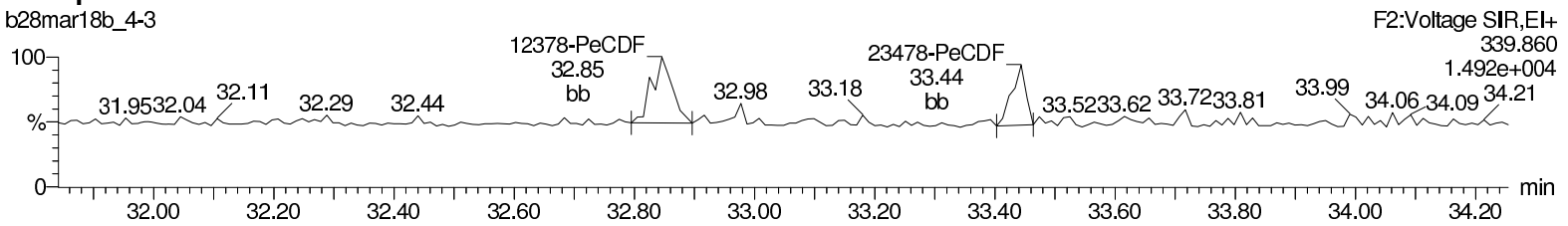
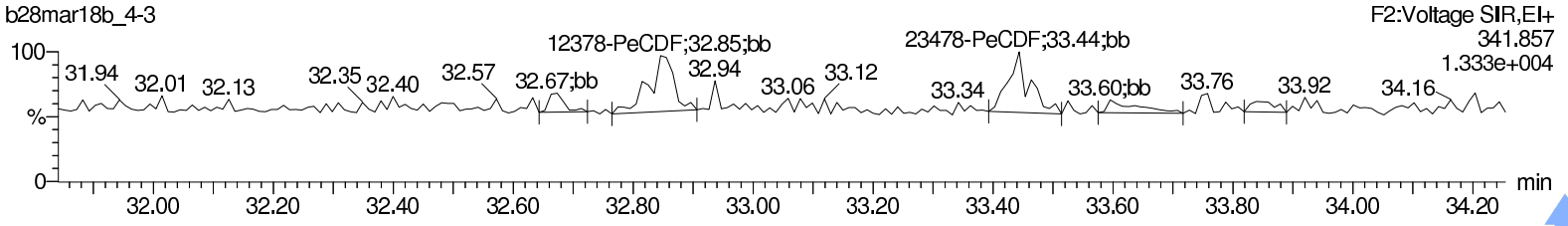
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

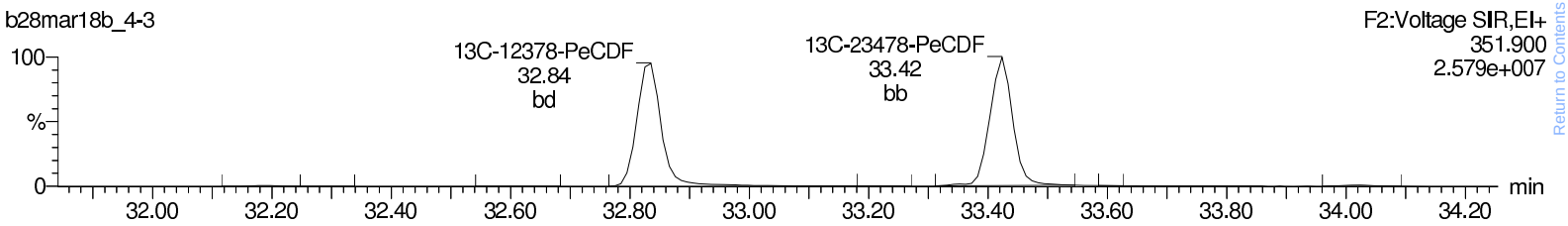
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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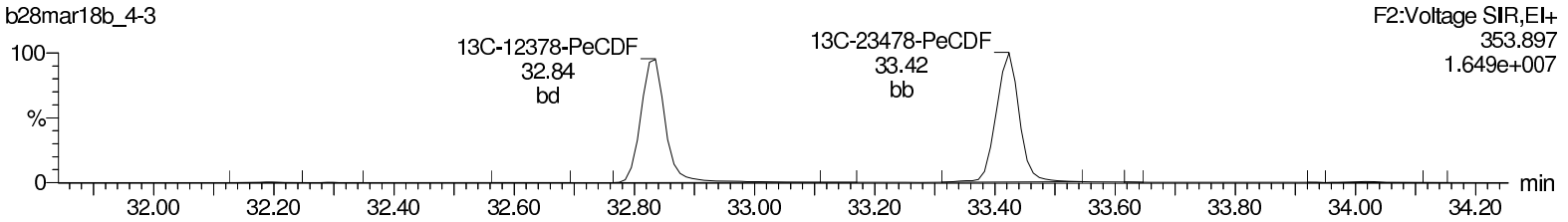
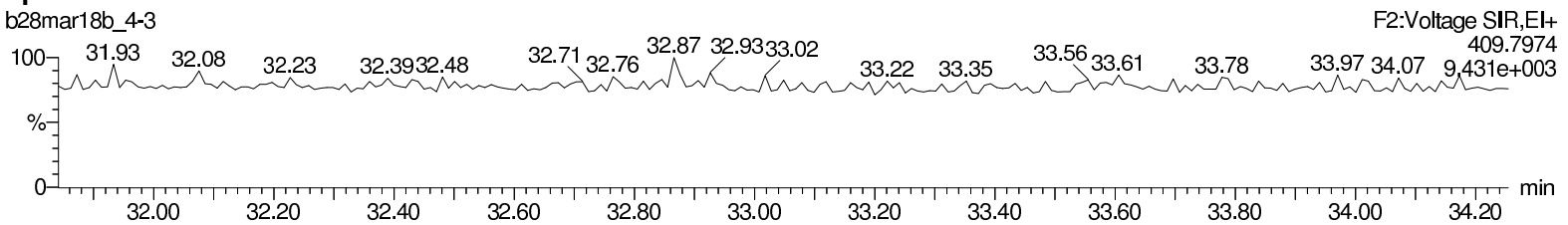
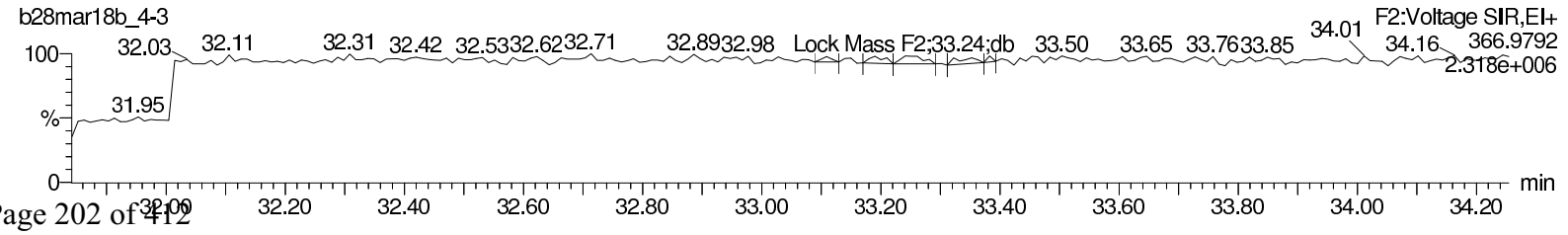


HpDPE



Lock Mass F2



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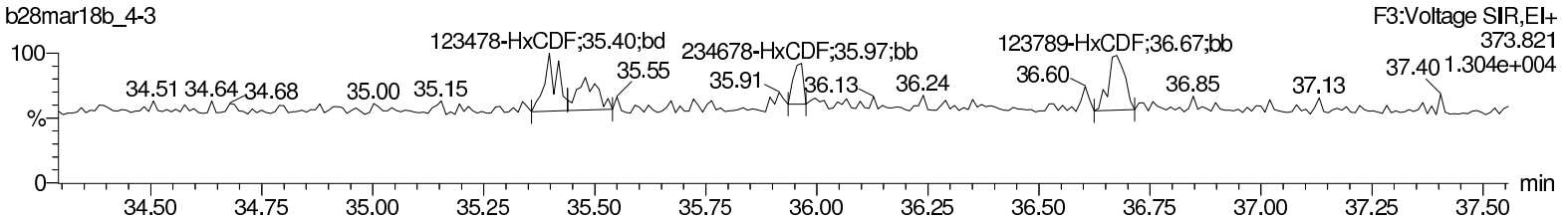
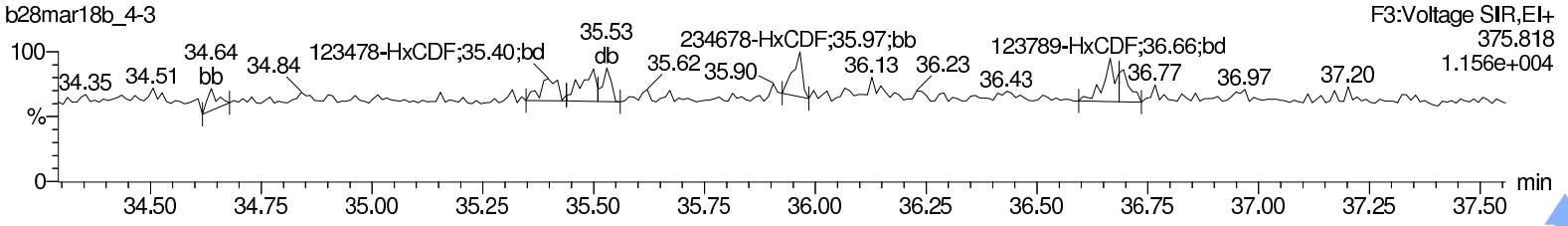
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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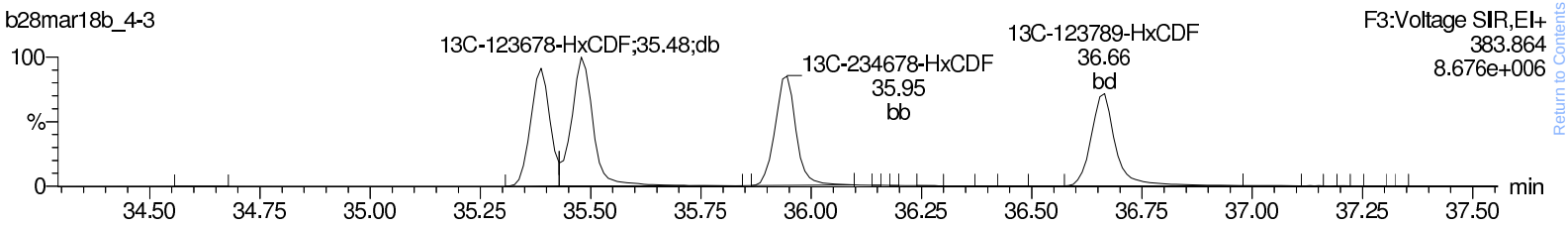

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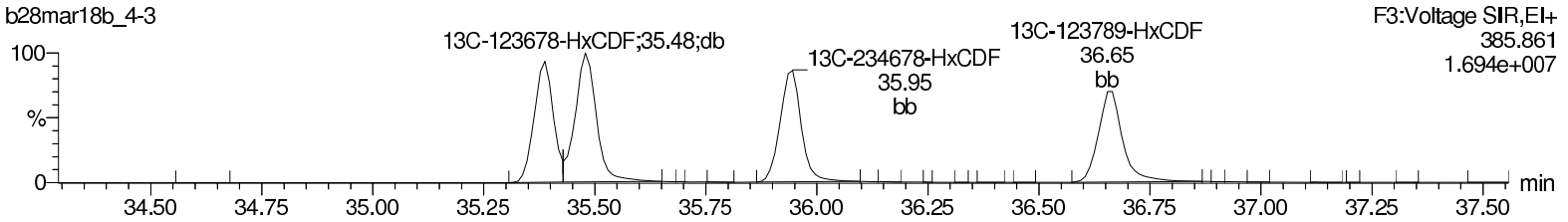
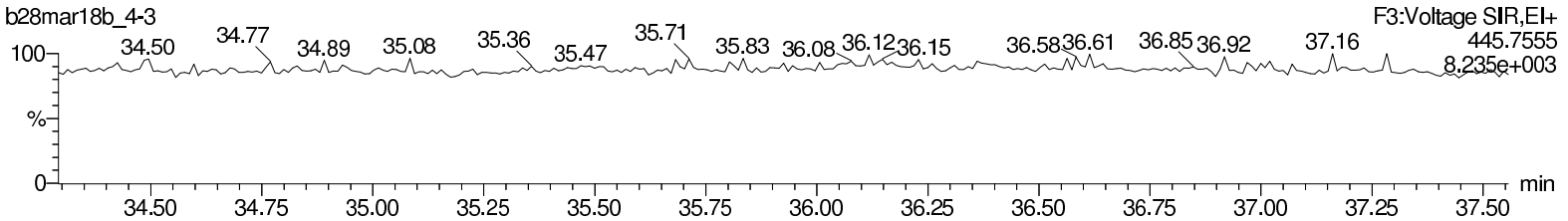
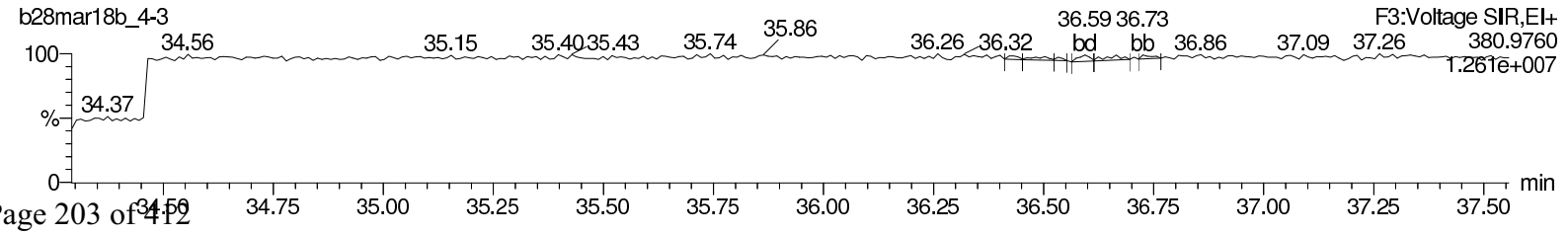


OcDPE



Lock Mass F3



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

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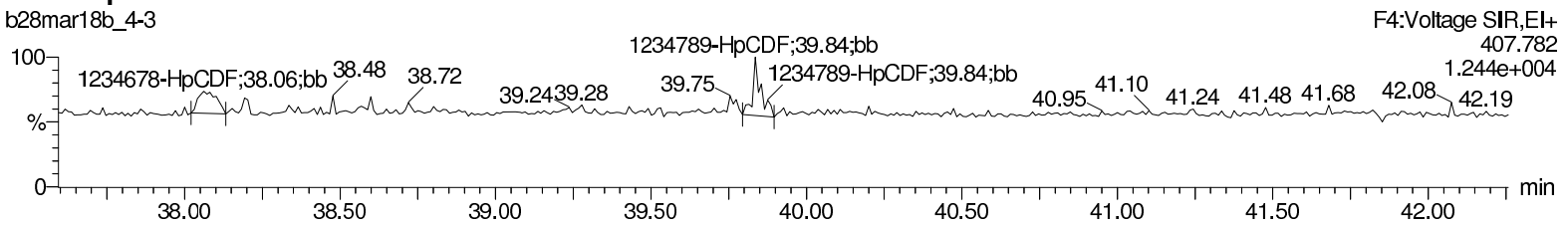

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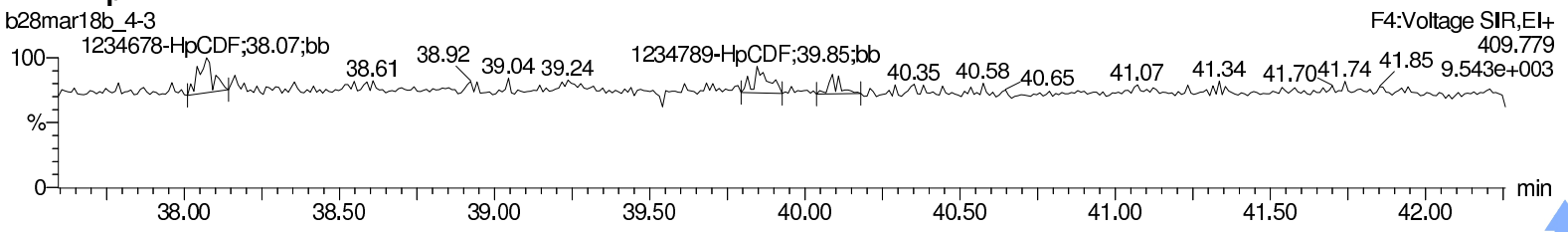

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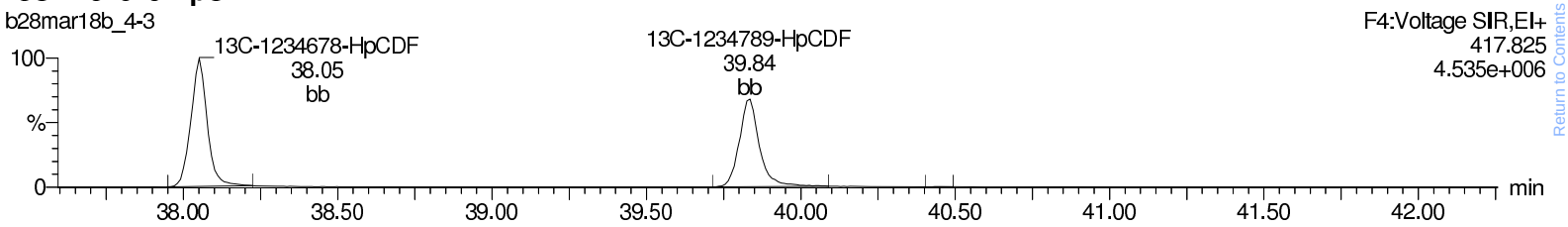

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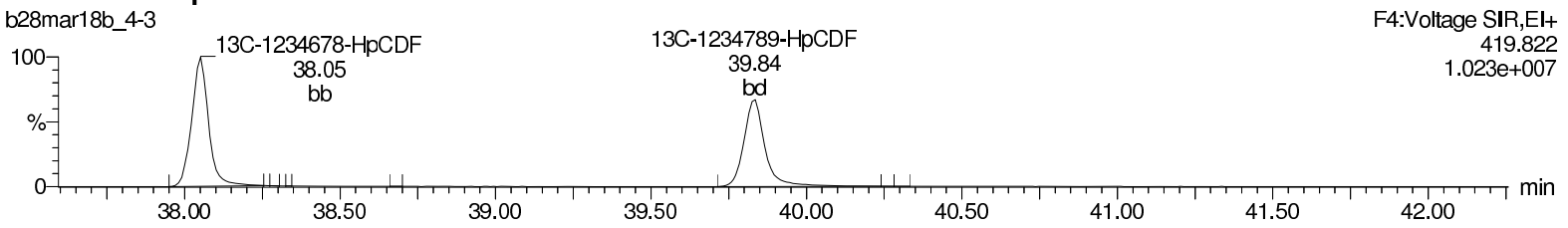

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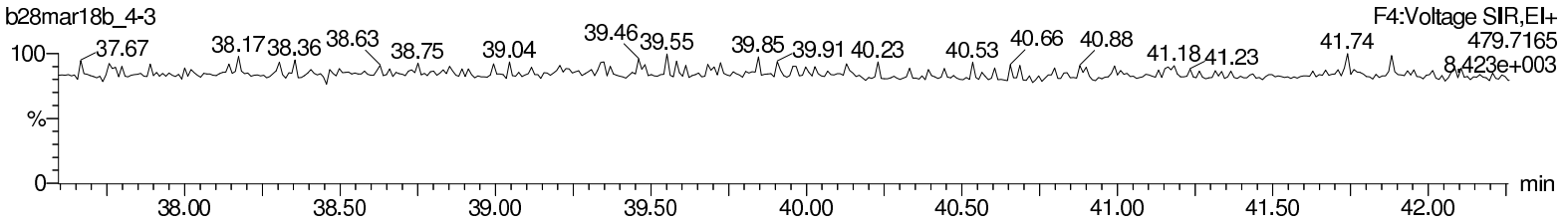
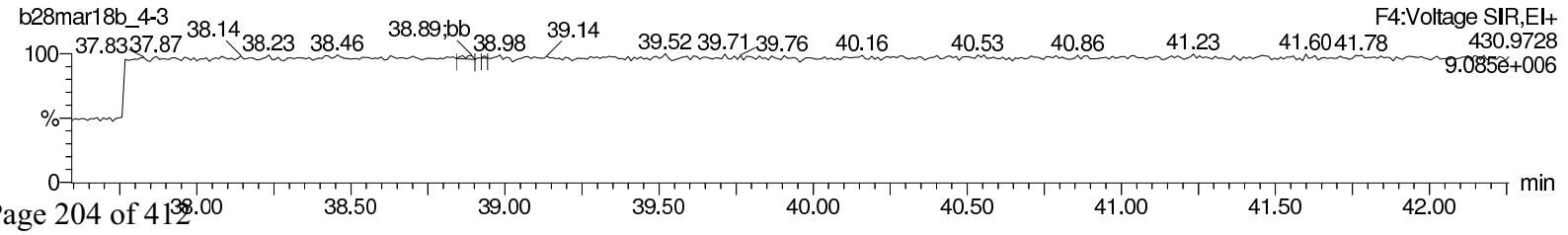


Lock Mass F4

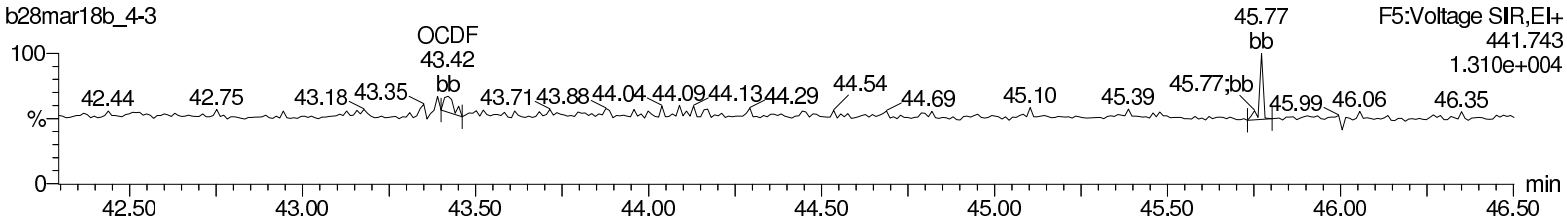


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

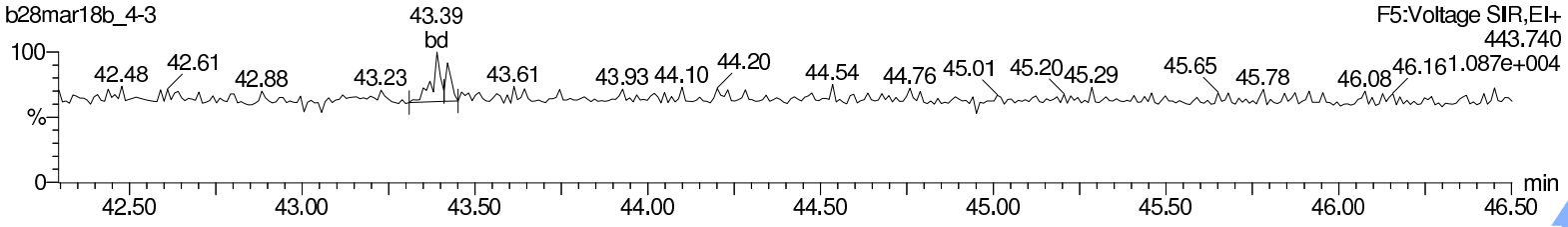
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-3, Date: 29-Mar-2018, Time: 22:52:09, ID: 12020981-1 MB, Description: , Job: %613%, Task: HRP763_1, User: CLP

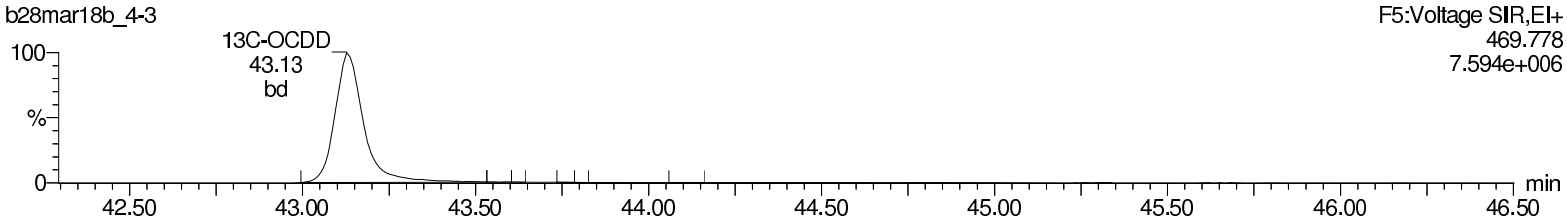
OCDF



OCDF



13C-OCDD



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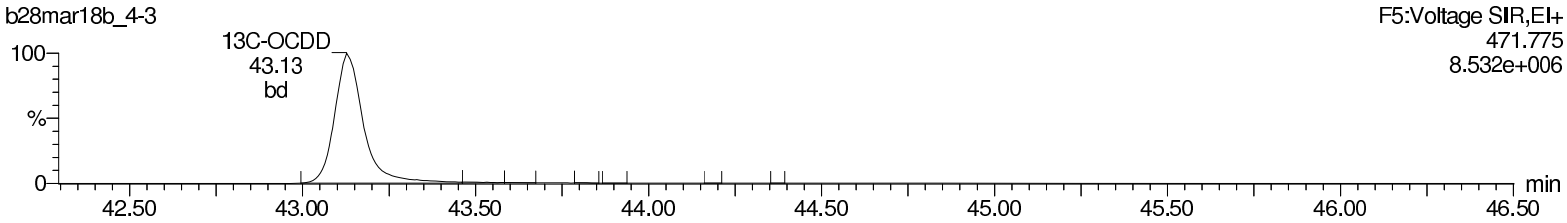
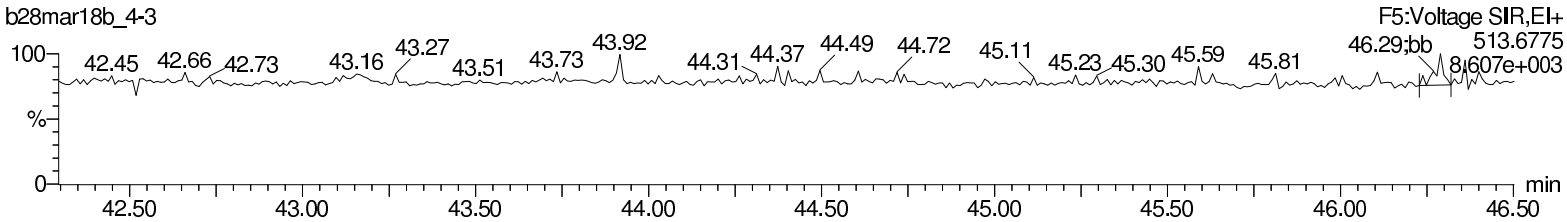
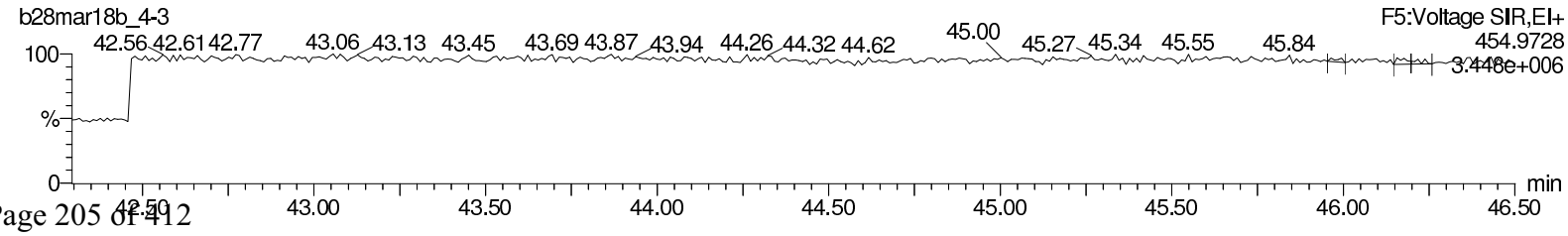


DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**12020982**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 37284**				
Client ID:	**LCS for batch 37284**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/29/2018 21:15**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b28mar18b_4-1**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		0.219	ng/L	0.000884	0.010
40321-76-4	1,2,3,7,8-PeCDD		1.20	ng/L	0.00139	0.050
39227-28-6	1,2,3,4,7,8-HxCDD		1.14	ng/L	0.00173	0.050
57653-85-7	1,2,3,6,7,8-HxCDD		1.13	ng/L	0.00169	0.050
19408-74-3	1,2,3,7,8,9-HxCDD		1.16	ng/L	0.00176	0.050
35822-46-9	1,2,3,4,6,7,8-HpCDD		0.989	ng/L	0.00324	0.050
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2.16	ng/L	0.00354	0.100
51207-31-9	2,3,7,8-TCDF		0.199	ng/L	0.000726	0.010
57117-41-6	1,2,3,7,8-PeCDF		1.01	ng/L	0.00135	0.050
57117-31-4	2,3,4,7,8-PeCDF		1.01	ng/L	0.00123	0.050
70648-26-9	1,2,3,4,7,8-HxCDF		1.09	ng/L	0.00256	0.050
57117-44-9	1,2,3,6,7,8-HxCDF		1.09	ng/L	0.00258	0.050
60851-34-5	2,3,4,6,7,8-HxCDF		1.10	ng/L	0.00258	0.050
72918-21-9	1,2,3,7,8,9-HxCDF		1.11	ng/L	0.00348	0.050
67562-39-4	1,2,3,4,6,7,8-HpCDF		1.08	ng/L	0.00274	0.050
55673-89-7	1,2,3,4,7,8,9-HpCDF		1.13	ng/L	0.00392	0.050
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2.19	ng/L	0.00442	0.100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.74	2.00	ng/L	87.2	(20%-175%)
13C-1,2,3,7,8-PeCDD		1.63	2.00	ng/L	81.5	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		1.60	2.00	ng/L	80.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		1.62	2.00	ng/L	80.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		1.73	2.00	ng/L	86.6	(22%-166%)
13C-OCDD		3.20	4.00	ng/L	80.1	(13%-199%)
13C-2,3,7,8-TCDF		1.88	2.00	ng/L	94.2	(22%-152%)
13C-1,2,3,7,8-PeCDF		1.88	2.00	ng/L	93.9	(21%-192%)
13C-2,3,4,7,8-PeCDF		1.83	2.00	ng/L	91.7	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		1.61	2.00	ng/L	80.7	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		1.63	2.00	ng/L	81.5	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		1.65	2.00	ng/L	82.3	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		1.70	2.00	ng/L	84.9	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		1.57	2.00	ng/L	78.6	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		1.66	2.00	ng/L	82.9	(20%-186%)
37Cl-2,3,7,8-TCDD		0.178	0.200	ng/L	89.0	(31%-191%)

Comments:

U **Analyte was analyzed for, but not detected above the specified detection limit.**

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, April 06, 2018 14:45:40 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	7.06e4	9.02e4	1.61e5	30.40	1.001	0.78	NO	10.933	0.0442	7.41e5	1566	473.2	9.25e5	1168	792.4	bd	bb
2	12378-PeCDD	3.75e5	2.37e5	6.13e5	33.61	1.000	1.58	NO	59.765	0.0695	8.39e6	3068	2733.8	5.50e6	3306	1665.1	bd	bb
3	123478-HxCDD	2.98e5	2.39e5	5.38e5	36.07	1.000	1.25	NO	56.839	0.0865	6.22e6	3096	2008.7	4.98e6	3690	1350.8	bd	bd
4	123678-HxCDD	3.28e5	2.62e5	5.91e5	36.15	1.000	1.25	NO	56.505	0.0844	6.35e6	3096	2050.4	5.17e6	3690	1400.2	db	db
5	123789-HxCDD	3.09e5	2.52e5	5.60e5	36.37	1.007	1.23	NO	57.966	0.0880	5.80e6	3096	1872.2	4.67e6	3690	1266.0	bb	bb
6	1234678-HpCDD	2.25e5	2.18e5	4.43e5	39.23	1.000	1.03	NO	49.428	0.162	3.37e6	3882	867.9	3.21e6	4586	699.3	bb	bd
7	OCDD	3.68e5	4.14e5	7.82e5	43.14	1.000	0.89	NO	107.812	0.177	4.06e6	2602	1560.9	4.46e6	2918	1527.9	bd	bd
8	2378-TCDF	8.18e4	1.09e5	1.91e5	29.47	1.001	0.75	NO	9.938	0.0363	8.71e5	1457	597.7	1.20e6	1635	733.3	bb	bb
9	12378-PeCDF	4.85e5	3.18e5	8.03e5	32.83	1.000	1.53	NO	50.505	0.0676	1.18e7	5514	2131.4	7.64e6	4597	1662.7	bd	bd
10	23478-PeCDF	5.31e5	3.43e5	8.74e5	33.42	1.000	1.55	NO	50.267	0.0616	1.26e7	5514	2280.6	8.30e6	4597	1805.9	bb	bb
11	123478-HxCDF	3.66e5	2.99e5	6.65e5	35.39	1.000	1.23	NO	54.734	0.128	7.73e6	6853	1128.1	6.34e6	6242	1015.5	bd	bd
12	123678-HxCDF	3.96e5	3.30e5	7.26e5	35.49	1.000	1.20	NO	54.630	0.129	7.87e6	6853	1148.4	6.37e6	6242	1019.9	db	dd
13	234678-HxCDF	3.81e5	3.08e5	6.89e5	35.94	1.000	1.24	NO	54.780	0.129	7.75e6	6853	1130.5	6.26e6	6242	1002.7	bb	bb
14	123789-HxCDF	3.39e5	2.69e5	6.08e5	36.67	1.000	1.26	NO	55.522	0.174	5.63e6	6853	820.8	4.61e6	6242	738.0	bb	bb
15	1234678-HpCDF	2.74e5	2.68e5	5.42e5	38.05	1.000	1.02	NO	53.966	0.137	4.60e6	5123	898.3	4.50e6	4178	1077.1	bb	bb
16	1234789-HpCDF	2.41e5	2.40e5	4.81e5	39.84	1.000	1.00	NO	56.499	0.196	3.19e6	5123	621.7	3.29e6	4178	786.7	bb	bb
17	OCDF	3.80e5	4.23e5	8.03e5	43.41	1.007	0.90	NO	109.316	0.221	4.07e6	2939	1384.4	4.52e6	4039	1120.1	bb	bd
18	13C-2378-TCDD	7.18e5	9.32e5	1.65e6	30.37	1.024	0.77	NO	87.185	0.0819	7.55e6	3948	1913.5	9.97e6	3043	3277.0	bb	bb
19	13C-12378-PeCDD	8.06e5	4.93e5	1.30e6	33.60	1.133	1.64	NO	81.492	0.0992	1.80e7	3737	4822.0	1.15e7	3390	3407.1	bd	bb
20	13C-123478-HxCDD	6.23e5	5.07e5	1.13e6	36.06	0.992	1.23	NO	80.204	0.0886	1.29e7	5181	2489.7	1.04e7	4049	2569.9	bd	bd
21	13C-123678-HxCDD	6.73e5	5.72e5	1.24e6	36.14	0.994	1.18	NO	80.762	0.0810	1.29e7	5181	2496.9	1.07e7	4049	2640.2	db	dd
22	13C-1234678-HpCDD	4.57e5	4.38e5	8.94e5	39.21	1.078	1.04	NO	86.573	0.129	6.68e6	5212	1281.4	6.51e6	4667	1395.6	bb	bb
23	13C-OCDD	7.49e5	8.45e5	1.59e6	43.13	1.186	0.89	NO	160.158	0.138	8.03e6	4302	1866.0	8.98e6	5854	1534.7	bb	bb
24	13C-2378-TCDF	9.12e5	1.17e6	2.09e6	29.44	0.993	0.78	NO	94.193	0.109	1.01e7	5802	1740.6	1.30e7	5132	2540.2	bb	bb
25	13C-12378-PeCDF	1.18e6	7.57e5	1.93e6	32.83	1.107	1.55	NO	93.931	0.144	2.77e7	8716	3173.9	1.77e7	4667	3799.8	bd	bd
26	13C-23478-PeCDF	1.15e6	7.25e5	1.88e6	33.41	1.126	1.59	NO	91.732	0.145	2.72e7	8716	3118.5	1.74e7	4667	3728.3	bb	db
27	13C-123478-HxCDF	4.07e5	8.09e5	1.22e6	35.38	0.973	0.50	NO	80.727	0.118	8.59e6	4915	1748.4	1.72e7	8205	2094.5	bd	bd
28	13C-123678-HxCDF	4.79e5	9.44e5	1.42e6	35.48	0.976	0.51	NO	81.546	0.102	9.15e6	4915	1861.3	1.78e7	8205	2171.4	dd	db
29	13C-234678-HxCDF	4.21e5	7.98e5	1.22e6	35.94	0.988	0.53	NO	82.320	0.120	8.46e6	4915	1722.1	1.64e7	8205	1993.5	bd	bb
30	13C-123789-HxCDF	3.94e5	7.55e5	1.15e6	36.65	1.008	0.52	NO	84.850	0.131	6.77e6	4915	1376.3	1.29e7	8205	1568.8	bb	bb
31	13C-1234678-HpCDF	2.80e5	6.36e5	9.15e5	38.04	1.046	0.44	NO	78.574	0.0988	4.73e6	3665	1291.1	1.05e7	4846	2171.0	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, April 06, 2018 14:45:40 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.35e5	5.32e5	7.67e5	39.83	1.095	0.44	NO	82.869	0.124	3.28e6	3665	893.8	7.38e6	4846	1523.7	bb	bb
33	13C-1234-TCDD	7.28e5	9.29e5	1.66e6	29.67	0.000	0.78	NO	100.000	0.0935	8.21e6	3948	2080.0	1.03e7	3043	3400.9	bb	bb
34	13C-123789-HxCDD	7.20e5	6.52e5	1.37e6	36.36	0.000	1.10	NO	100.000	0.0910	1.33e7	5181	2567.5	1.12e7	4049	2771.6	bb	dd
35	37Cl-2378-TCDD	1.71e5		1.71e5	30.40	1.025			8.901	0.0140	1.81e6	1213	1492.2				bb	

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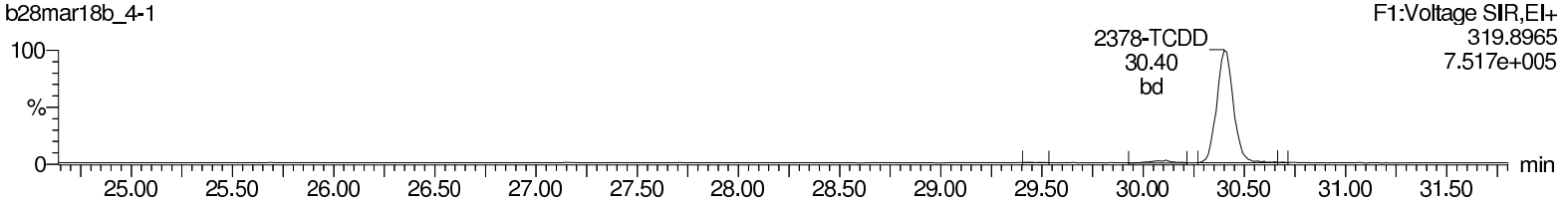
Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

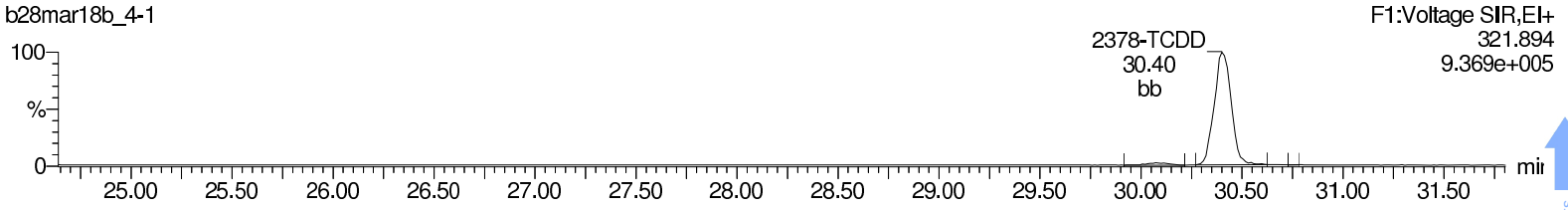
Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

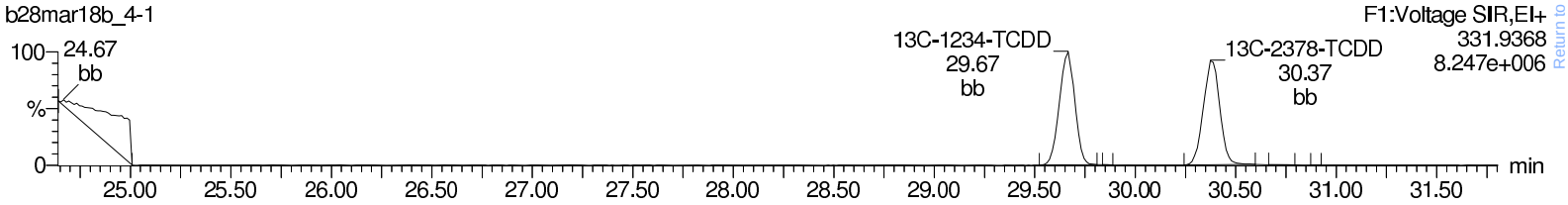
Total-tetradioxins



Total-tetradioxins



13C-2378-TCDD



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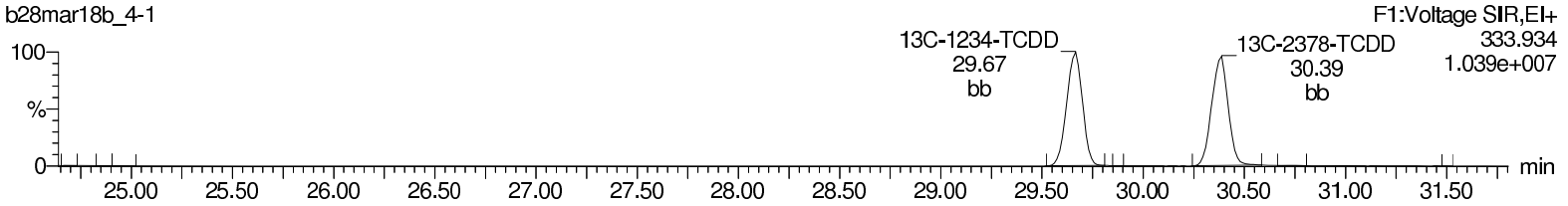
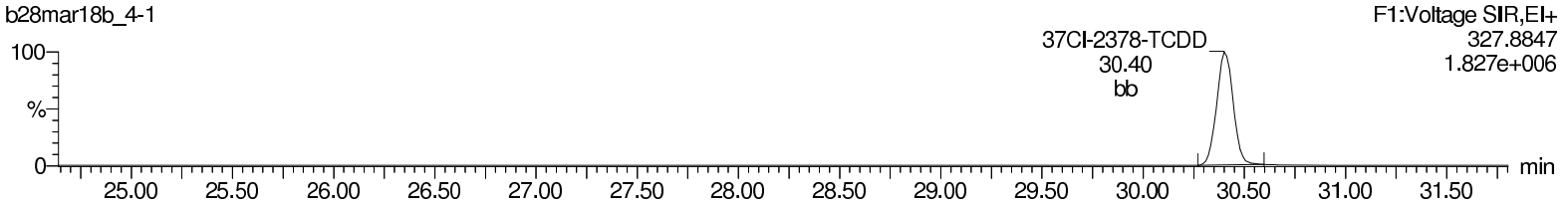
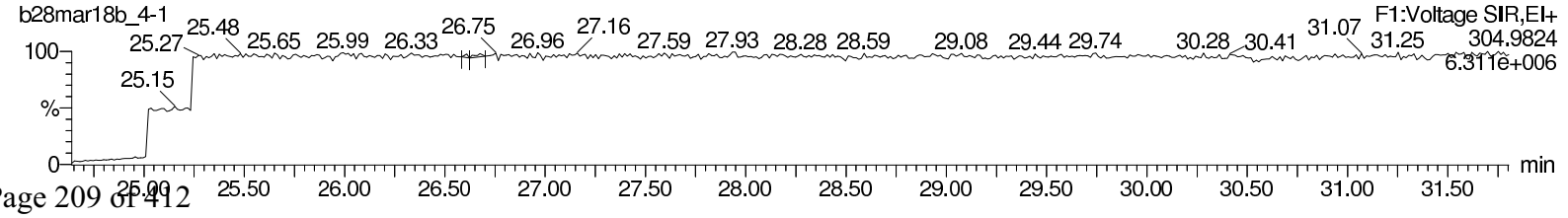


37Cl-2378-TCDD



Lock Mass F1

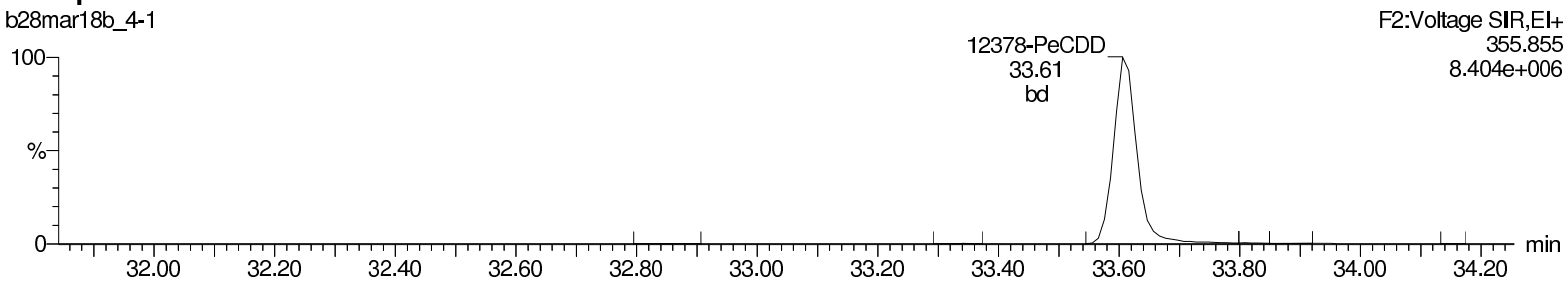


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

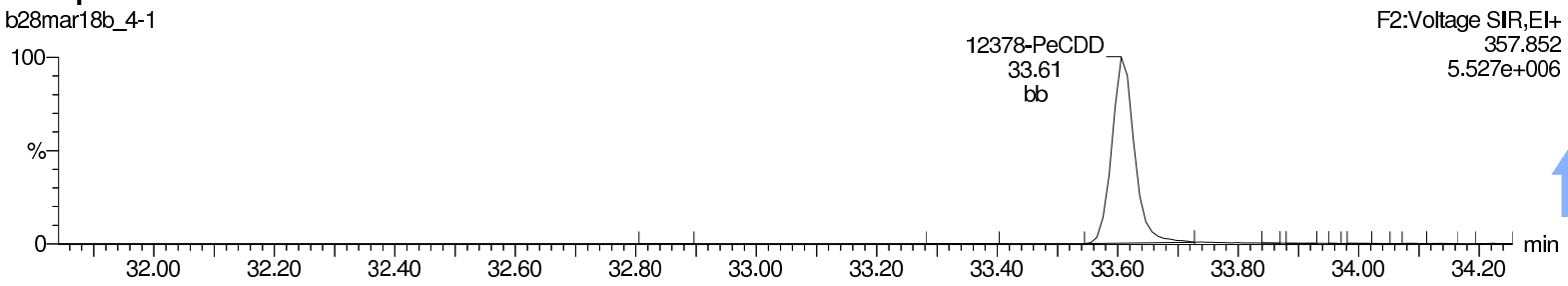
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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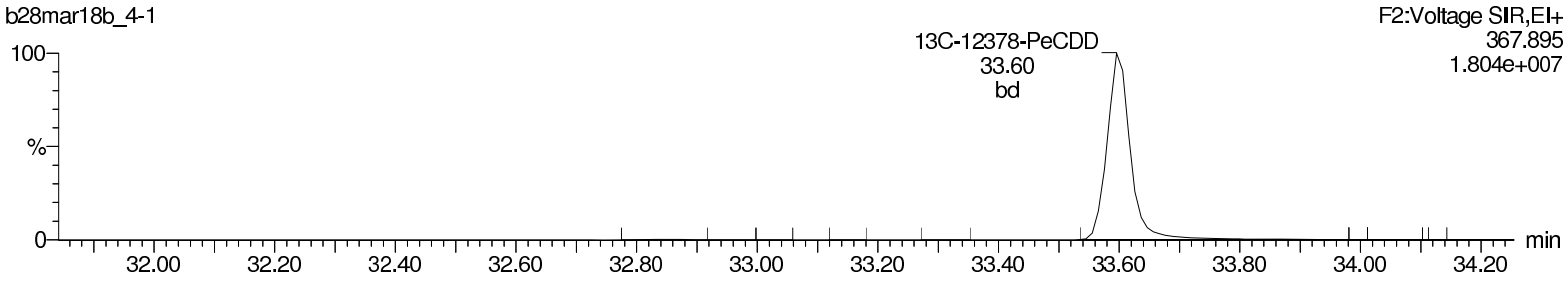

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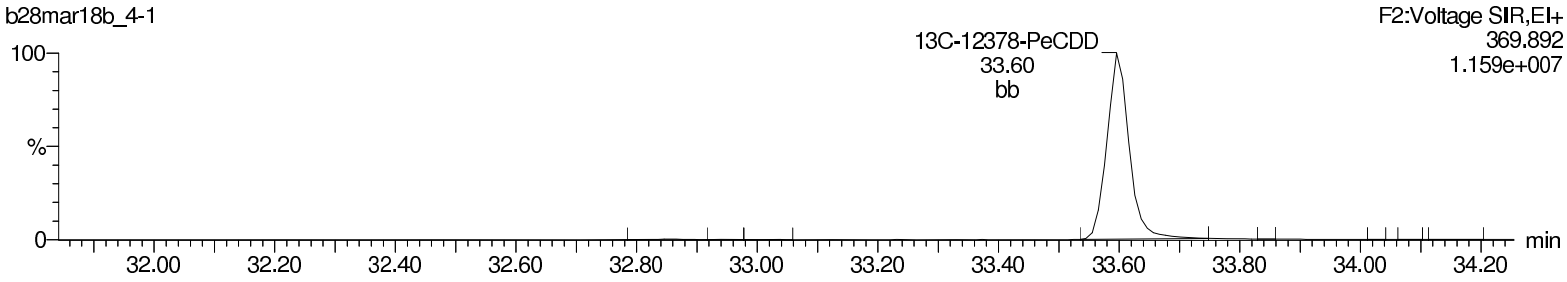
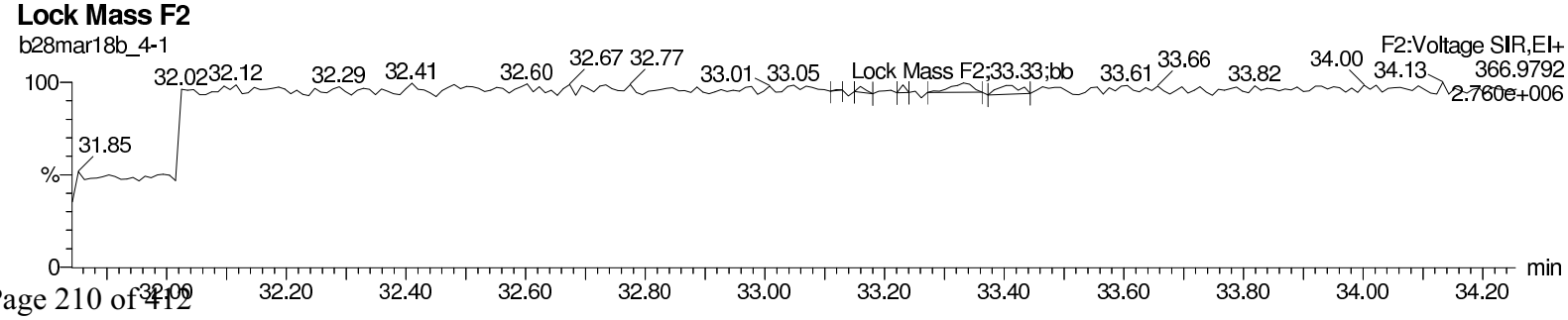


Lock Mass F2

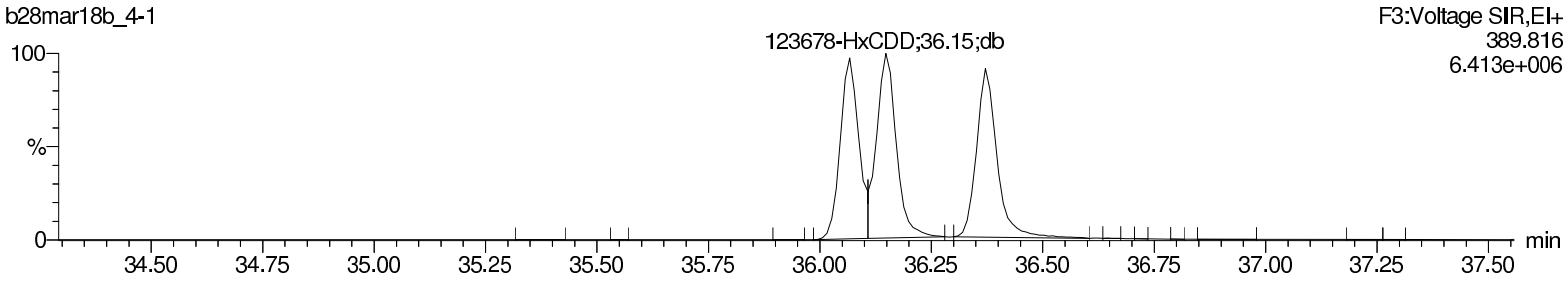


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

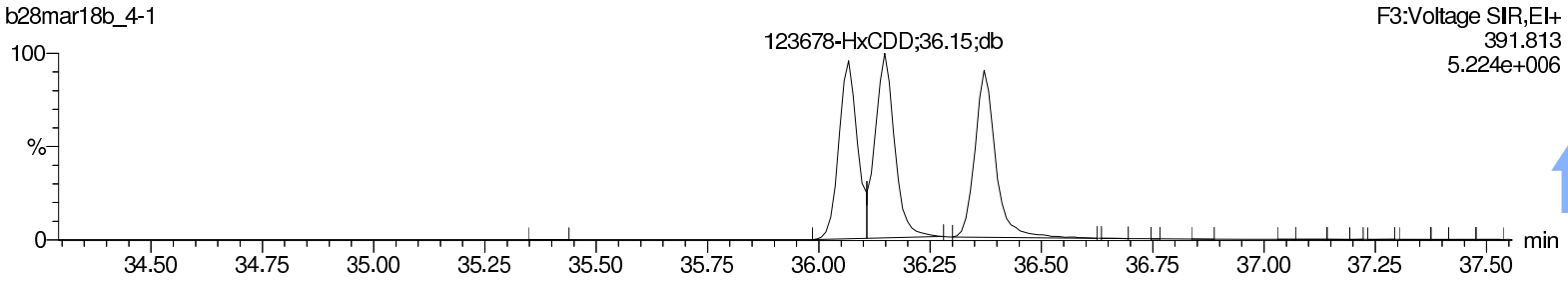
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-hexadioxins



Total-hexadioxins



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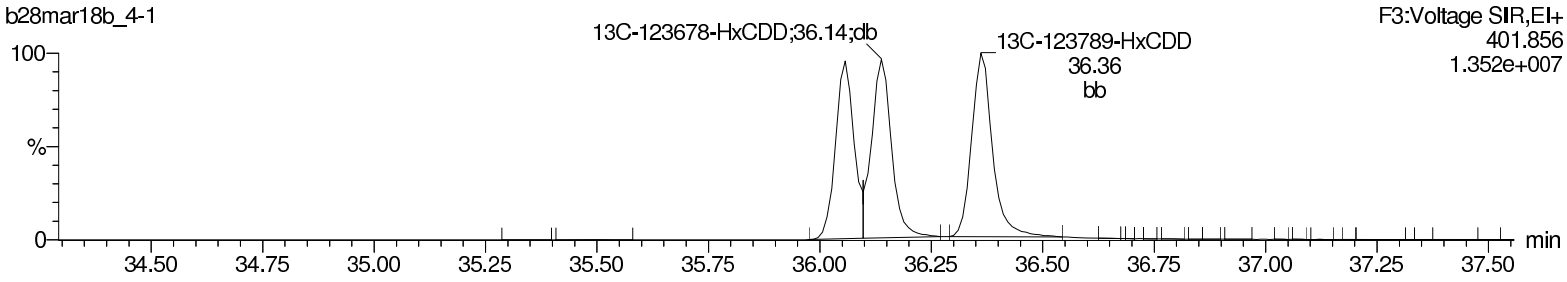
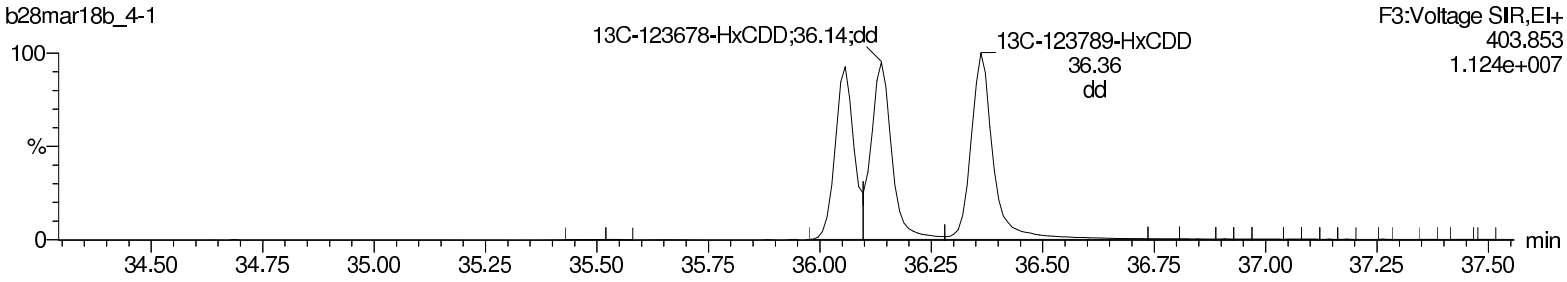
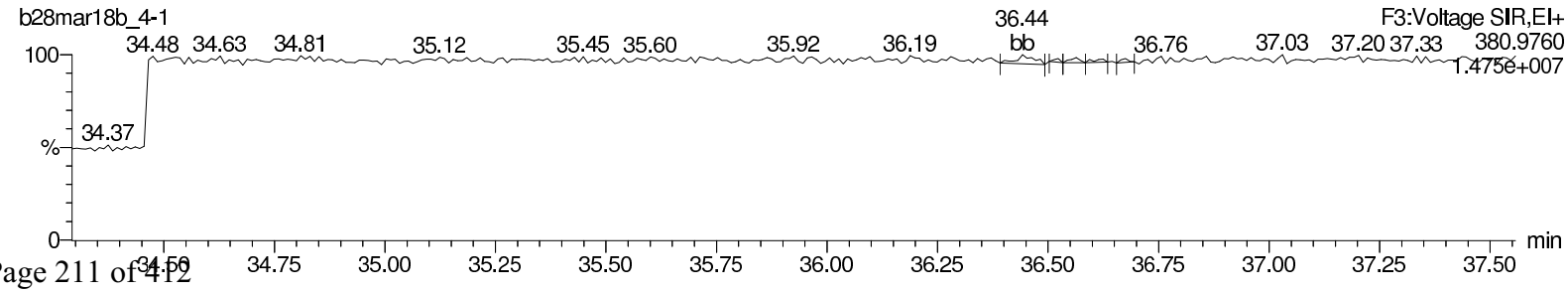


13C-123478-HxCDD



Lock Mass F3

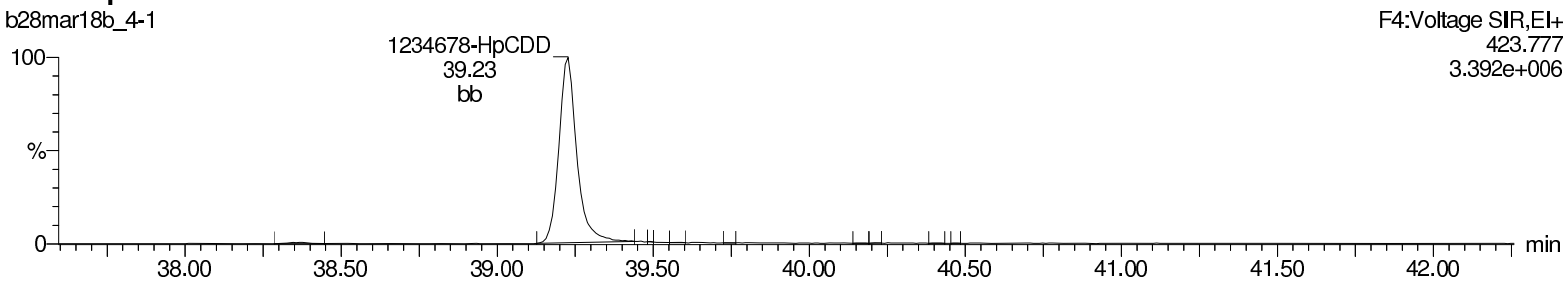


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

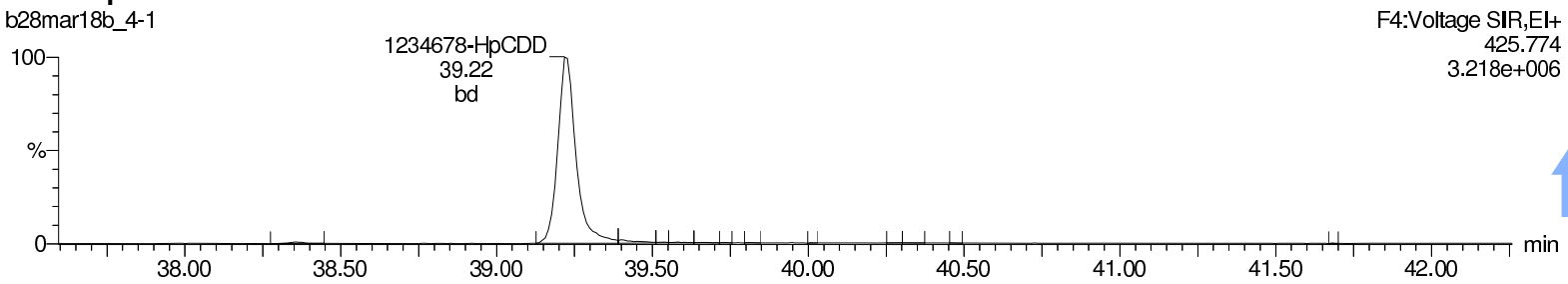
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-heptadioxins



Total-heptadioxins



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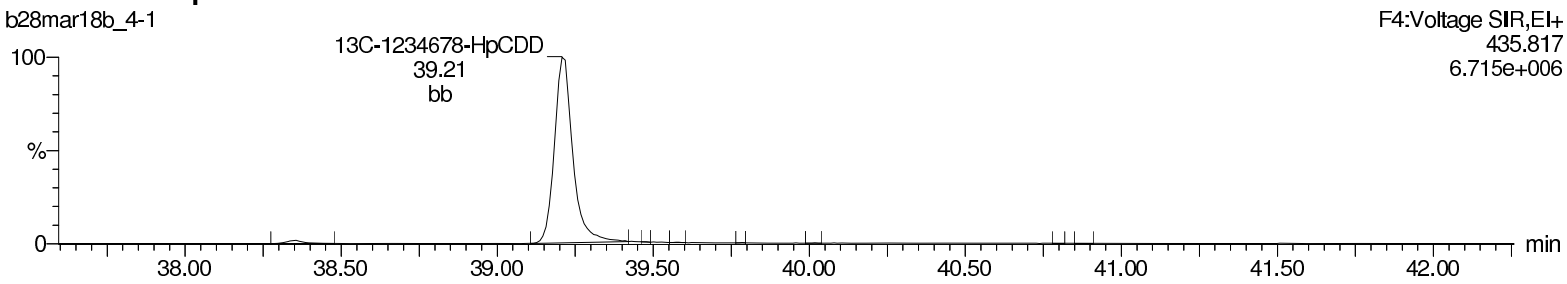

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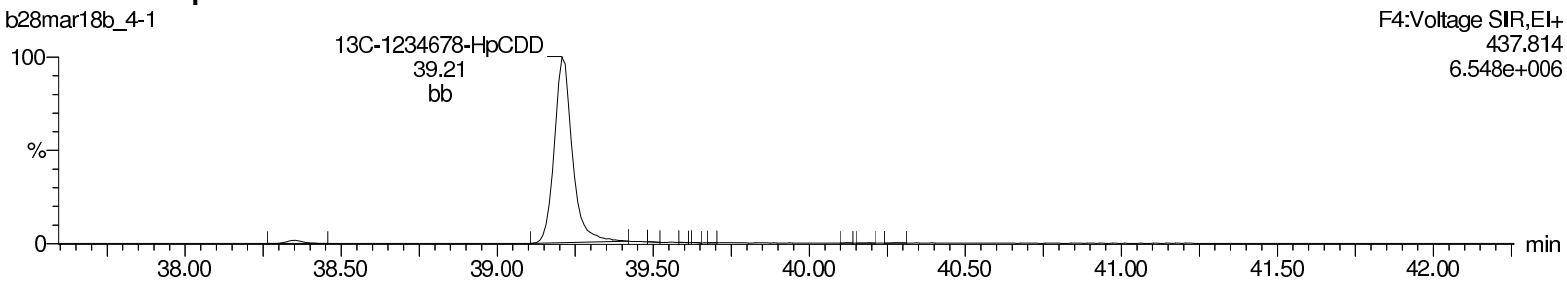
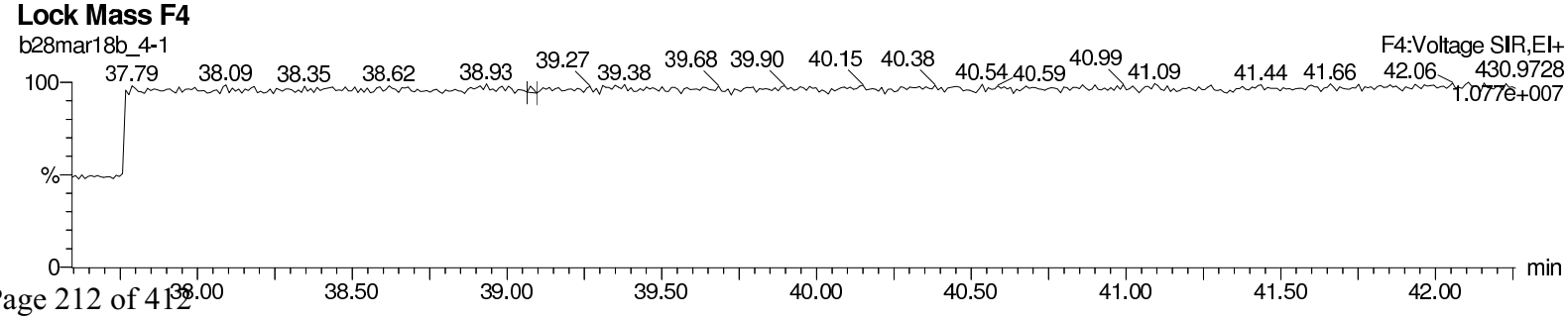


Lock Mass F4



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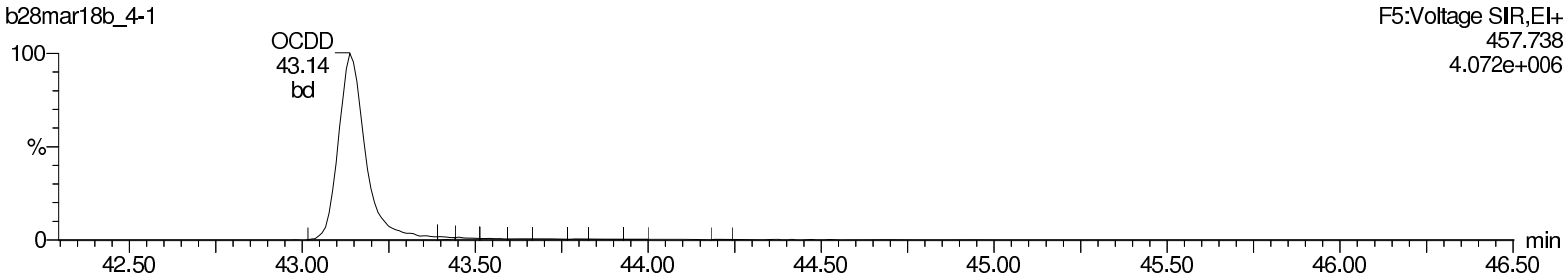
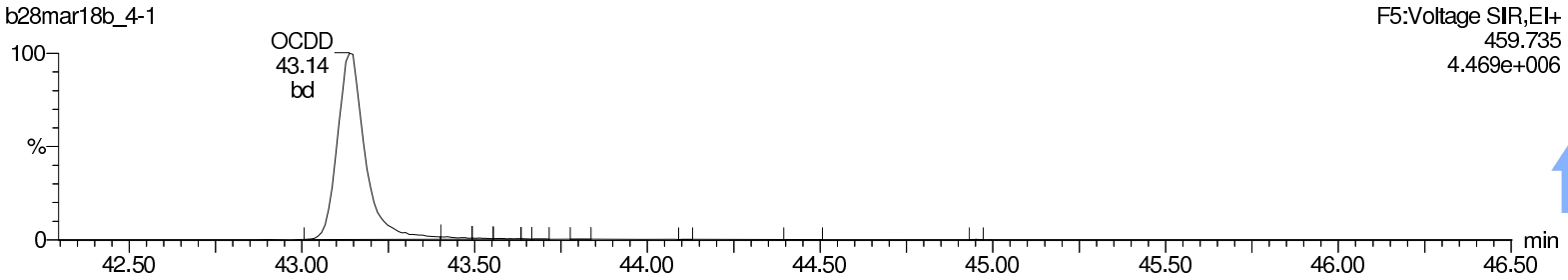
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

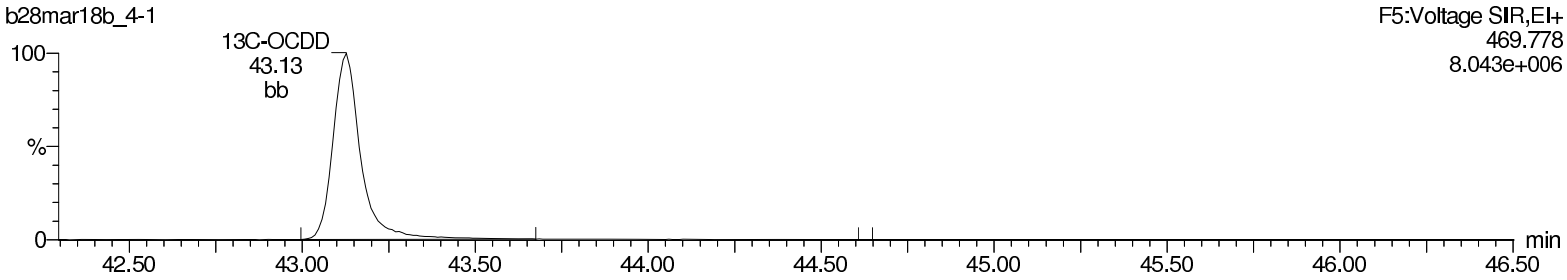
OCDD



OCDD



13C-OCDD



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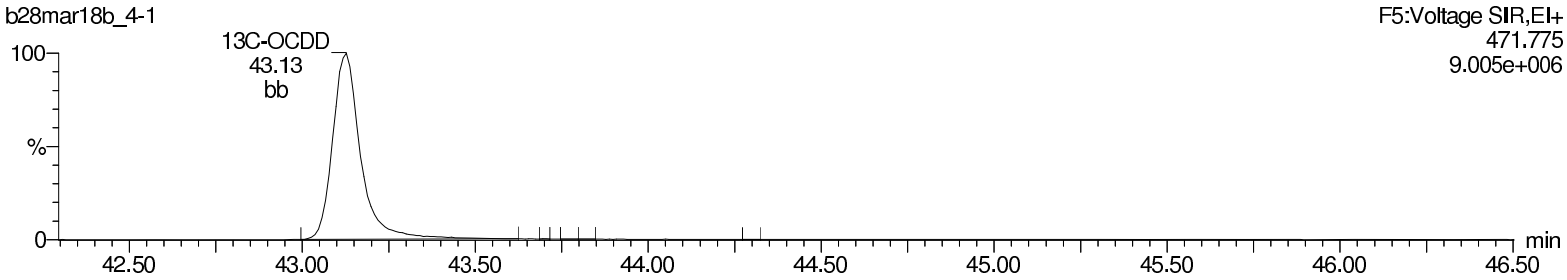
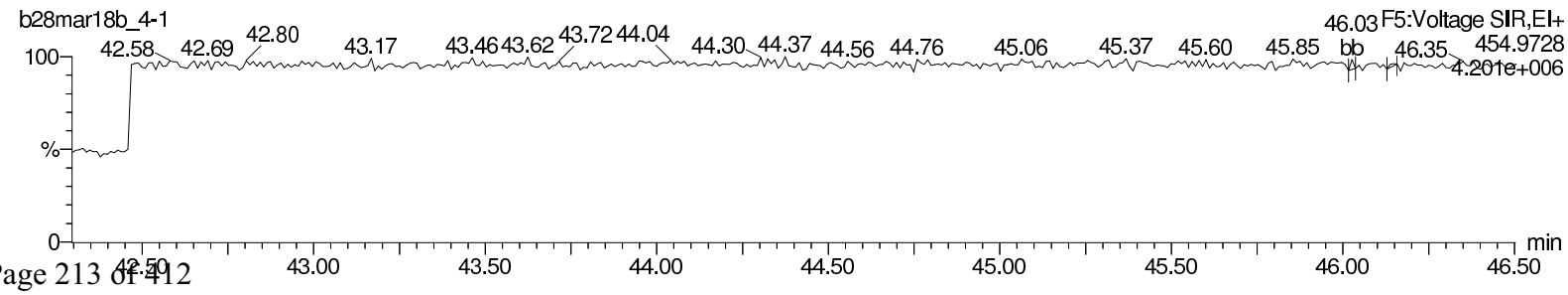


Lock Mass F5

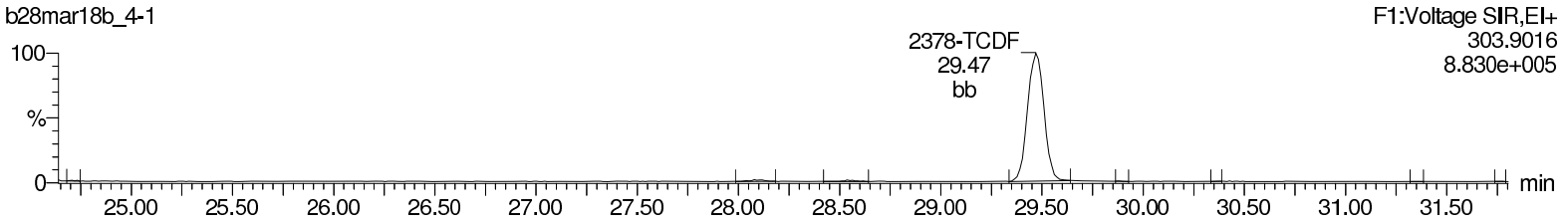


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

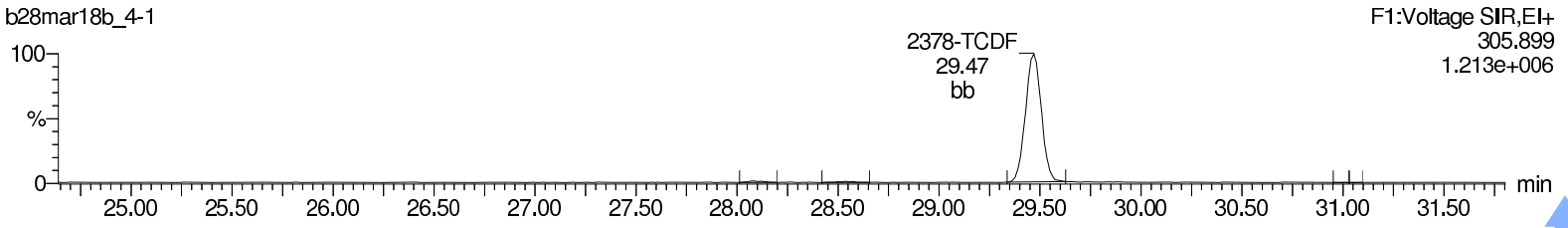
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

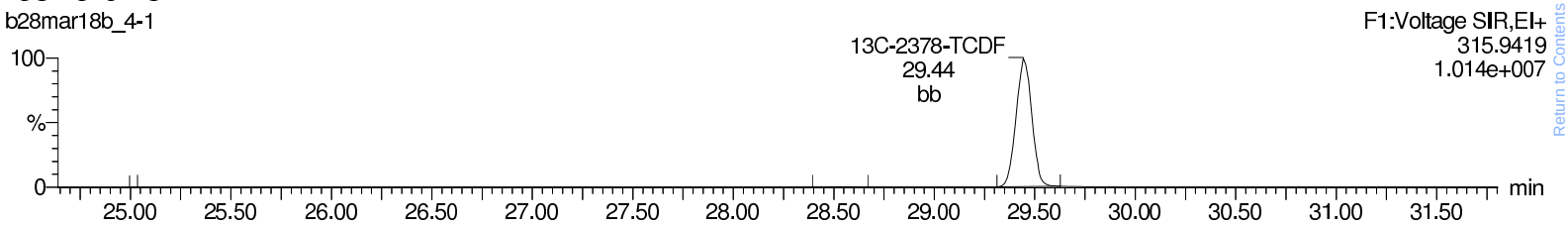
Total-tetrafurans



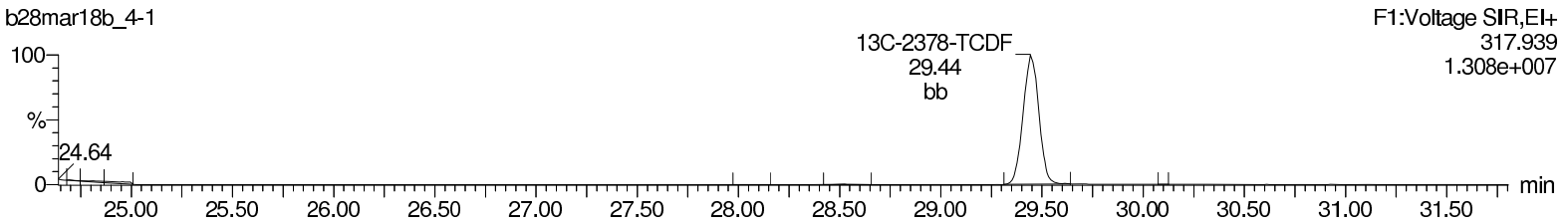
Total-tetrafurans



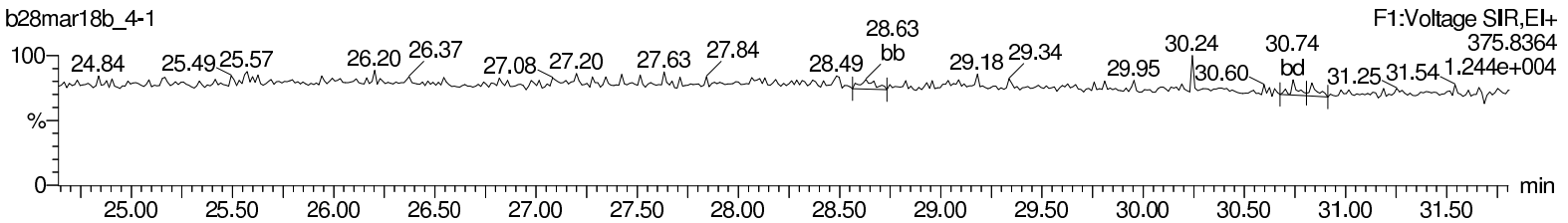
13C-2378-TCDF



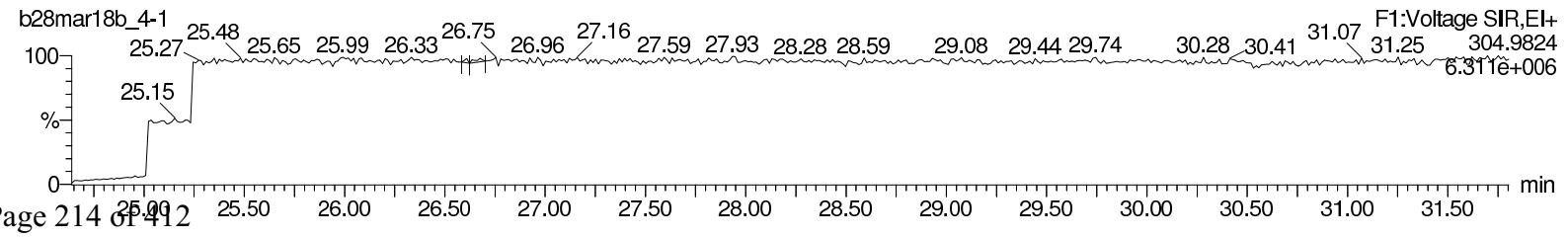
13C-2378-TCDF



HxDPE



Lock Mass F1

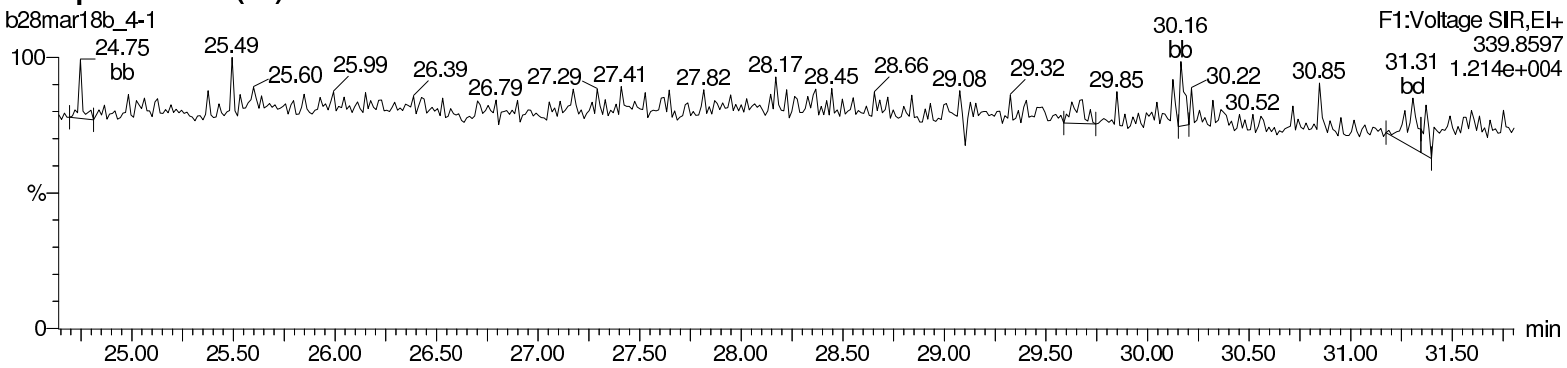


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

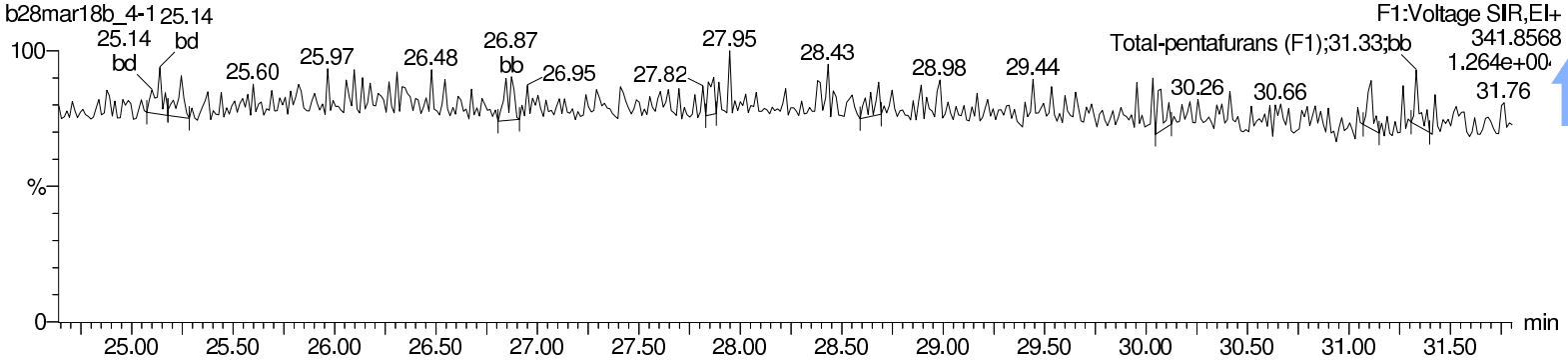
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

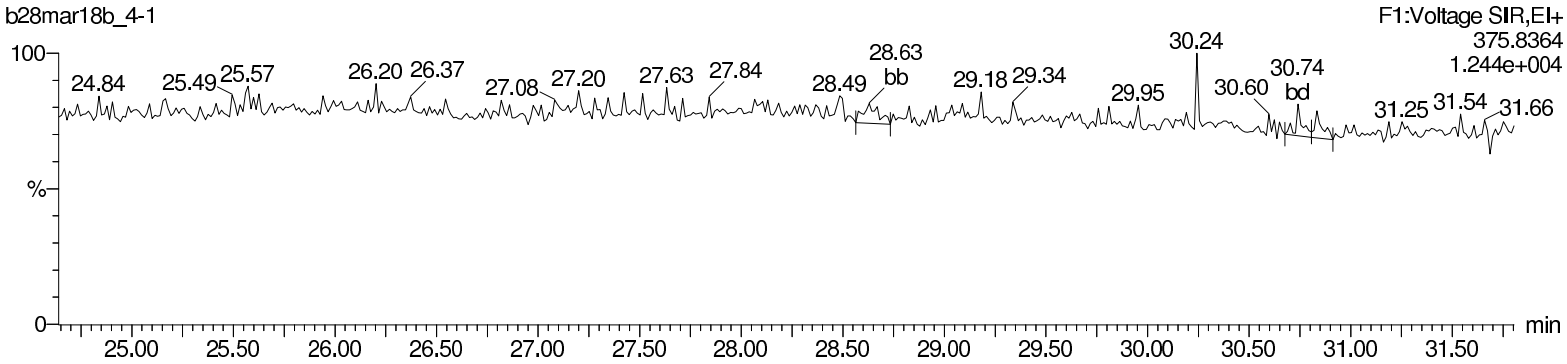
Total-pentafurans (F1)



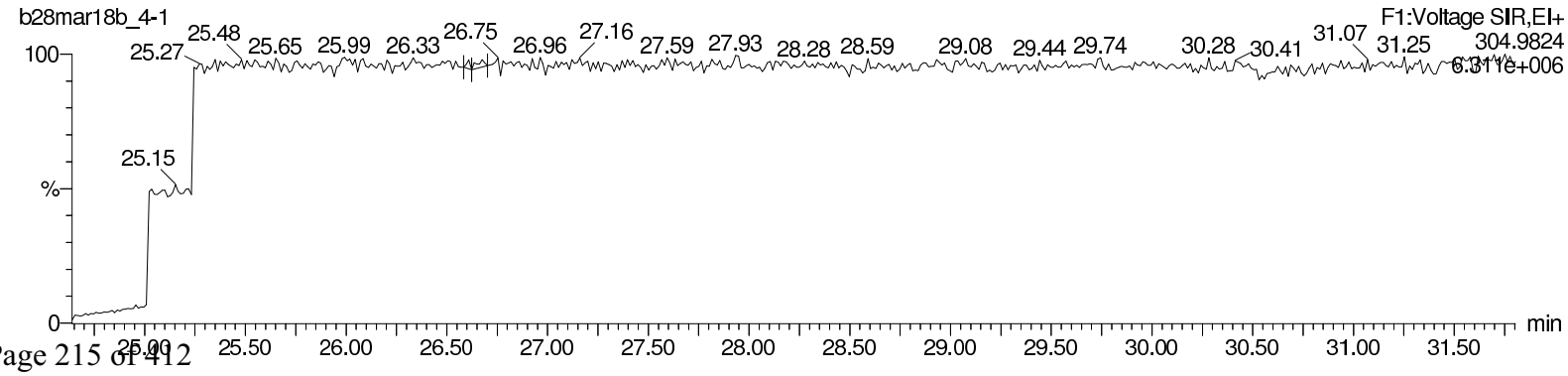
Total-pentafurans (F1)



HxDPE



Lock Mass F1

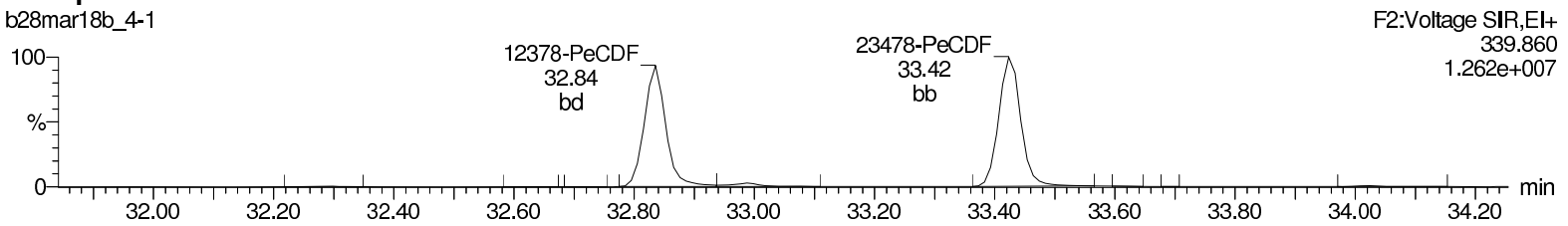


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

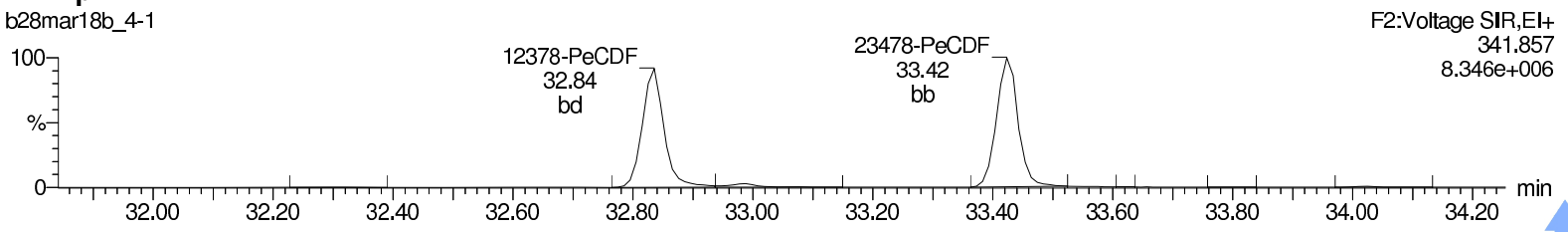
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

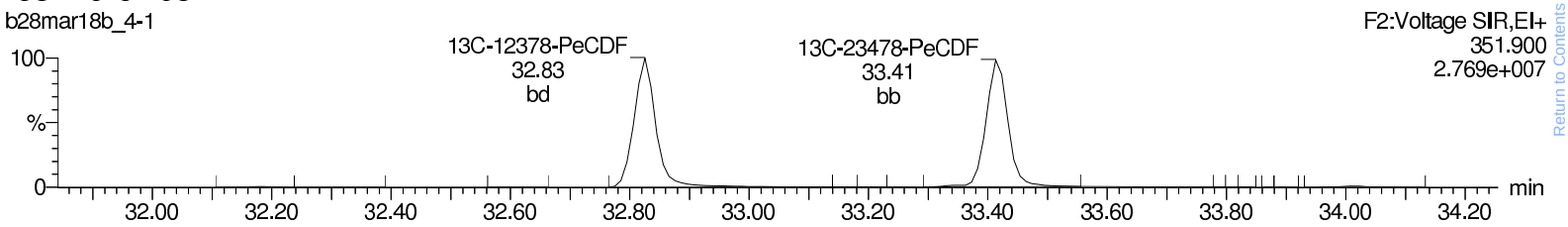
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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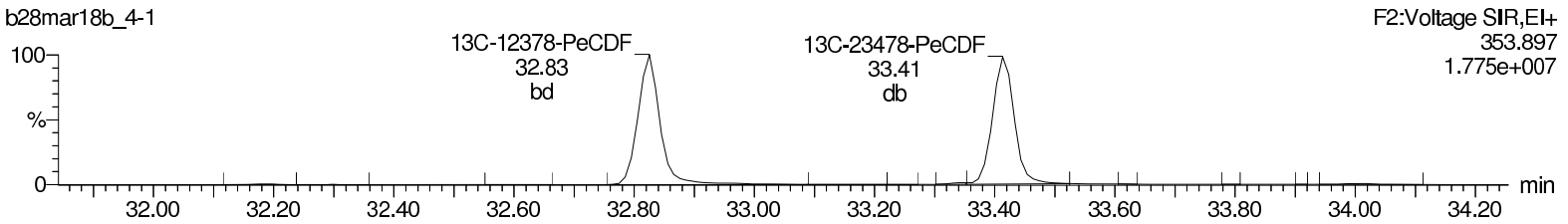
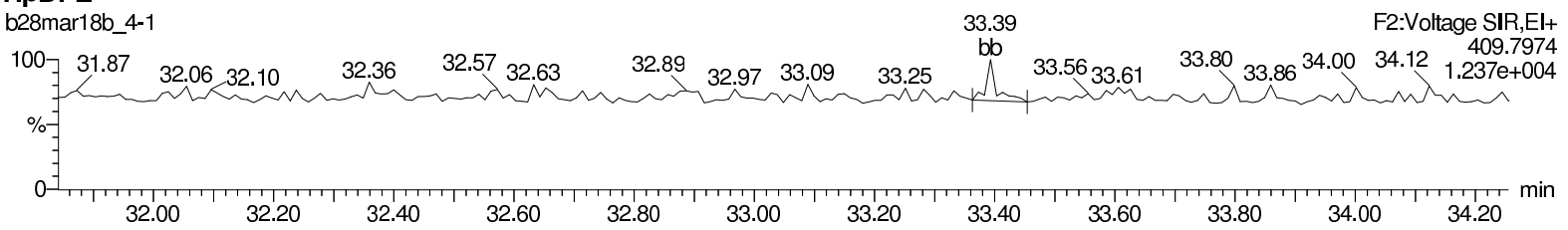
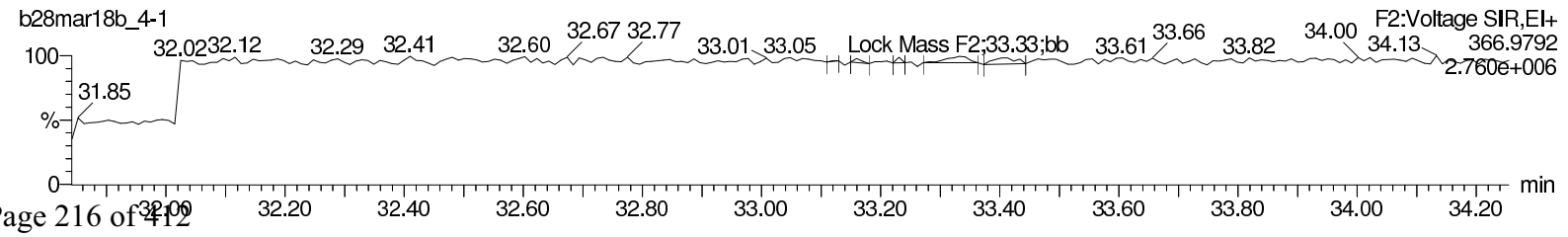
13C-12378-PeCDF



HpDPE



Lock Mass F2

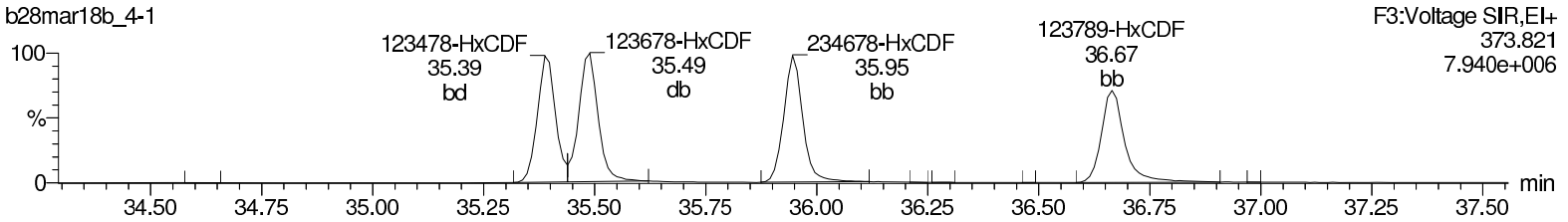


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

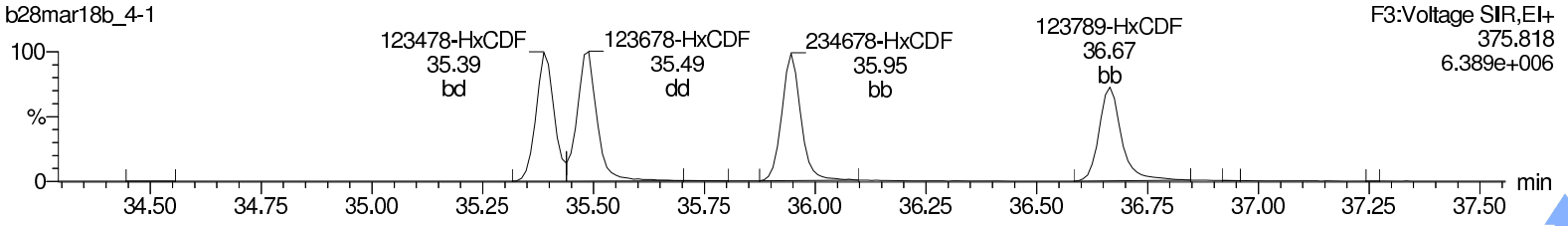
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

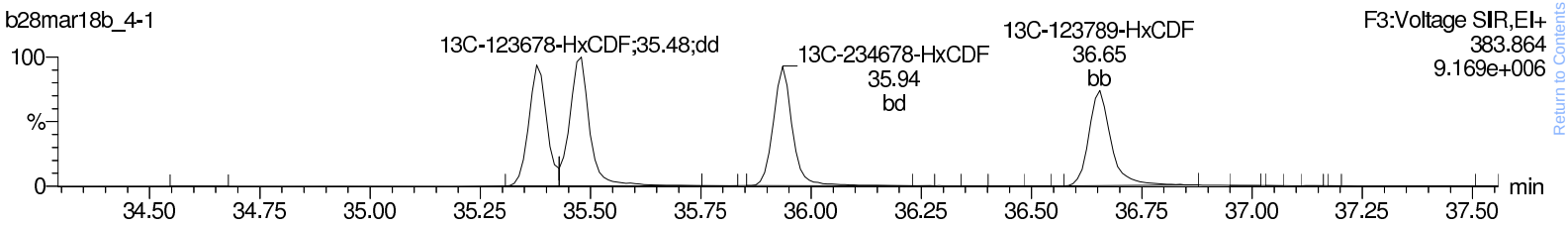
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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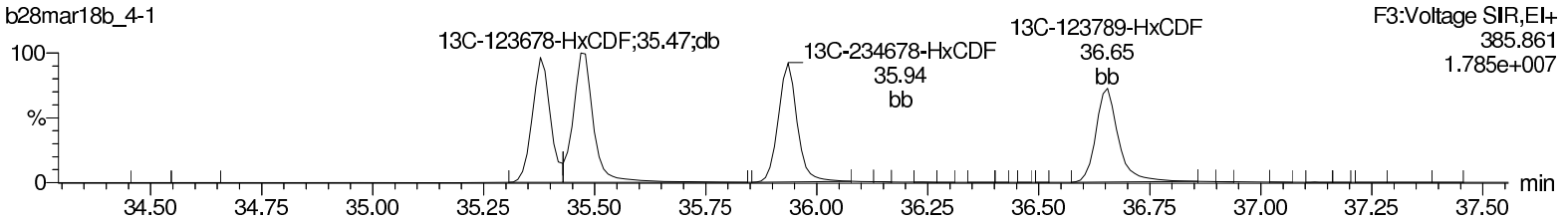

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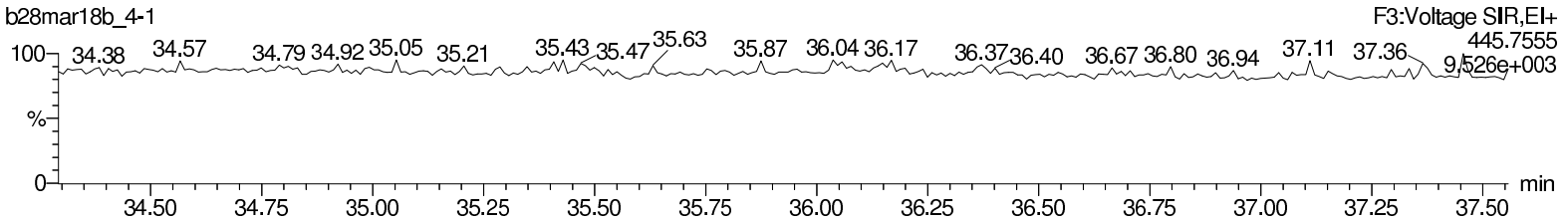
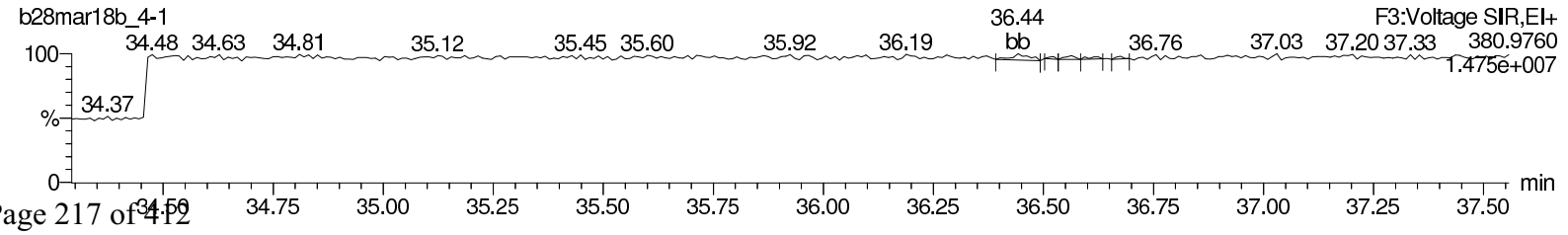


Lock Mass F3



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
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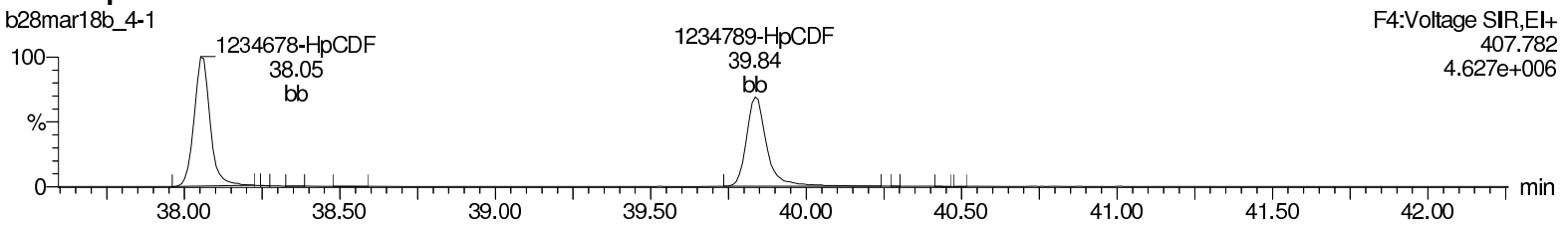
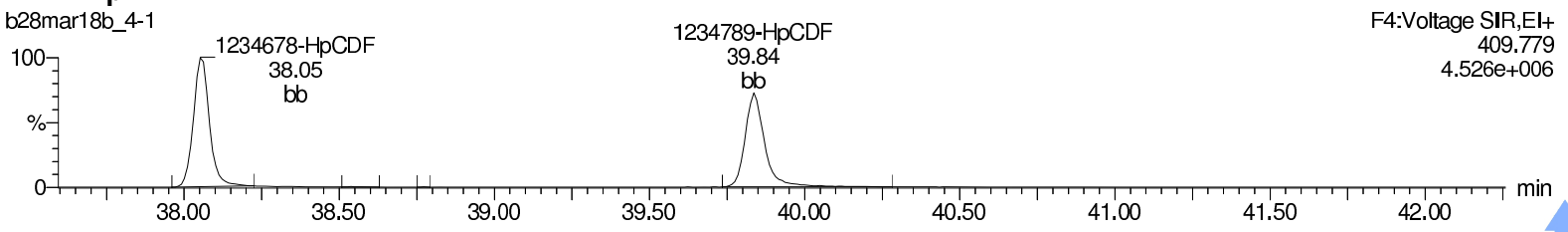
Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

Total-heptafurans



Total-heptafurans



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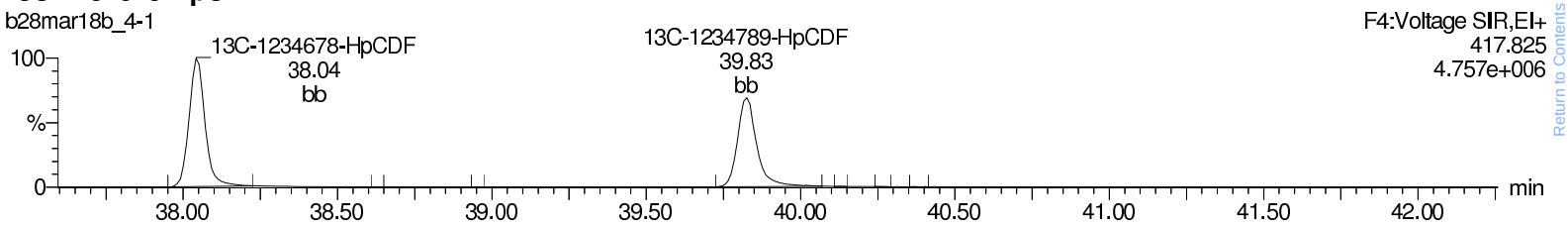

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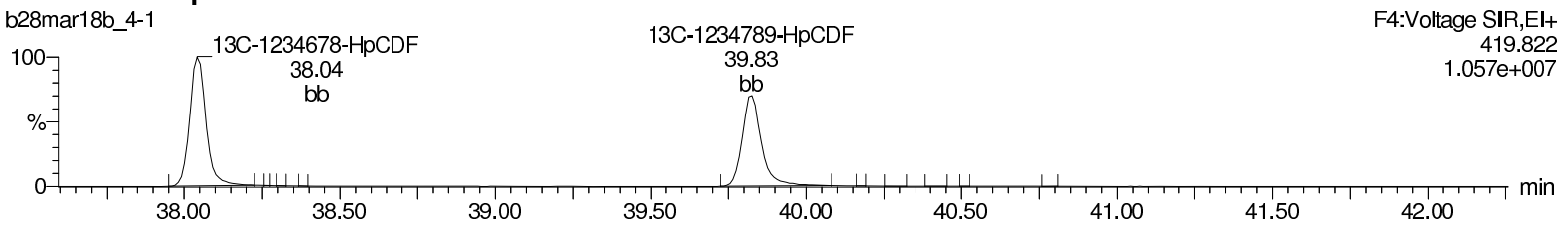

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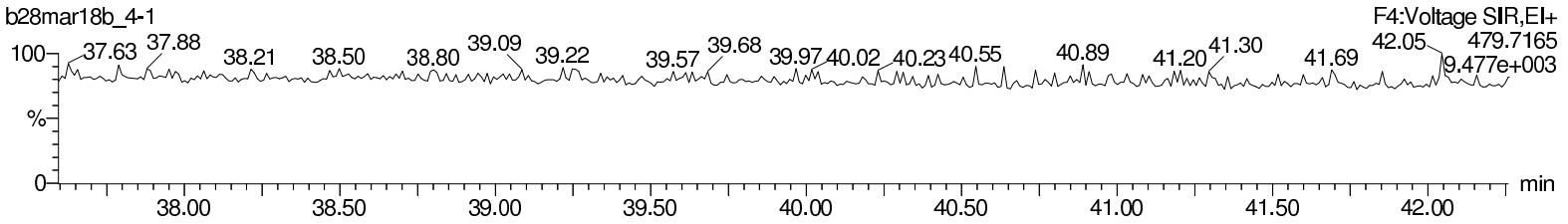
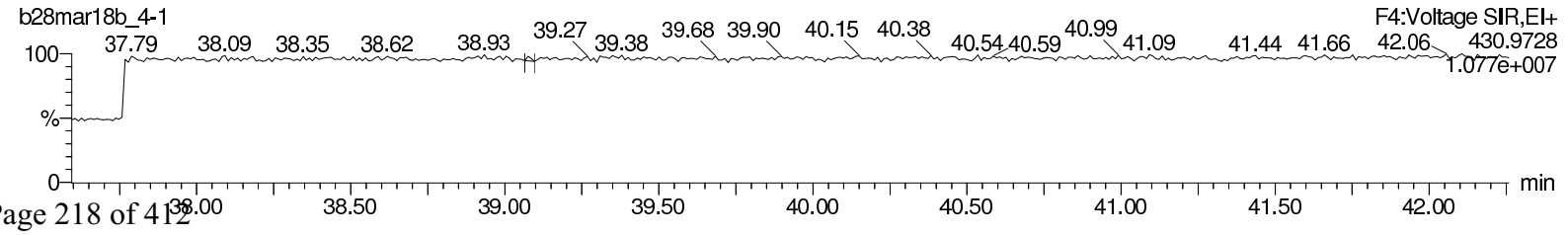


Lock Mass F4



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-1, Date: 29-Mar-2018, Time: 21:15:48, ID: 12020982-1 LCS, Description: , Job: %613%, Task: HRP763_1, User: CLP

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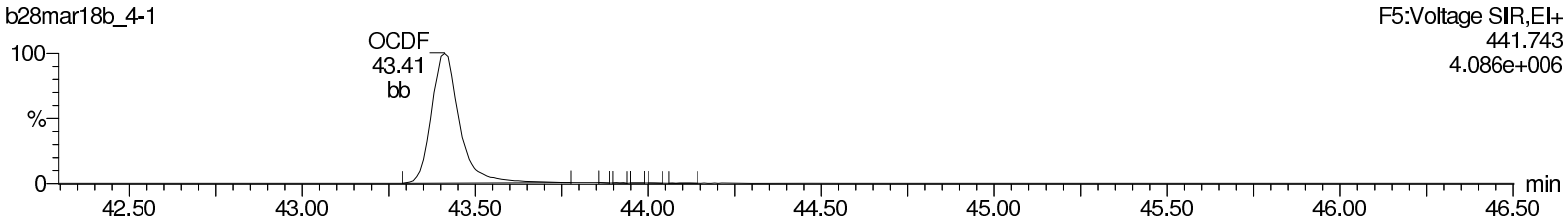

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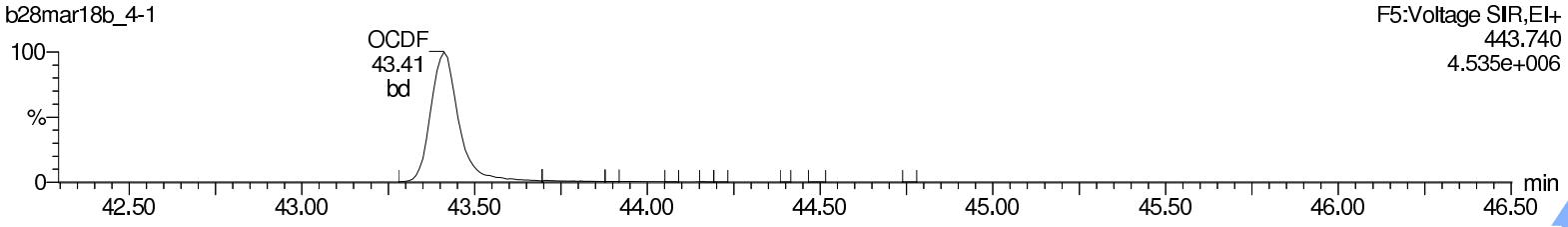

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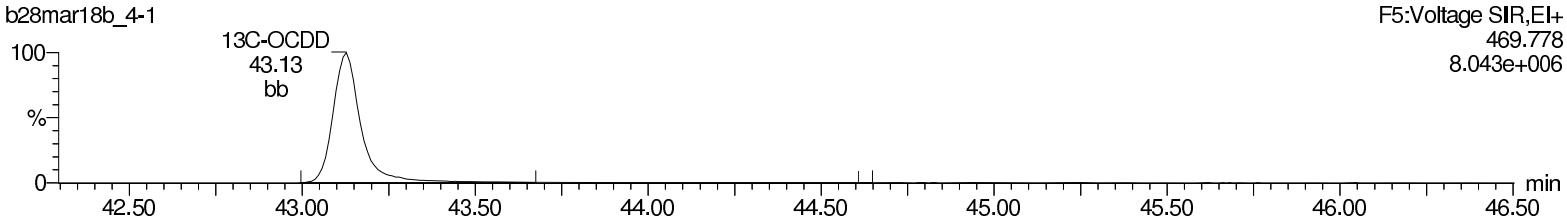

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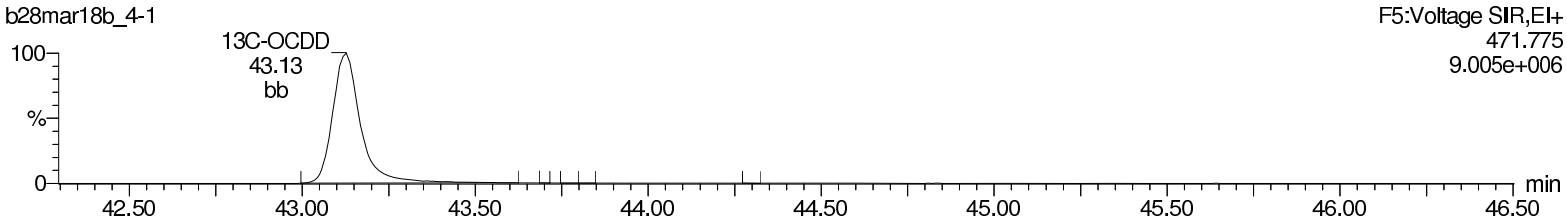
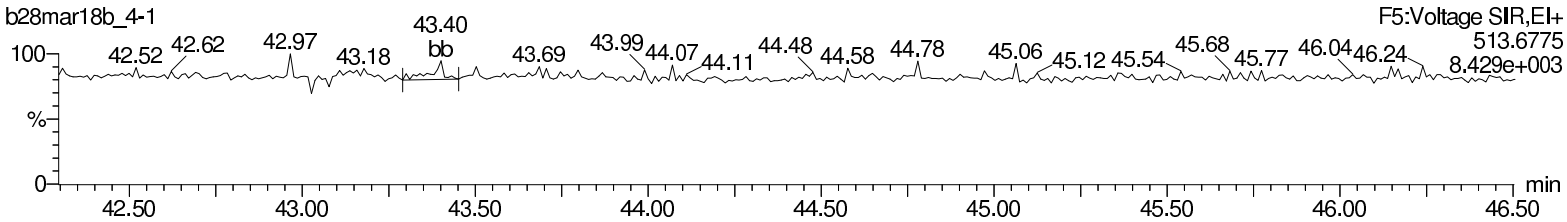
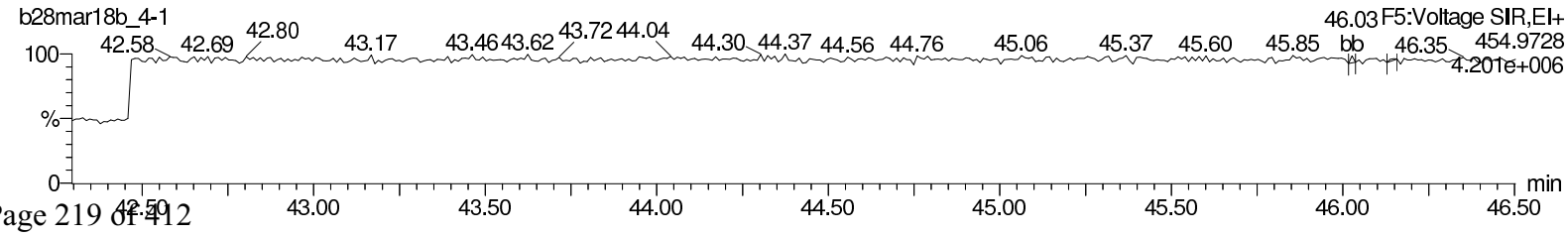


DeDPE



Lock Mass F5



Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**18-03-1974**	**Client:**	**CALS001**	**Project:**	**CALS00214**
Lab Sample ID:	**12020983**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 37284**				
Client ID:	**LCSD for batch 37284**			**Prep Basis:**	**As Received**
Batch ID:	**37301**	**Method:**	**EPA Method 1613B**		
Run Date:	**03/29/2018 22:03**	**Analyst:**	**CLP**	**Instrument:**	**HRP763**
Data File:	**b28mar18b_4-2**			**Dilution:**	**1**
Prep Batch:	**37284**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**28-MAR-18**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		0.210	ng/L	0.00101	0.010
40321-76-4	1,2,3,7,8-PeCDD		1.19	ng/L	0.00135	0.050
39227-28-6	1,2,3,4,7,8-HxCDD		1.14	ng/L	0.00312	0.050
57653-85-7	1,2,3,6,7,8-HxCDD		1.12	ng/L	0.00306	0.050
19408-74-3	1,2,3,7,8,9-HxCDD		1.15	ng/L	0.00318	0.050
35822-46-9	1,2,3,4,6,7,8-HpCDD		0.985	ng/L	0.00292	0.050
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2.16	ng/L	0.0052	0.100
51207-31-9	2,3,7,8-TCDF		0.195	ng/L	0.00095	0.010
57117-41-6	1,2,3,7,8-PeCDF		1.04	ng/L	0.00156	0.050
57117-31-4	2,3,4,7,8-PeCDF		1.01	ng/L	0.00139	0.050
70648-26-9	1,2,3,4,7,8-HxCDF		1.10	ng/L	0.00226	0.050
57117-44-9	1,2,3,6,7,8-HxCDF		1.10	ng/L	0.00216	0.050
60851-34-5	2,3,4,6,7,8-HxCDF		1.10	ng/L	0.00228	0.050
72918-21-9	1,2,3,7,8,9-HxCDF		1.11	ng/L	0.00316	0.050
67562-39-4	1,2,3,4,6,7,8-HpCDF		1.08	ng/L	0.0029	0.050
55673-89-7	1,2,3,4,7,8,9-HpCDF		1.08	ng/L	0.00414	0.050
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2.20	ng/L	0.00482	0.100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1.65	2.00	ng/L	82.7	(20%-175%)
13C-1,2,3,7,8-PeCDD		1.50	2.00	ng/L	75.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		1.53	2.00	ng/L	76.3	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		1.61	2.00	ng/L	80.5	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		1.71	2.00	ng/L	85.5	(22%-166%)
13C-OCDD		3.10	4.00	ng/L	77.4	(13%-199%)
13C-2,3,7,8-TCDF		1.74	2.00	ng/L	87.1	(22%-152%)
13C-1,2,3,7,8-PeCDF		1.69	2.00	ng/L	84.5	(21%-192%)
13C-2,3,4,7,8-PeCDF		1.70	2.00	ng/L	84.9	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		1.55	2.00	ng/L	77.3	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		1.61	2.00	ng/L	80.4	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		1.60	2.00	ng/L	80.0	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		1.65	2.00	ng/L	82.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		1.54	2.00	ng/L	77.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		1.63	2.00	ng/L	81.4	(20%-186%)
37Cl-2,3,7,8-TCDD		0.170	0.200	ng/L	84.9	(31%-191%)

Comments:

U **Analyte was analyzed for, but not detected above the specified detection limit.**

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, April 06, 2018 14:46:48 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	5.92e4	7.72e4	1.36e5	30.41	1.001	0.77	NO	10.480	0.0507	5.84e5	1671	349.4	7.68e5	1061	724.3	bb	bd
2	12378-PeCDD	3.19e5	2.06e5	5.24e5	33.62	1.000	1.55	NO	59.495	0.0674	7.23e6	3412	2118.5	4.63e6	2008	2306.4	bb	bb
3	123478-HxCDD	2.57e5	2.07e5	4.63e5	36.07	1.000	1.24	NO	56.961	0.156	5.05e6	4491	1124.5	4.08e6	5773	706.5	bd	bd
4	123678-HxCDD	2.93e5	2.35e5	5.28e5	36.16	1.001	1.25	NO	56.108	0.153	5.16e6	4491	1150.0	4.15e6	5773	718.3	db	db
5	123789-HxCDD	2.73e5	2.16e5	4.89e5	36.38	1.007	1.26	NO	57.404	0.159	4.75e6	4491	1058.6	3.71e6	5773	642.0	bd	bd
6	1234678-HpCDD	1.99e5	1.95e5	3.94e5	39.23	1.000	1.02	NO	49.239	0.146	2.83e6	3227	877.8	2.77e6	3170	872.3	bb	bd
7	OCDD	3.18e5	3.67e5	6.85e5	43.15	1.000	0.87	NO	108.093	0.260	3.29e6	3475	948.0	3.85e6	3328	1157.2	bd	bd
8	2378-TCDF	6.92e4	9.23e4	1.61e5	29.47	1.000	0.75	NO	9.743	0.0475	7.32e5	1478	495.1	9.61e5	1866	515.0	bb	bb
9	12378-PeCDF	4.22e5	2.71e5	6.93e5	32.84	1.000	1.55	NO	51.929	0.0781	9.68e6	4879	1983.2	6.40e6	4304	1486.6	bd	bd
10	23478-PeCDF	4.59e5	3.02e5	7.61e5	33.43	1.000	1.52	NO	50.728	0.0693	1.10e7	4879	2249.3	7.06e6	4304	1641.4	bb	bb
11	123478-HxCDF	3.17e5	2.60e5	5.77e5	35.40	1.000	1.22	NO	54.886	0.113	6.59e6	4940	1334.4	5.31e6	4777	1112.0	bd	bd
12	123678-HxCDF	3.65e5	2.88e5	6.53e5	35.49	1.000	1.27	NO	55.163	0.108	6.91e6	4940	1398.6	5.54e6	4777	1159.1	dd	db
13	234678-HxCDF	3.35e5	2.75e5	6.10e5	35.96	1.001	1.22	NO	55.244	0.114	6.43e6	4940	1302.4	5.12e6	4777	1071.2	bb	bd
14	123789-HxCDF	2.97e5	2.38e5	5.35e5	36.67	1.000	1.25	NO	55.539	0.158	4.69e6	4940	950.1	3.80e6	4777	794.7	bd	bd
15	1234678-HpCDF	2.43e5	2.40e5	4.83e5	38.06	1.000	1.01	NO	54.208	0.145	3.97e6	4007	991.1	3.77e6	4114	916.9	bb	bd
16	1234789-HpCDF	2.05e5	2.02e5	4.07e5	39.85	1.000	1.02	NO	53.891	0.207	2.79e6	4007	697.3	2.75e6	4114	668.6	bd	bb
17	OCDF	3.34e5	3.71e5	7.05e5	43.42	1.007	0.90	NO	109.923	0.241	3.54e6	3168	1118.3	3.95e6	3204	1233.3	bd	bd
18	13C-2378-TCDD	6.33e5	8.27e5	1.46e6	30.39	1.024	0.76	NO	82.686	0.0798	6.55e6	3647	1795.6	8.44e6	2323	3631.7	bb	bb
19	13C-12378-PeCDD	6.86e5	4.31e5	1.12e6	33.61	1.133	1.59	NO	75.076	0.0709	1.57e7	2978	5257.1	9.67e6	1484	6517.3	bb	bb
20	13C-123478-HxCDD	5.35e5	4.36e5	9.71e5	36.06	0.991	1.23	NO	76.263	0.101	1.08e7	3739	2886.1	8.62e6	4957	1738.5	bd	bd
21	13C-123678-HxCDD	6.08e5	5.12e5	1.12e6	36.14	0.994	1.19	NO	80.479	0.0922	1.09e7	3739	2905.6	9.01e6	4957	1817.6	db	dd
22	13C-1234678-HpCDD	4.14e5	3.84e5	7.98e5	39.22	1.078	1.08	NO	85.478	0.151	5.67e6	4870	1164.4	5.44e6	4676	1163.1	bd	bb
23	13C-OCDD	6.55e5	7.37e5	1.39e6	43.13	1.186	0.89	NO	154.804	0.142	6.75e6	4471	1510.5	7.62e6	4183	1821.2	bd	bd
24	13C-2378-TCDF	7.83e5	1.02e6	1.80e6	29.46	0.993	0.77	NO	87.080	0.102	8.31e6	5377	1545.4	1.09e7	3528	3080.9	bb	bb
25	13C-12378-PeCDF	9.94e5	6.30e5	1.62e6	32.83	1.107	1.58	NO	84.546	0.168	2.19e7	7025	3114.5	1.41e7	6639	2126.1	bb	bb
26	13C-23478-PeCDF	9.88e5	6.31e5	1.62e6	33.42	1.127	1.57	NO	84.855	0.169	2.18e7	7025	3109.2	1.40e7	6639	2114.1	bb	bb
27	13C-123478-HxCDF	3.53e5	7.00e5	1.05e6	35.39	0.973	0.50	NO	77.297	0.132	7.24e6	5001	1447.2	1.42e7	7143	1992.8	bd	bd
28	13C-123678-HxCDF	4.24e5	8.43e5	1.27e6	35.48	0.975	0.50	NO	80.366	0.114	8.02e6	5001	1604.0	1.58e7	7143	2218.0	db	db
29	13C-234678-HxCDF	3.63e5	7.07e5	1.07e6	35.94	0.988	0.51	NO	79.957	0.134	6.99e6	5001	1397.7	1.36e7	7143	1900.1	bb	bb
30	13C-123789-HxCDF	3.46e5	6.64e5	1.01e6	36.65	1.008	0.52	NO	82.551	0.147	5.54e6	5001	1107.9	1.10e7	7143	1536.8	bd	bb
31	13C-1234678-HpCDF	2.48e5	5.64e5	8.13e5	38.05	1.046	0.44	NO	77.203	0.108	3.90e6	3359	1161.1	8.80e6	4358	2020.4	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 Quantification Report

Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, April 06, 2018 14:46:48 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	2.07e5	4.74e5	6.81e5	39.83	1.095	0.44	NO	81.373	0.136	2.70e6	3359	802.5	6.27e6	4358	1438.2	bd	bd
33	13C-1234-TCDD	6.79e5	8.68e5	1.55e6	29.67	0.000	0.78	NO	100.000	0.0912	7.19e6	3647	1970.7	9.16e6	2323	3942.9	bb	bb
34	13C-123789-HxCDD	6.56e5	5.83e5	1.24e6	36.37	0.000	1.13	NO	100.000	0.104	1.11e7	3739	2972.3	9.15e6	4957	1845.1	bd	dd
35	37Cl-2378-TCDD	1.52e5		1.52e5	30.41	1.025			8.493	0.0157	1.53e6	1191	1287.6				bb	

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Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

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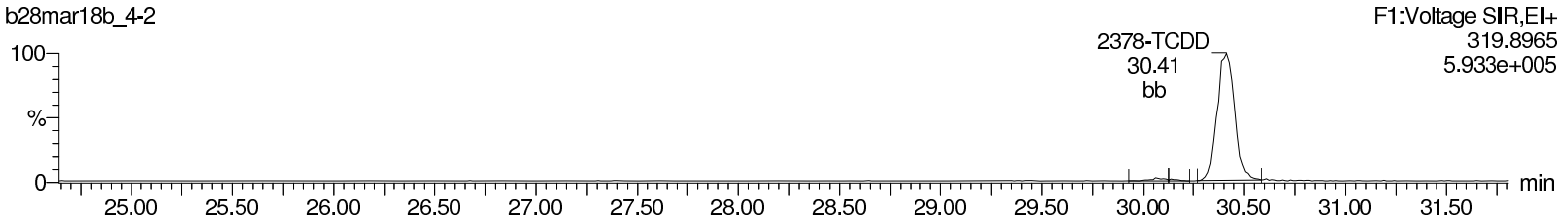
Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-tetradioxins



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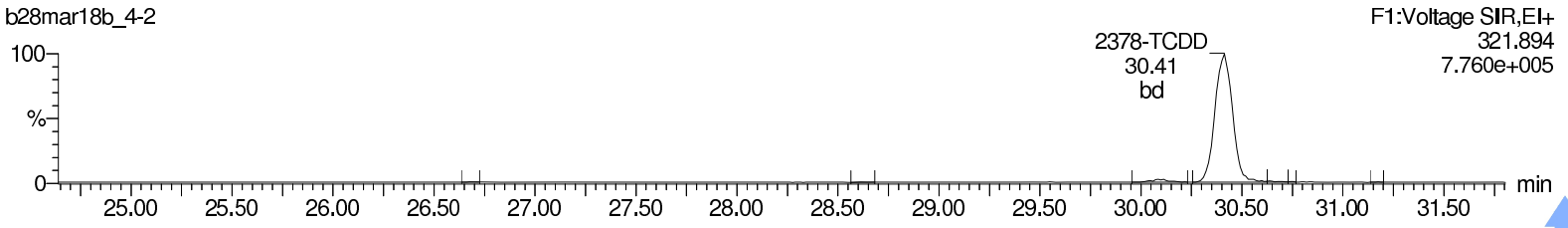

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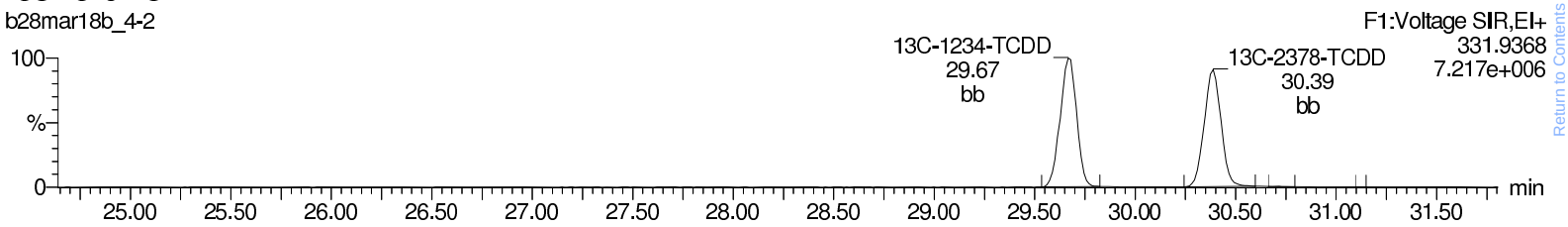

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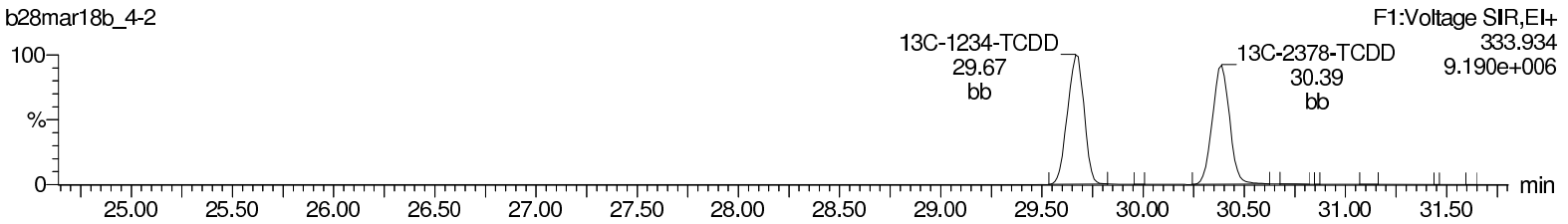

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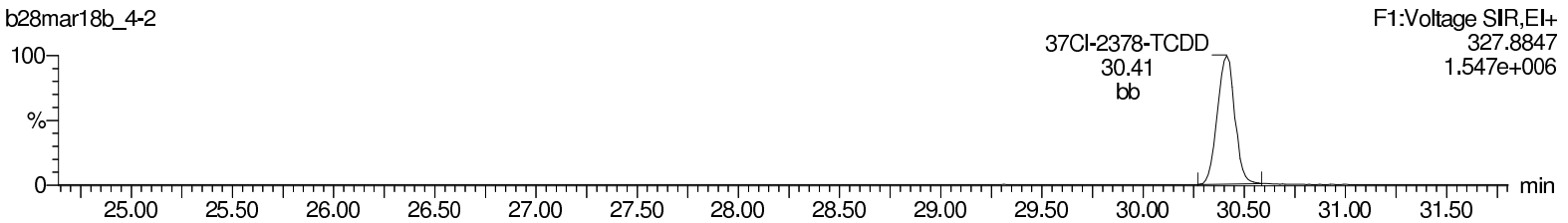
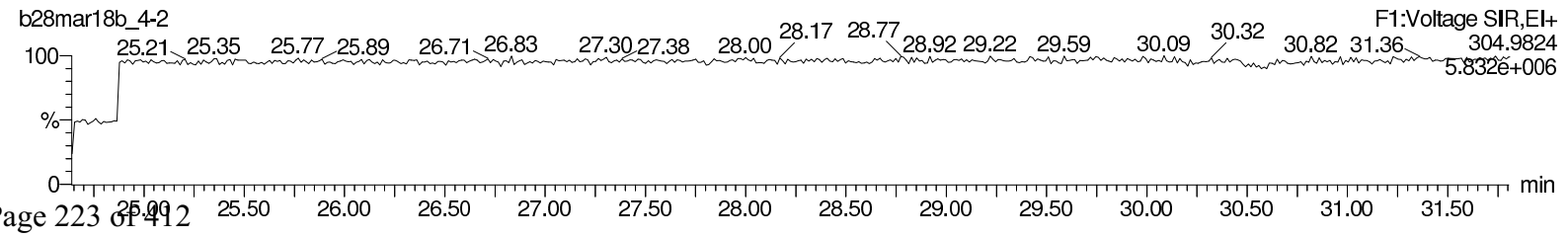


Lock Mass F1



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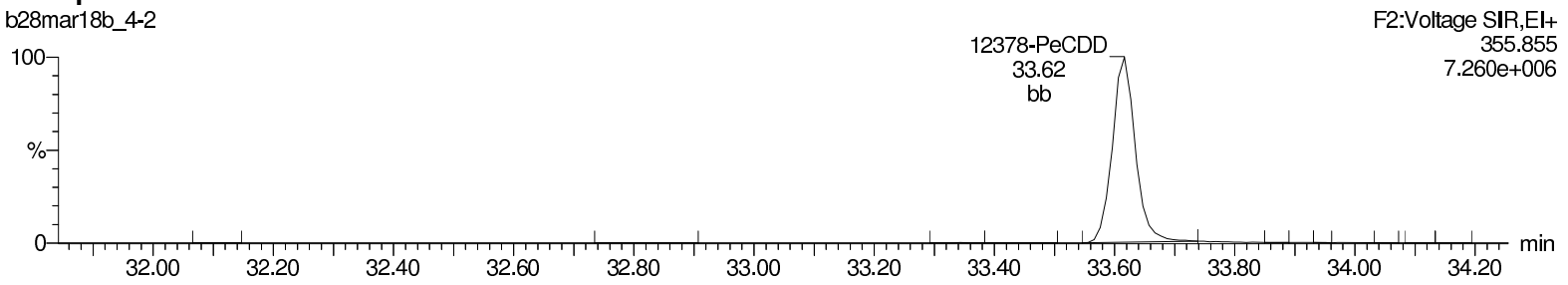
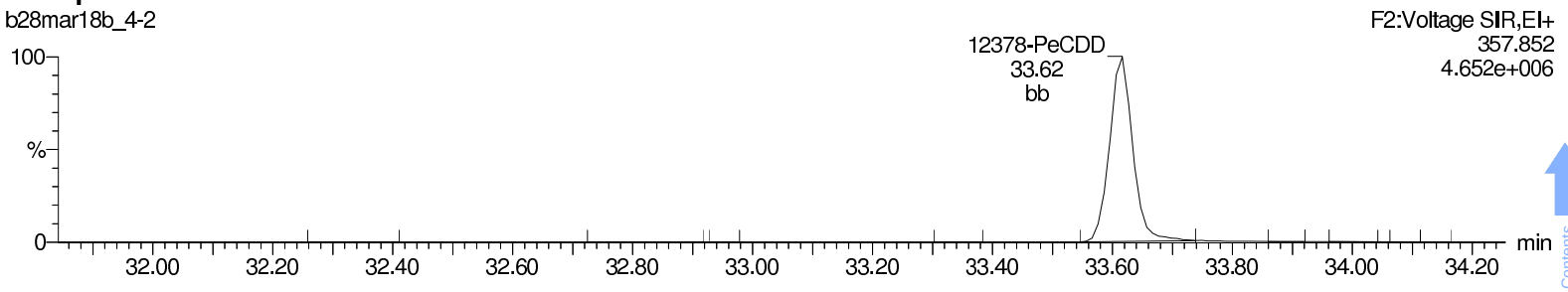
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

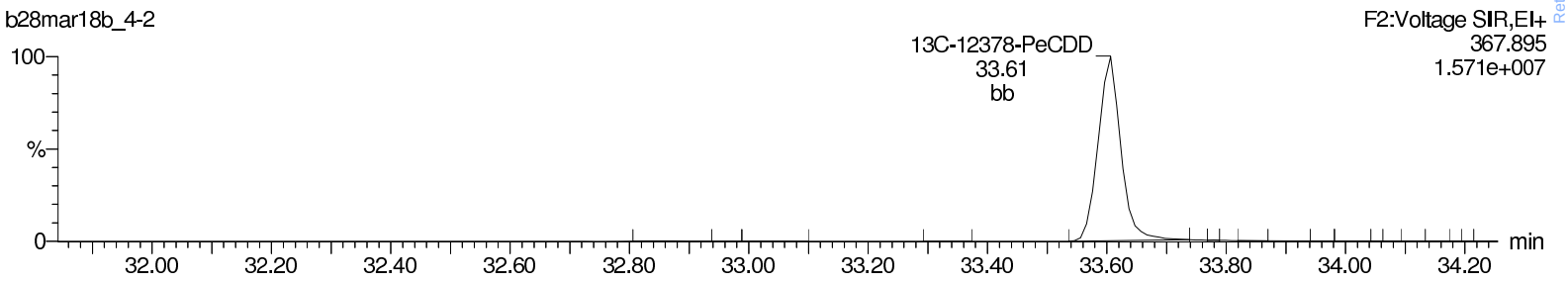
Total-pentadioxins



Total-pentadioxins



13C-12378-PeCDD



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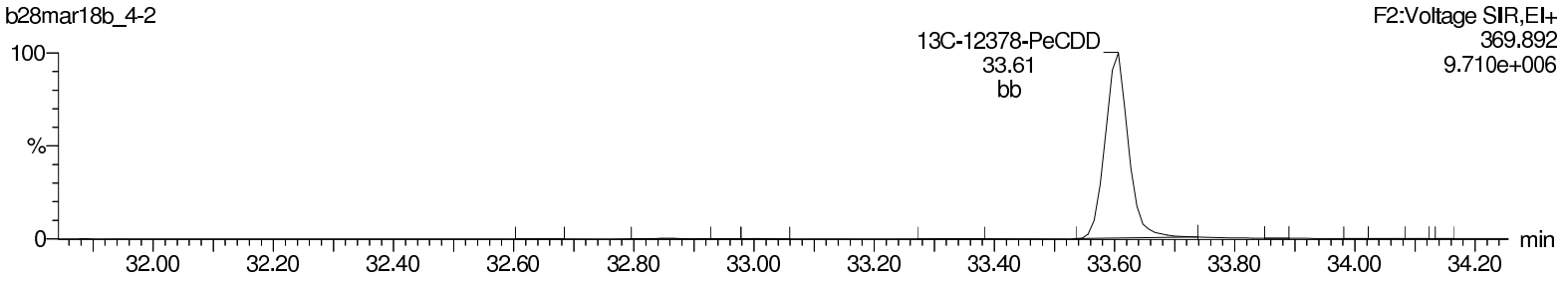
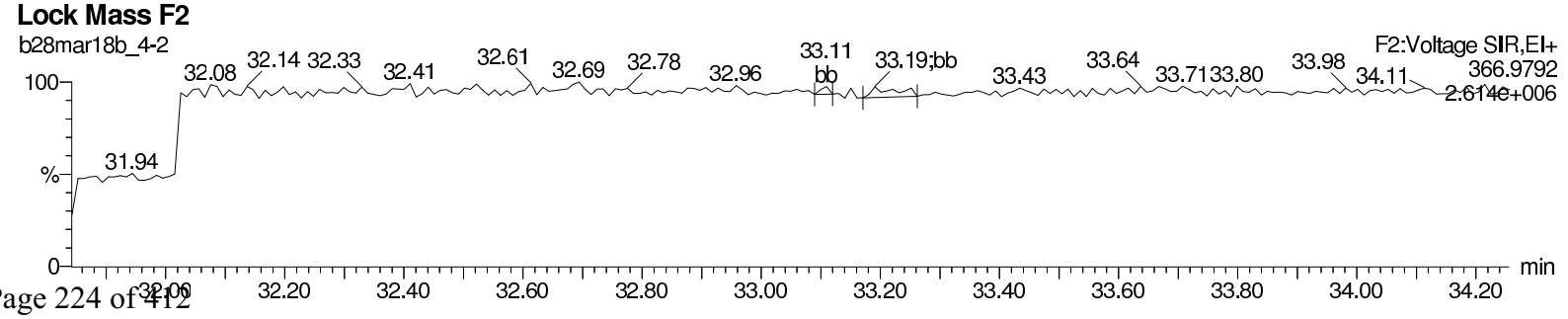


Lock Mass F2

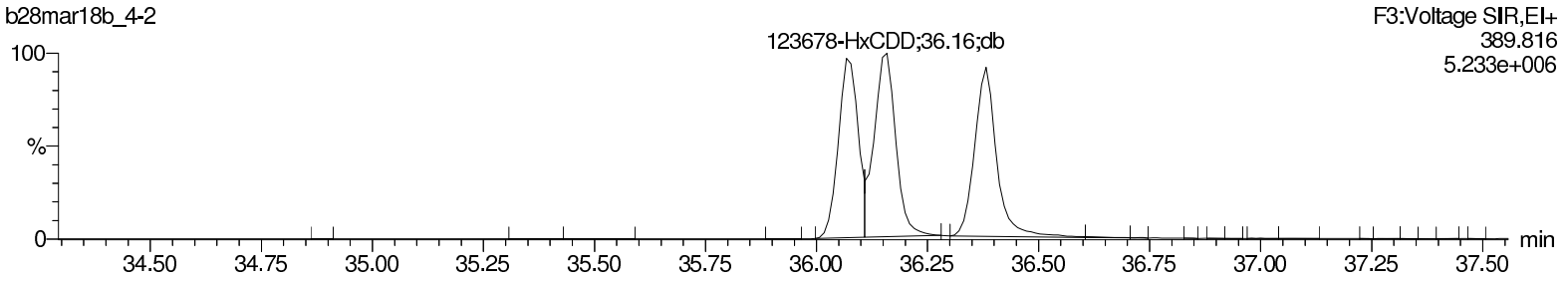


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

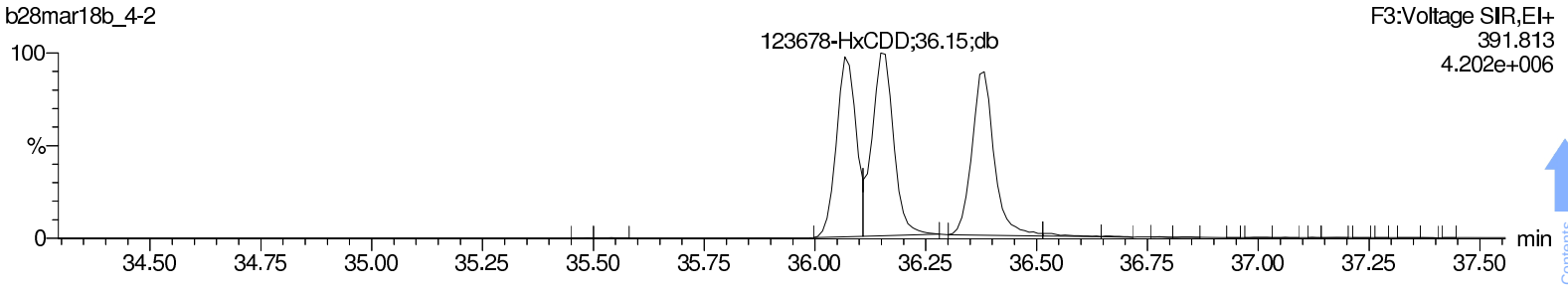
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-hexadioxins



Total-hexadioxins



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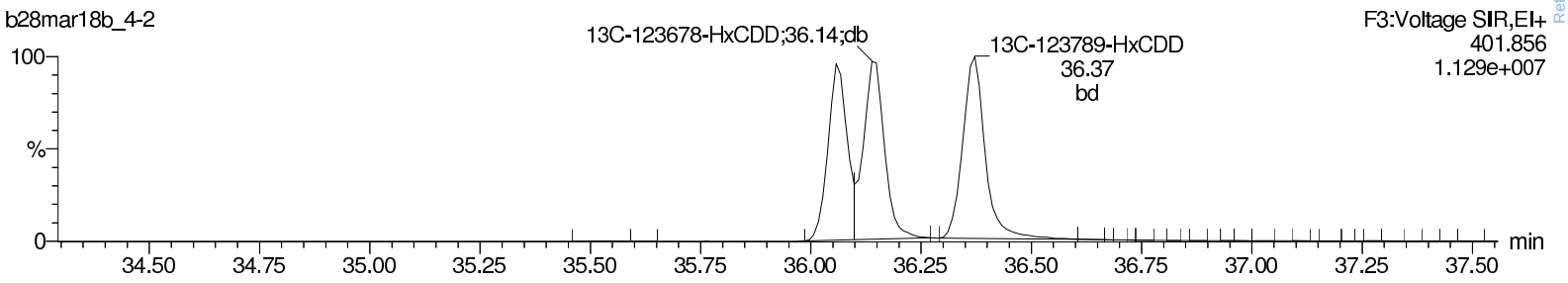

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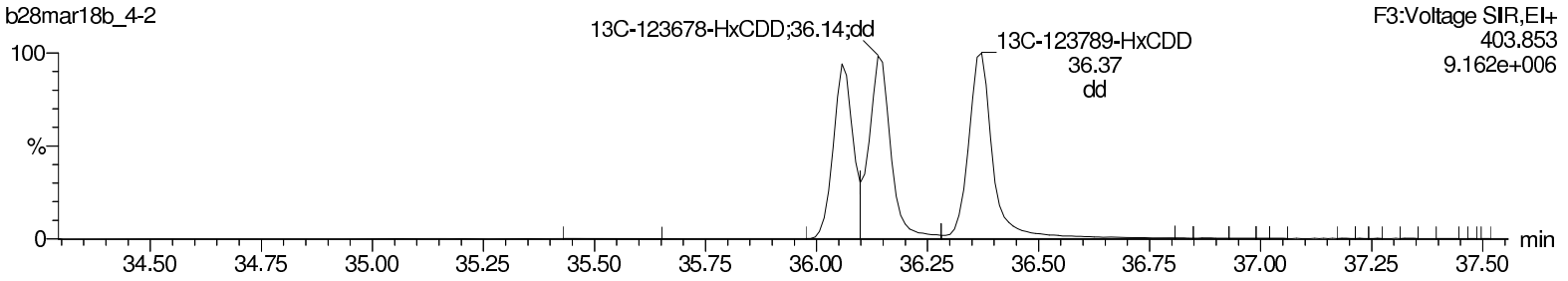

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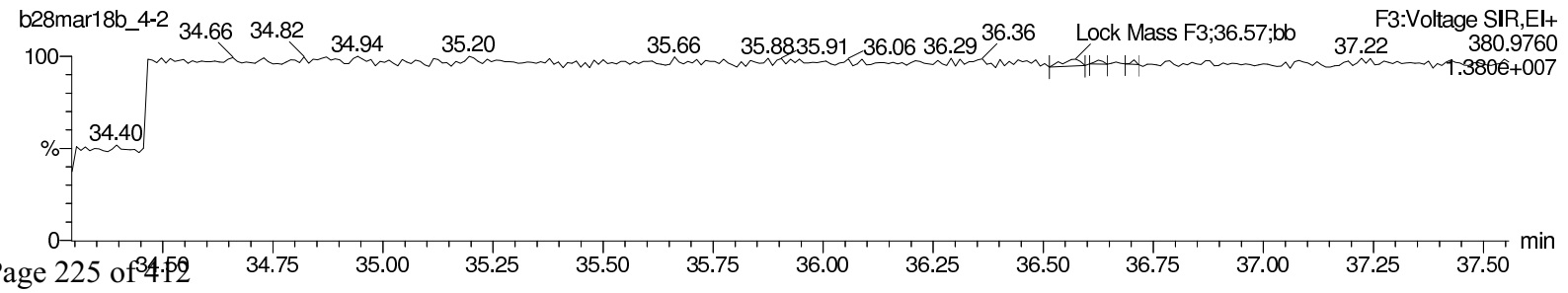

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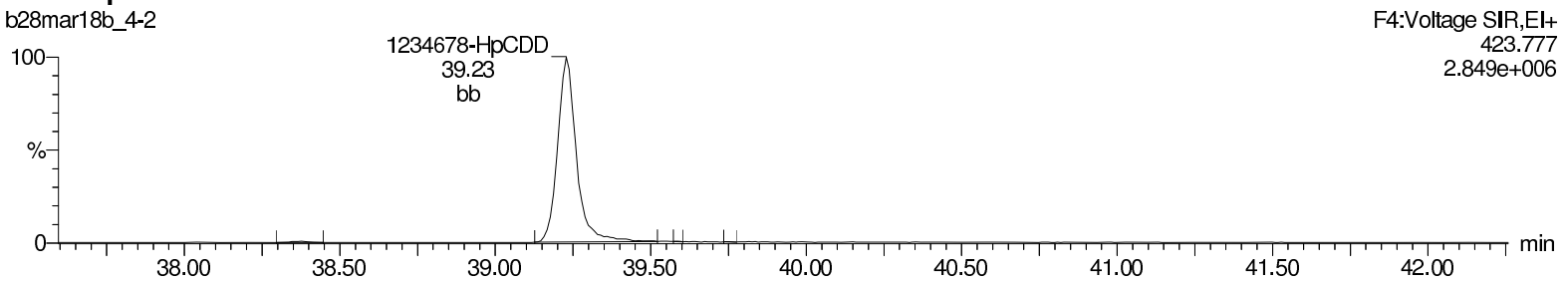
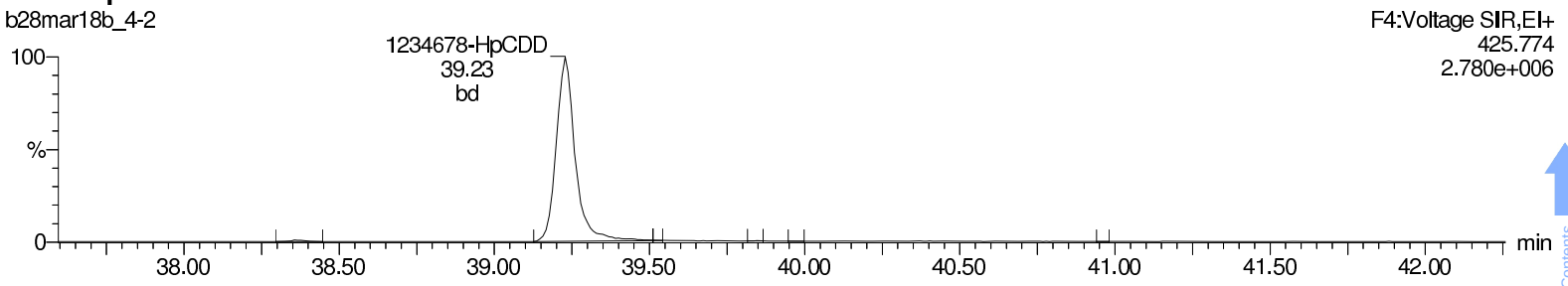
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-heptadioxins



Total-heptadioxins



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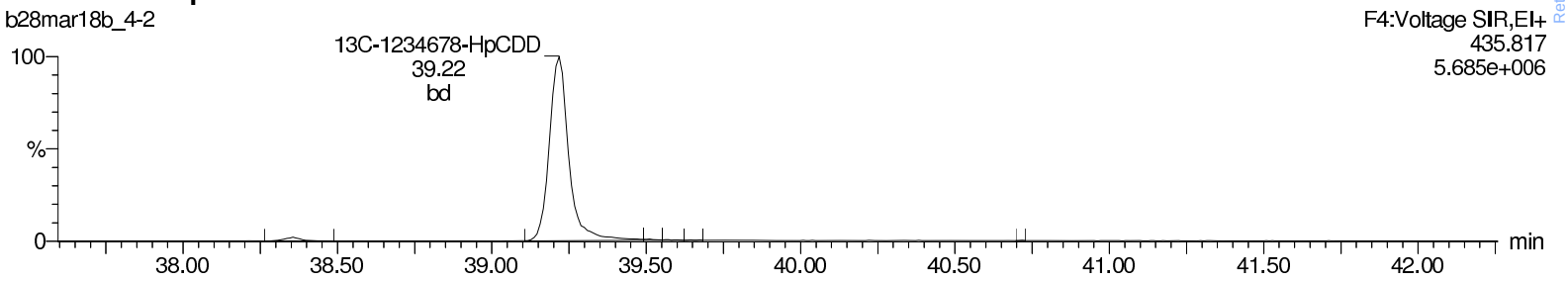

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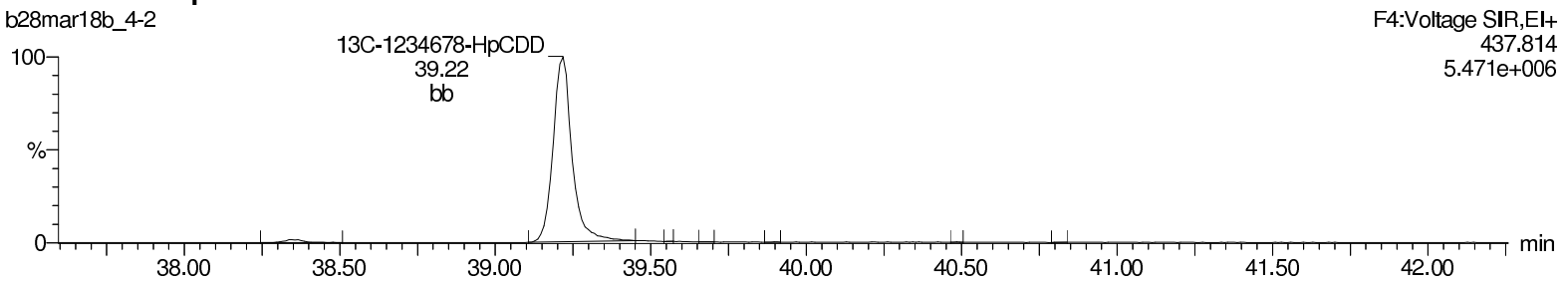

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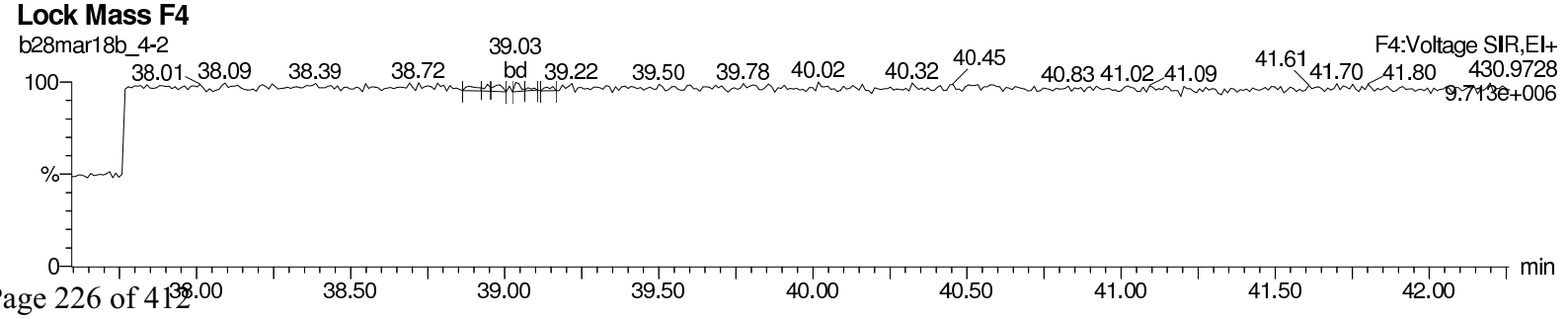

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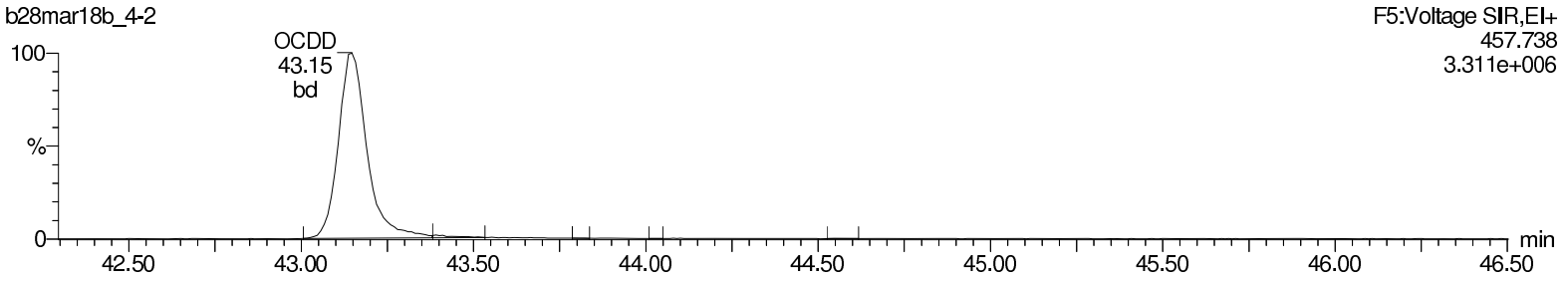
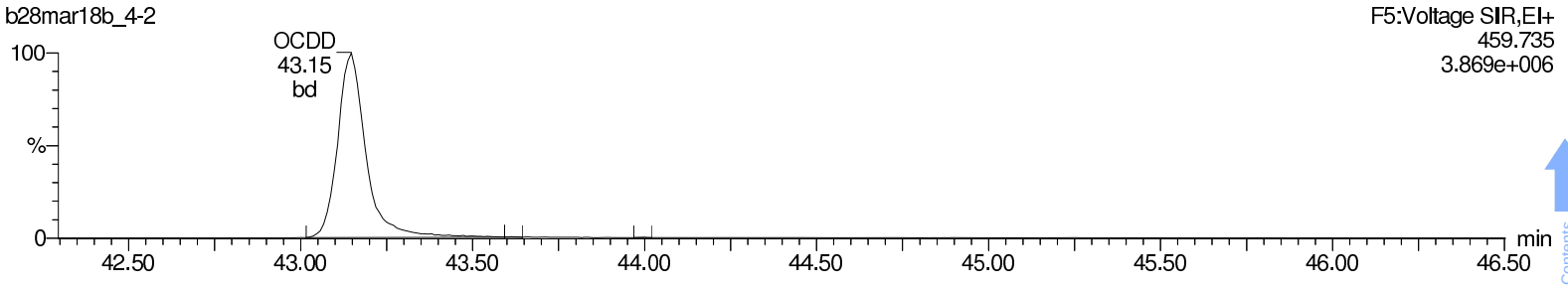
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

OCDD



OCDD



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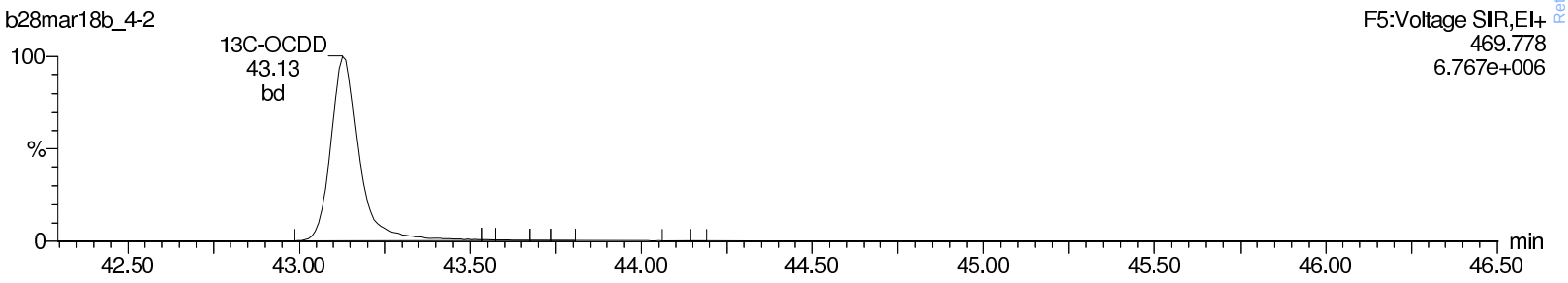

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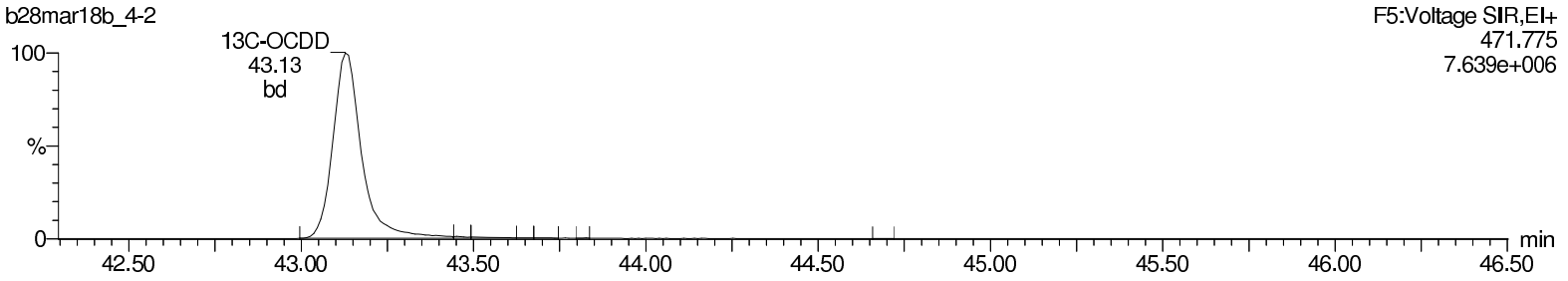
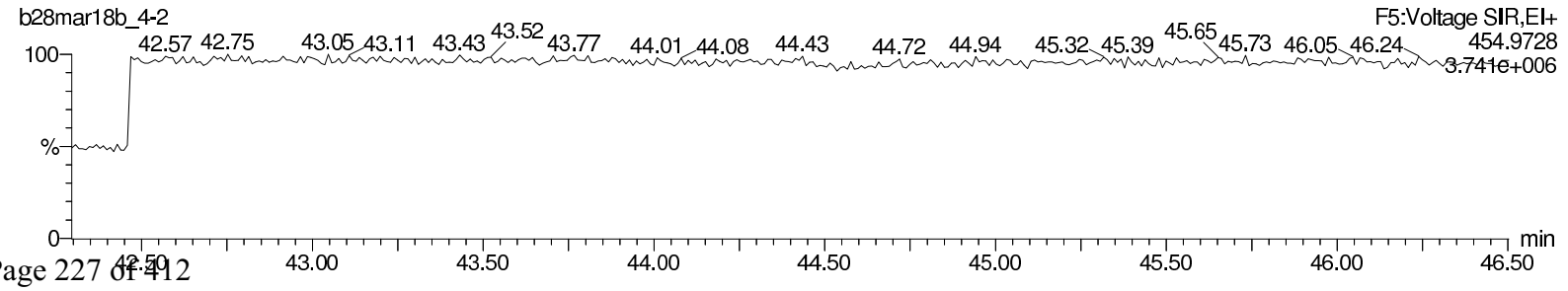


Lock Mass F5



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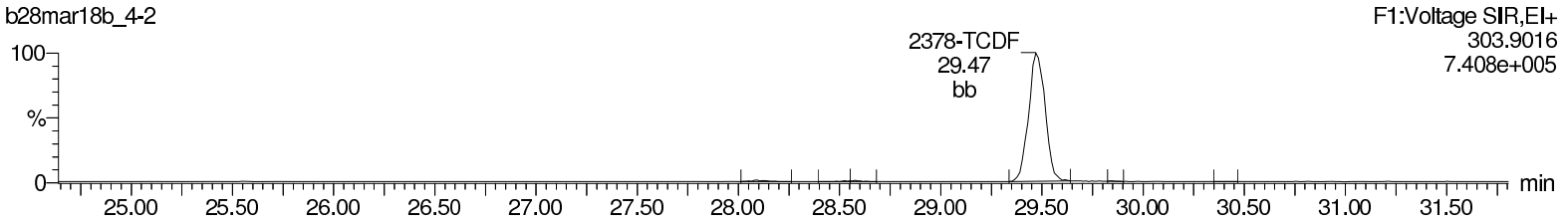
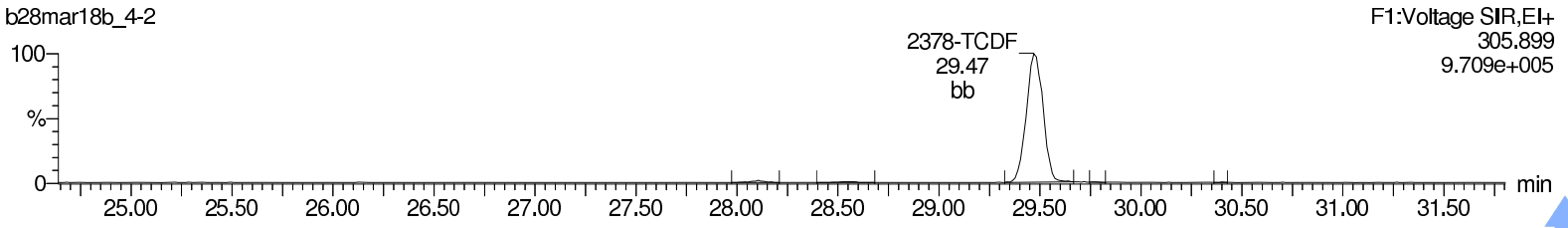
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-tetrafurans



Total-tetrafurans



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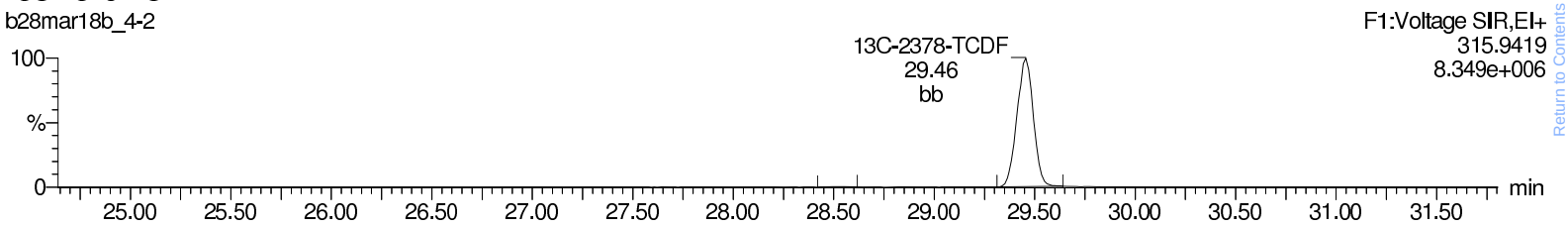

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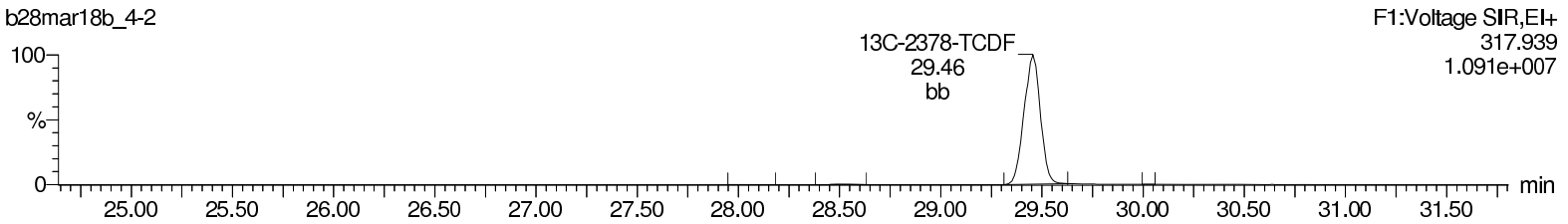
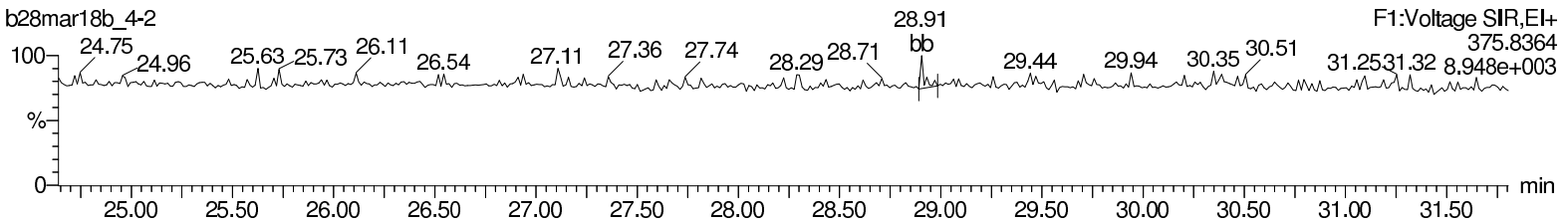
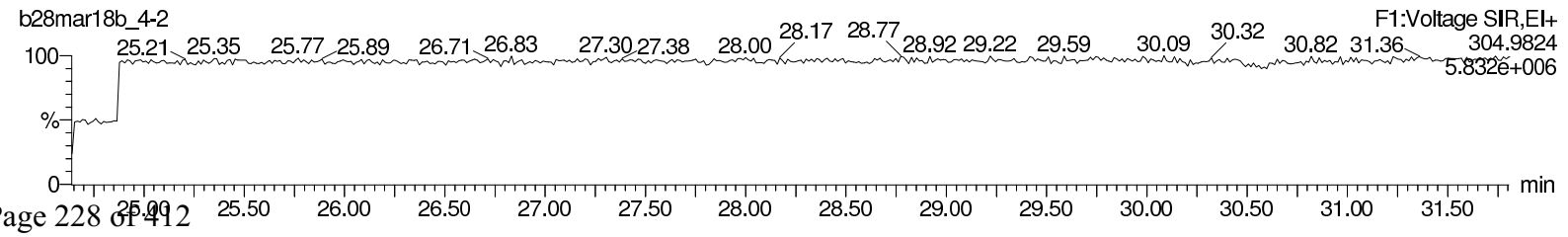


HxDPE



Lock Mass F1

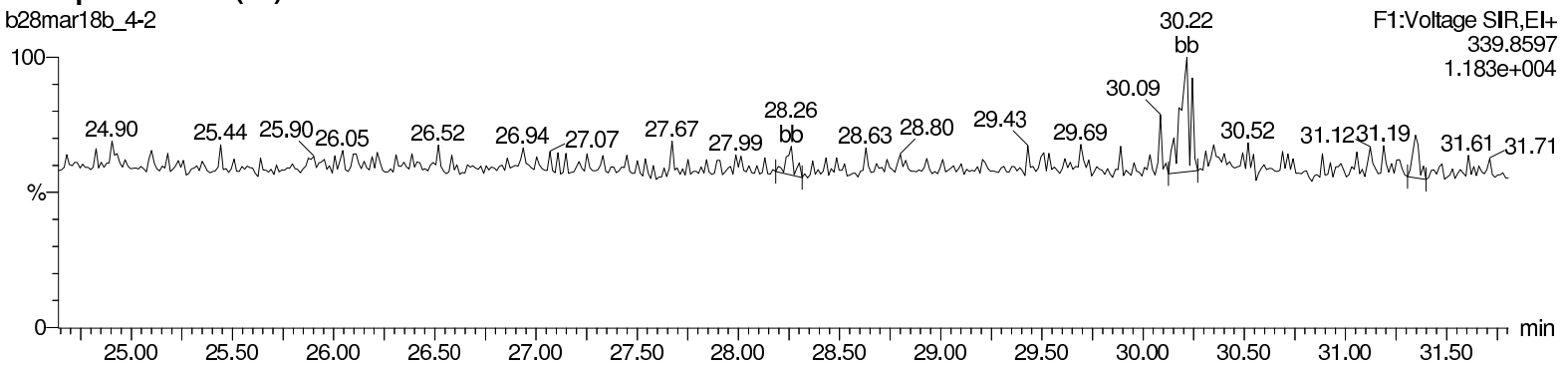


Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

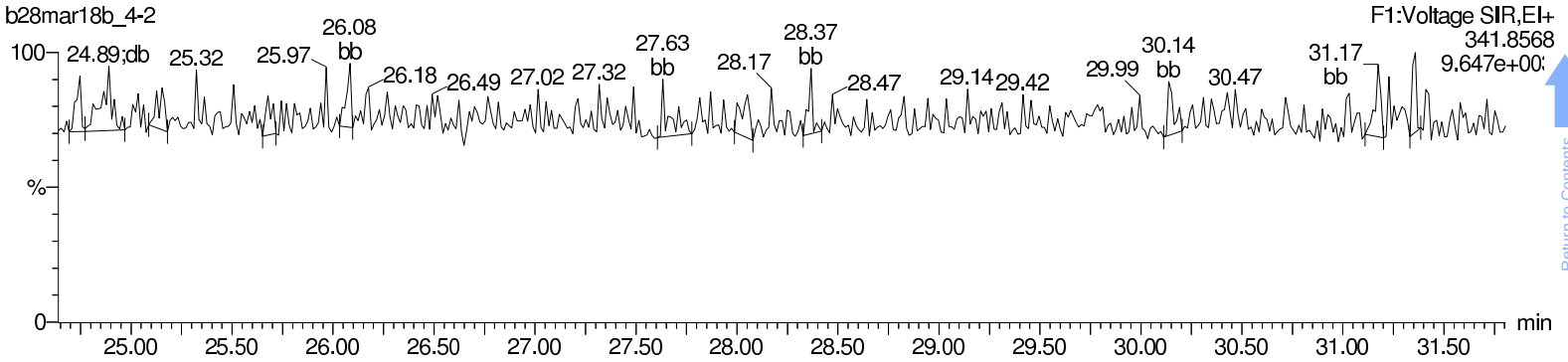
Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
Printed: Friday, March 30, 2018 10:13:29 Eastern Standard Time

Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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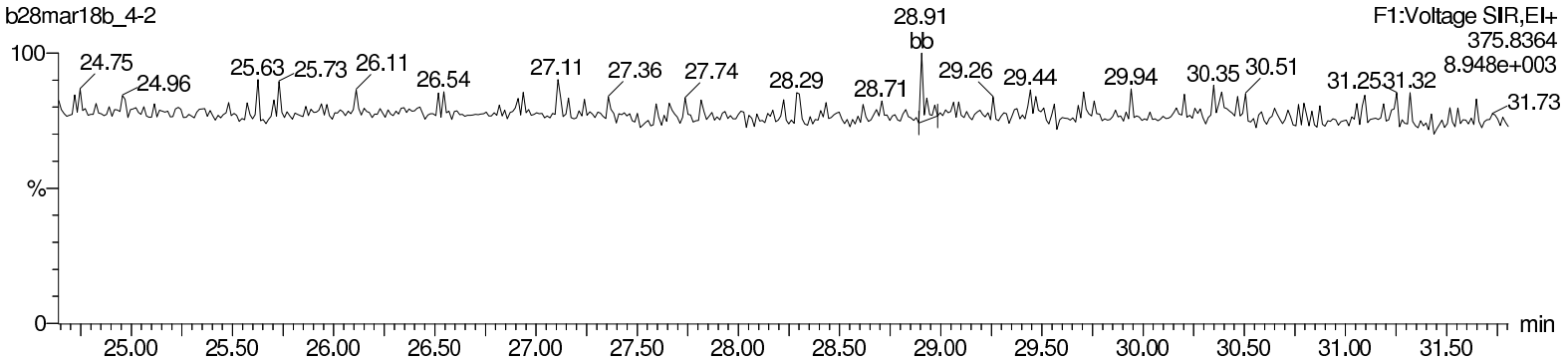
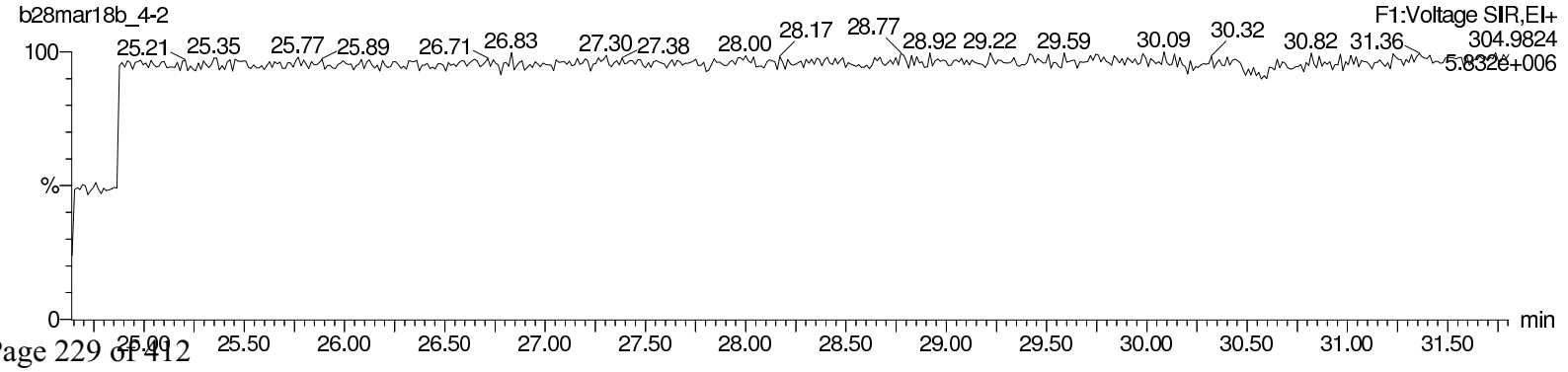


Lock Mass F1



Dataset: C:\MassLynx\Default.pro\Sample Results\1613-b28mar18b_4.qld

Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
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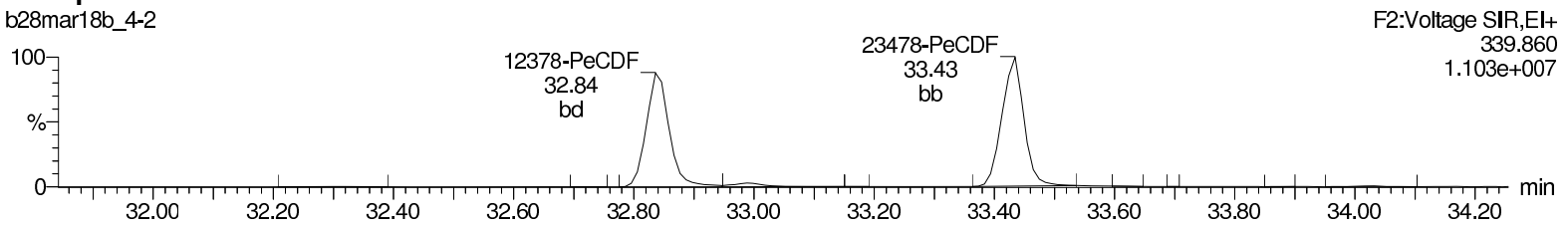
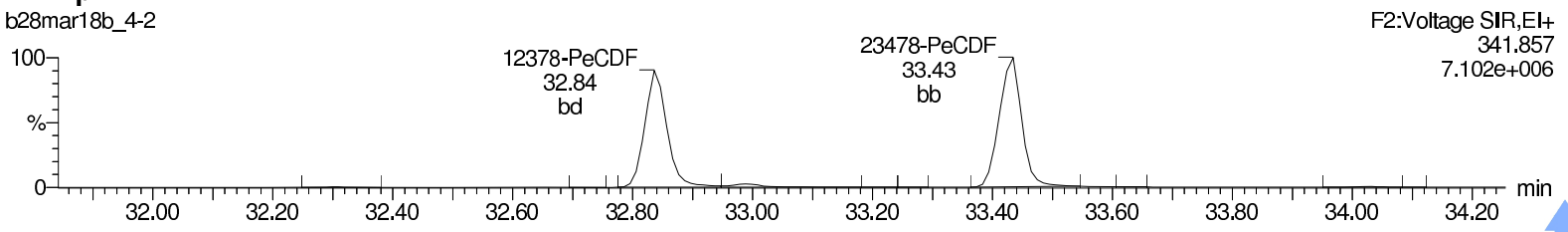
Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

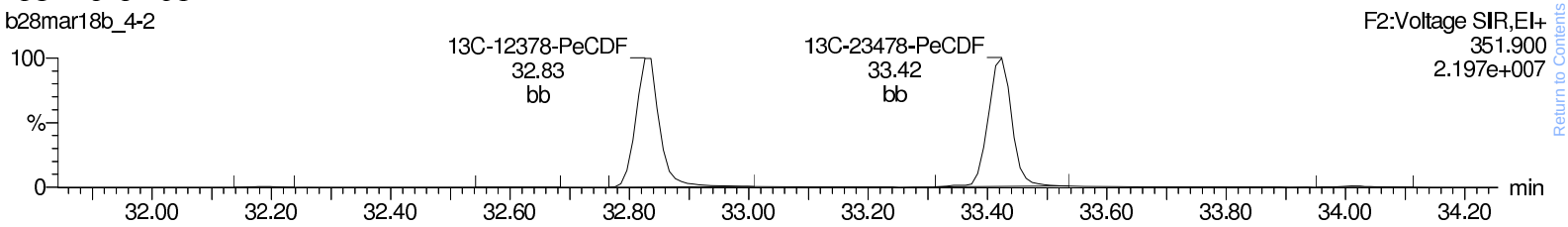
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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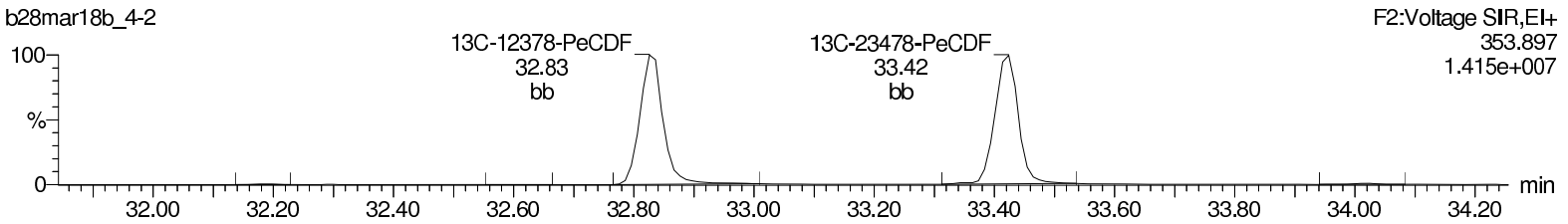

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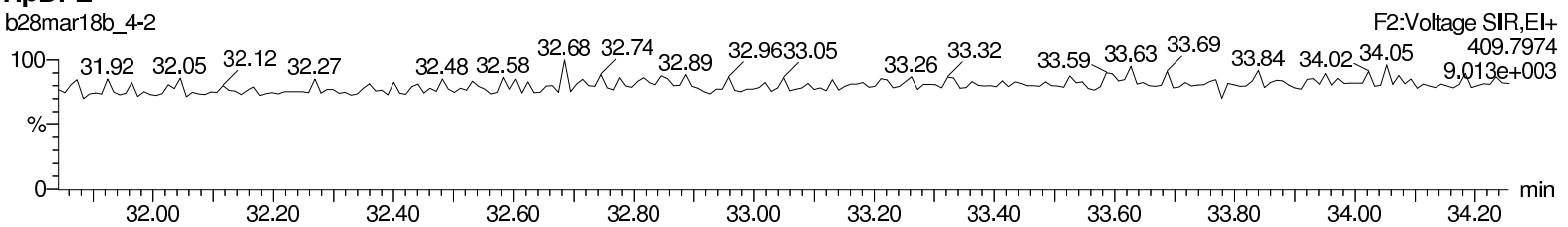
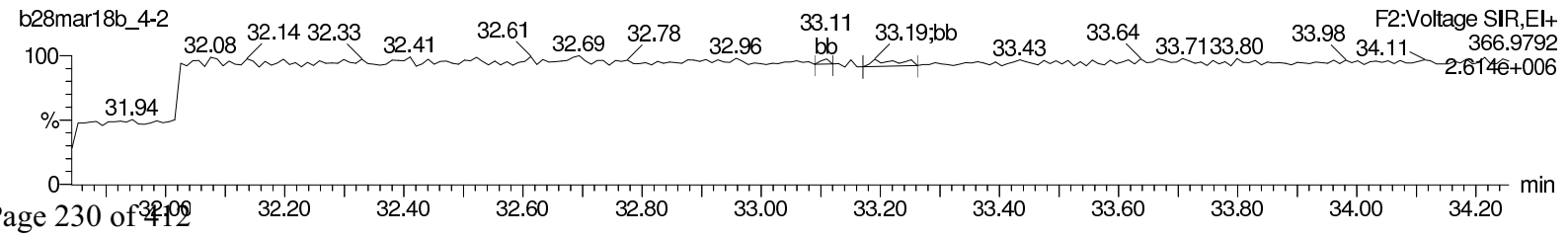


Lock Mass F2



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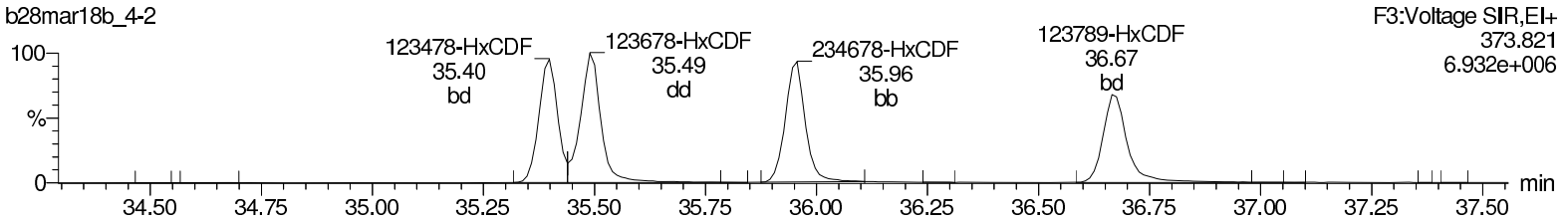
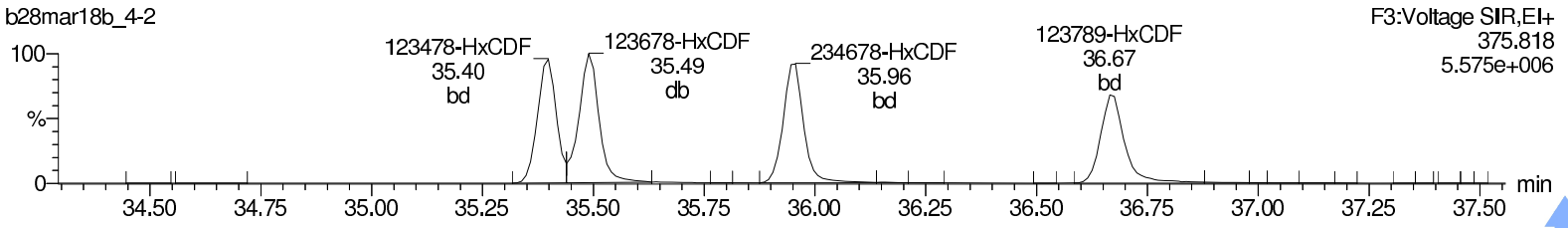
Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-hexafurans



Total-hexafurans



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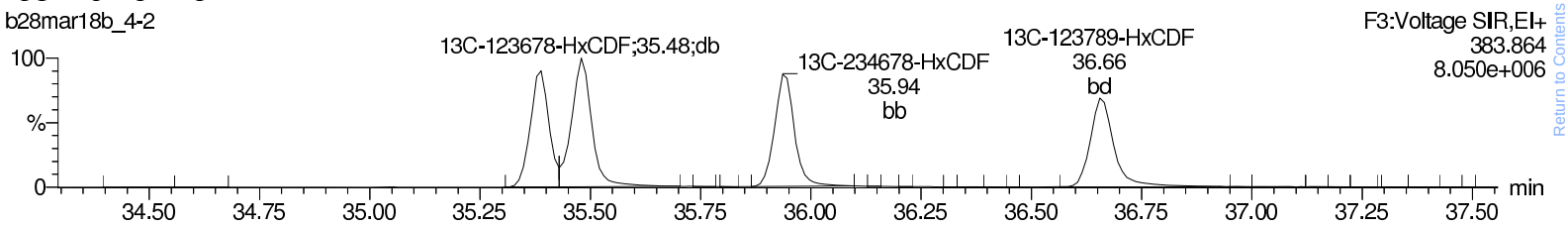

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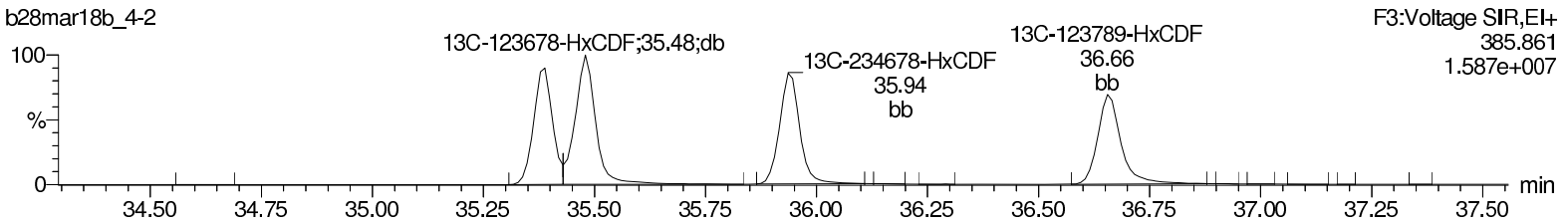

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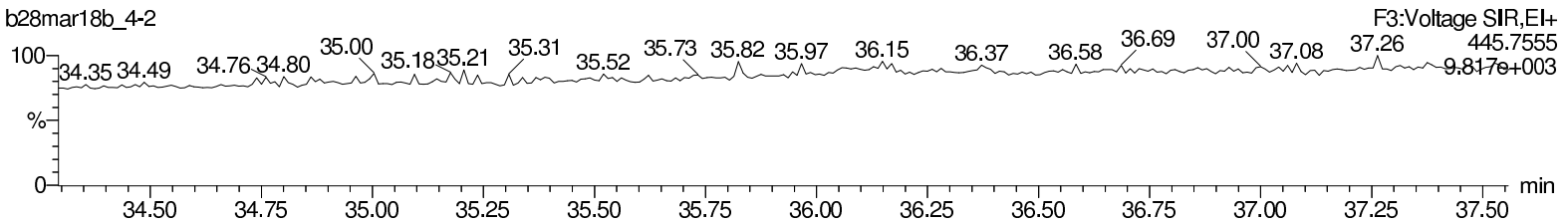

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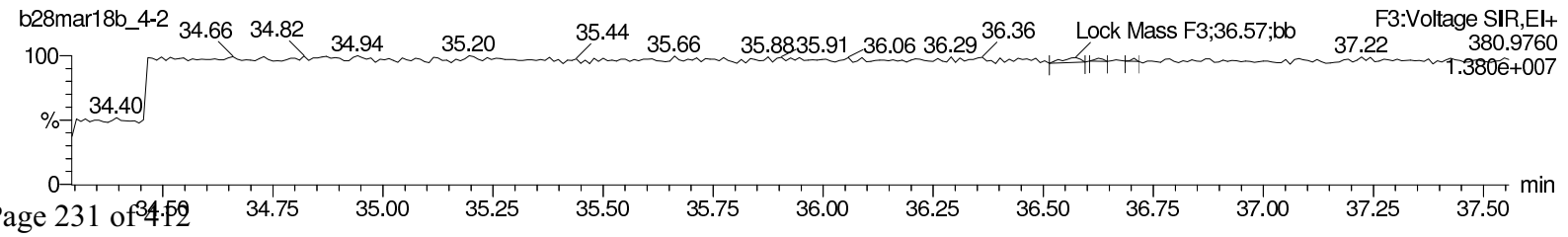

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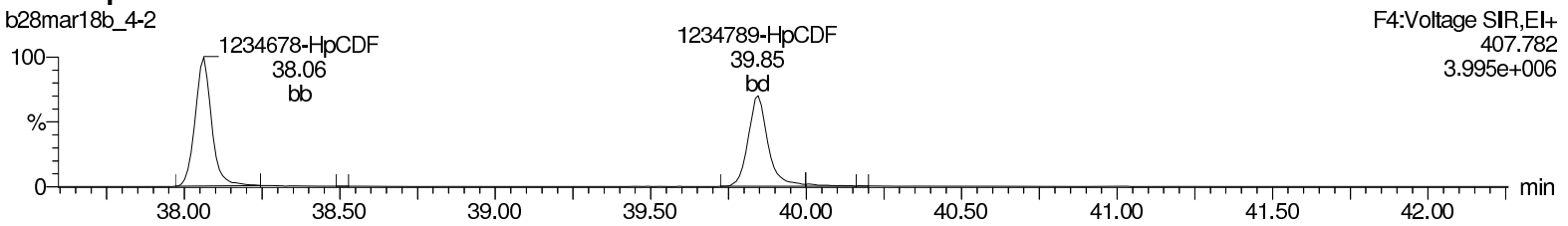
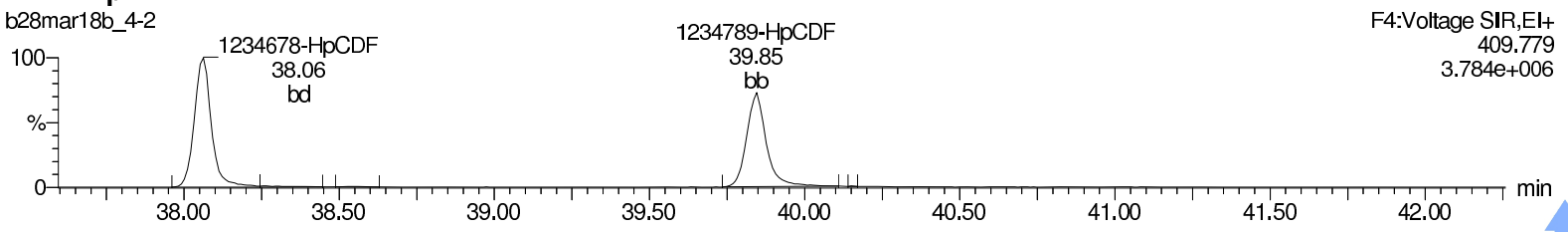
Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

Total-heptafurans



Total-heptafurans



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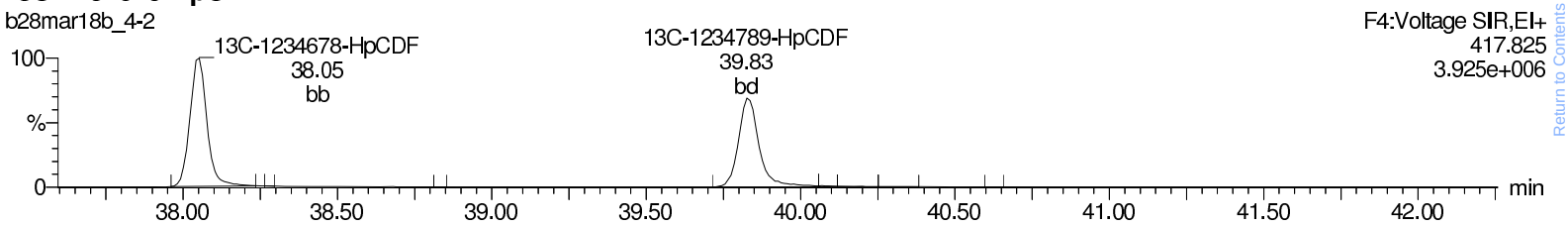

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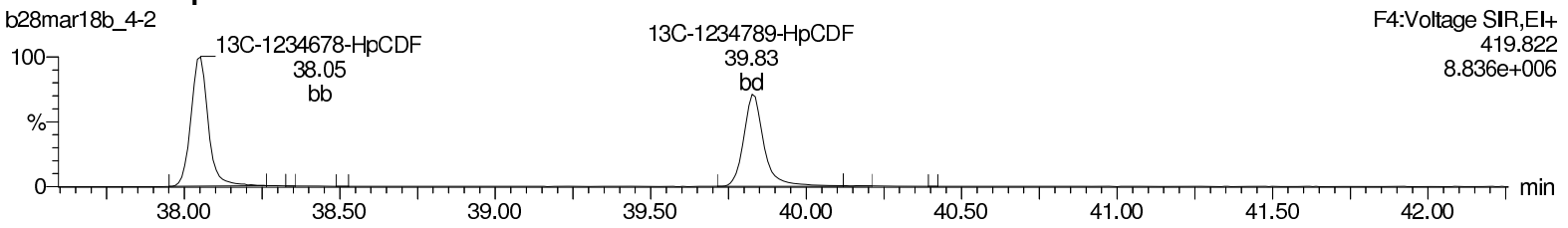

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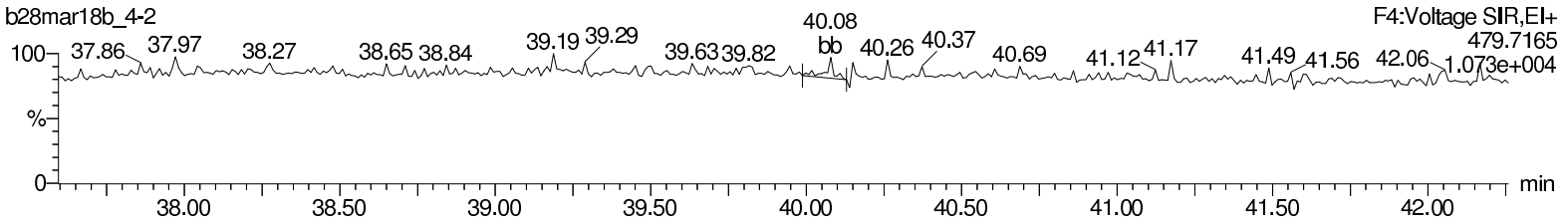
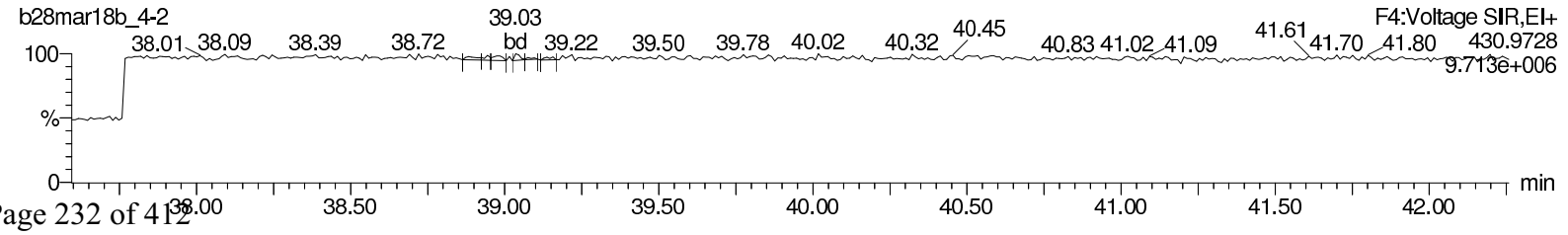


Lock Mass F4



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Last Altered: Friday, March 30, 2018 10:12:39 Eastern Standard Time
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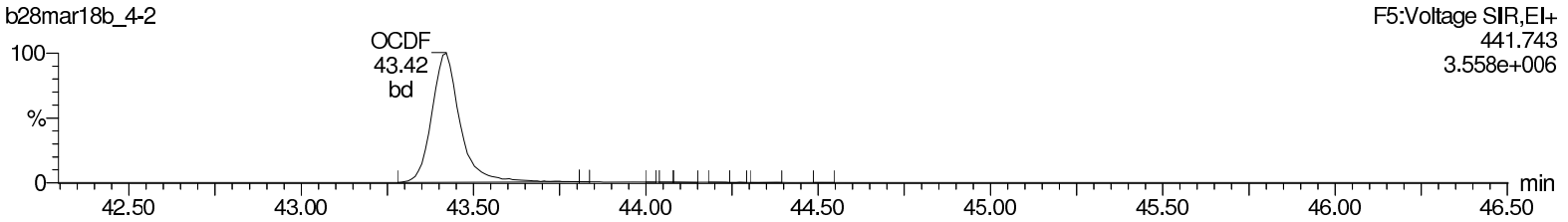
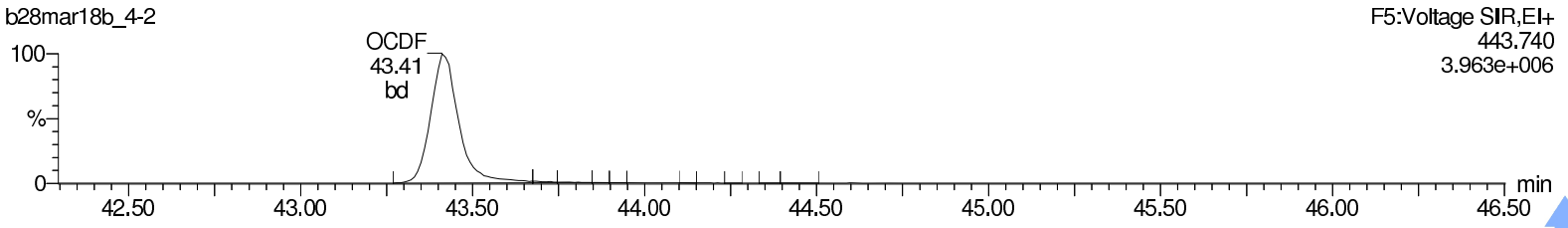
Name: b28mar18b_4-2, Date: 29-Mar-2018, Time: 22:03:36, ID: 12020983-1 LCSD, Description: , Job: %613%, Task: HRP763_1
User: CLP

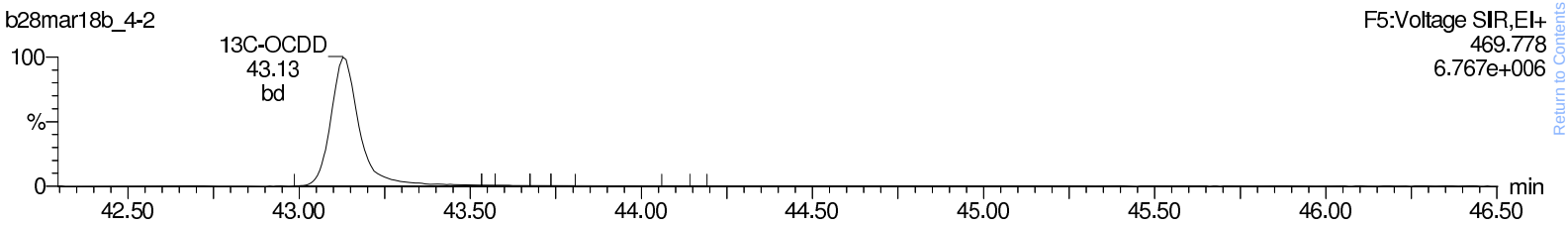
OCDF



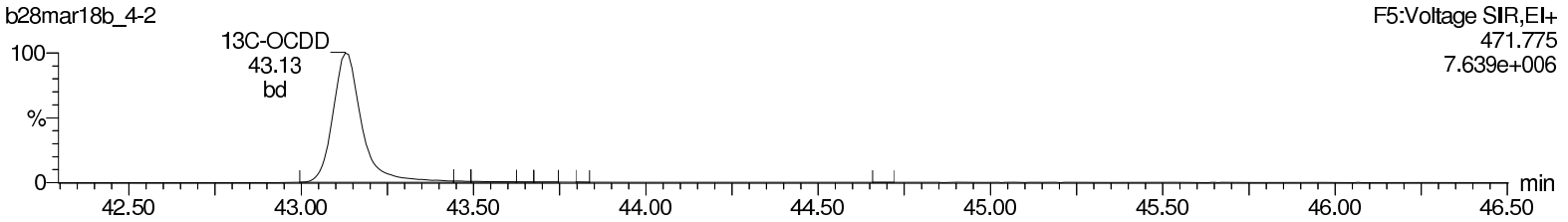
OCDF



13C-OCDD



13C-OCDD



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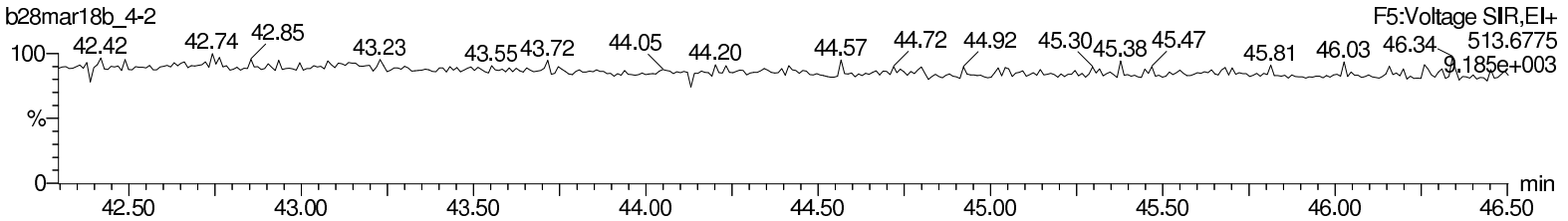
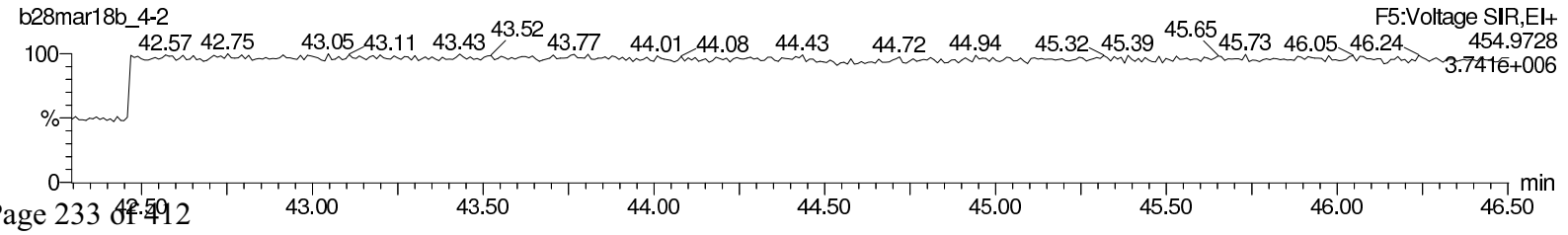


Lock Mass F5



Logbooks

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Prep Logbook

3520C Aqueous Extraction for Method 1613B

Batch ID: 37284 **Verified by:** _____
Analyst: Amalie Walker
Method: SW846 3520C

Lab SOP: CF-OA-E-002 REV# 15
Instrument: Ohaus Scout Pro 4000

Sample ID	Start Run Date	Aliquot (mL)	pH (su)	ES Amount (uL)	MX Amount (uL)	MX Serial#	ES Serial#	Decanted? (Y/N)
12020981 MB	28-MAR-2018 13:00	1000	5	40			WD180328-03 .05 ng/uL	N
12020981 MB	28-MAR-2018 13:00	1000	5	40			WD180328-03 .05 ng/uL	N
12020982 LCS	28-MAR-2018 13:00	1000	5	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
12020982 LCS	28-MAR-2018 13:00	1000	5	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
12020983 LCSD	28-MAR-2018 13:00	1000	5	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
12020983 LCSD	28-MAR-2018 13:00	1000	5	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
13112001	28-MAR-2018 13:00	1016.4	8	40			WD180328-03 .05 ng/uL	N
13112002	28-MAR-2018 13:00	963.4	8	40			WD180328-03 .05 ng/uL	N
13112003 MS (13112002)	28-MAR-2018 13:00	1026.2	8	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
13112004 MSD (13112002)	28-MAR-2018 13:00	970.1	8	40	40	WD180328-01 .005 ng/uL	WD180328-03 .05 ng/uL	N
13112005	28-MAR-2018 13:00	1020.4	8	40			WD180328-03 .05 ng/uL	N
13112006	28-MAR-2018 13:00	1016	8	40			WD180328-03 .05 ng/uL	N
13113001	28-MAR-2018 13:00	1052.1	8	40			WD180328-03 .05 ng/uL	N
13113002	28-MAR-2018 13:00	1058.8	8	40			WD180328-03 .05 ng/uL	N
13113003	28-MAR-2018 13:00	940.9	8	40			WD180328-03 .05 ng/uL	N
13113004	28-MAR-2018 13:00	1014.5	8	40			WD180328-03 .05 ng/uL	N
13114001	28-MAR-2018 13:00	912.4	7	40			WD180328-03 .05 ng/uL	N
13121001	28-MAR-2018 13:00	942.8	8	40			WD180328-03 .05 ng/uL	N
13123001	28-MAR-2018 13:00	1033.1	7	40			WD180328-03 .05 ng/uL	N
13123002	28-MAR-2018 13:00	970.6	7	40			WD180328-03 .05 ng/uL	N
13123003	28-MAR-2018 13:00	1016	7	40			WD180328-03 .05 ng/uL	N
13123004	28-MAR-2018 13:00	1029.2	7	40			WD180328-03 .05 ng/uL	N
13123005	28-MAR-2018 13:00	1053.6	7	40			WD180328-03 .05 ng/uL	N
13123006	28-MAR-2018 13:00	1024.9	7	40			WD180328-03 .05 ng/uL	N

Prep Logbook

Batch ID: 37284 **Verified by:** _____
Analyst: Amalie Walker
Method: SW846 3520C

Lab SOP: CF-OA-E-002 REV# 15
Instrument: Ohaus Scout Pro 4000

Sample ID	Start Run Date	Aliquot (mL)	pH (su)	ES Amount (uL)	MX Amount (uL)	MX Serial#	ES Serial#	Decanted? (Y/N)
13123007	28-MAR-2018 13:00	1060.8	7	40			WD180328-03 .05 ng/uL	N
13127001	28-MAR-2018 13:00	947.3	7	40			WD180328-03 .05 ng/uL	N
13127002	28-MAR-2018 13:00	933.5	10	40			WD180323-07 .05 ng/uL	N

Type	Sample Id	Description	Serial Number	Spike Amt	Units
REAGENT		Concentrated Sulfuric Acid	1136019-A.2	1	mL
REAGENT		Sodium Sulfate	1136857-A	10	g
REAGENT		Methylene Chloride	1137514-A	250	mL

Comments:

H2SO4 added to sample 13127002 to obtain pH<7.
Finish Time: 29-MAR-2018 07:23

Prep Logbook

Cleanup Procedure for Liquids

Batch ID: 37285 **Verified by:** _____

Analyst: Mike Medwedeff

Lab SOP:

Instrument: No analytical instrument

Sample ID	Start Run Date	Cleanup Type	Train	Aliqout Analyzed (percent)	CS Amount (uL)	CS Serial#
12020981 MB	29-MAR-2018 09:00	AB Silica Florisil	190	100	20	WD180328-05 .01 ng/uL
12020981 MB	29-MAR-2018 09:00	AB Silica Florisil	190	100	20	WD180328-05 .01 ng/uL
12020982 LCS	29-MAR-2018 09:00	AB Silica Florisil	26	100	20	WD180328-05 .01 ng/uL
12020982 LCS	29-MAR-2018 09:00	AB Silica Florisil	26	100	20	WD180328-05 .01 ng/uL
12020983 LCSD	29-MAR-2018 09:00	AB Silica Florisil	189	100	20	WD180328-05 .01 ng/uL
12020983 LCSD	29-MAR-2018 09:00	AB Silica Florisil	189	100	20	WD180328-05 .01 ng/uL
13112001	29-MAR-2018 09:00	AB Silica Florisil	175	100	20	WD180328-05 .01 ng/uL
13112002	29-MAR-2018 09:00	AB Silica Florisil	203	100	20	WD180328-05 .01 ng/uL
13112003 MS (13112002)	29-MAR-2018 09:00	AB Silica Florisil	80	100	20	WD180328-05 .01 ng/uL
13112004 MSD (13112002)	29-MAR-2018 09:00	AB Silica Florisil	20	100	20	WD180328-05 .01 ng/uL
13112005	29-MAR-2018 09:00	AB Silica Florisil	164	100	20	WD180328-05 .01 ng/uL
13112006	29-MAR-2018 09:00	AB Silica Florisil	39	100	20	WD180328-05 .01 ng/uL
13113001	29-MAR-2018 09:00	AB Silica Florisil	182	100	20	WD180328-05 .01 ng/uL
13113002	29-MAR-2018 09:00	AB Silica Florisil	115	100	20	WD180328-05 .01 ng/uL
13113003	29-MAR-2018 09:00	AB Silica Florisil	63	100	20	WD180328-05 .01 ng/uL
13113004	29-MAR-2018 09:00	AB Silica Florisil	45	100	20	WD180328-05 .01 ng/uL
13114001	29-MAR-2018 09:00	AB Silica Florisil	173	100	20	WD180328-05 .01 ng/uL
13121001	29-MAR-2018 09:00	AB Silica Florisil	31	100	20	WD180328-05 .01 ng/uL
13123001	29-MAR-2018 09:00	AB Silica Florisil	86	100	20	WD180328-05 .01 ng/uL
13123002	29-MAR-2018 09:00	AB Silica Florisil	127	100	20	WD180328-05 .01 ng/uL
13123003	29-MAR-2018 09:00	AB Silica Florisil	100	100	20	WD180328-05 .01 ng/uL
13123004	29-MAR-2018 09:00	AB Silica Florisil	89	100	20	WD180328-05 .01 ng/uL
13123005	29-MAR-2018 09:00	AB Silica Florisil	76	100	20	WD180328-05 .01 ng/uL
13123006	29-MAR-2018 09:00	AB Silica Florisil	154	100	20	WD180328-05 .01 ng/uL

Prep Logbook

Batch ID: 37285 **Verified by:** _____
Analyst: Mike Medwedeff

Lab SOP:
Instrument: No analytical instrument

Sample ID	Start Run Date	Cleanup Type	Train	Aliqout Analyzed (percent)	CS Amount (uL)	CS Serial#
13123007	29-MAR-2018 09:00	AB Silica Florisil	29	100	20	WD180328-05 .01 ng/uL
13127001	29-MAR-2018 09:00	AB Silica Florisil	81	100	20	WD180328-05 .01 ng/uL
13127002	29-MAR-2018 09:00	AB Silica Florisil	13	100	20	WD180328-05 .01 ng/uL

Type	Sample Id	Description	Serial Number	Spike Amt	Units
REAGENT		Glass Wool	1135226-A.3	1	each
REAGENT		Silica Gel	1136056-A	2	g
REAGENT		Base silica	1136853-C	3	g
REAGENT		Acid silica	1136855	7	g
REAGENT		Sodium Sulfate	1136857-A	3	g
REAGENT		Florisil	1137088-A	1.5	g
REAGENT		Methylene Chloride	1137514-A	100	mL
REAGENT		Hexane	1137933-A.2	130	mL
REAGENT		Hexane	1137935-A.3	130	mL
REAGENT		Hexane	1137937-A.4	130	mL

Comments:

Prep Logbook

Method 1613B HRMS Aqueous Analysis

Batch ID: 37301 **Verified by:** _____

Analyst: Chris Presnell

Method: EPA Method 1613B

Lab SOP: CF-OA-E-002 REV# 15

Instrument: Waters Autospec Premier High-Resolution GC/MS

Sample ID	Start Run Date	Final Volume (uL)	Prep Factor (Final Volume /Aliquot) (uL/uL)	Dilution	Dilution Type	Injection Volume (uL)	Vial Prep Date
12020982 LCS	29-MAR-2018 21:15	20	2.00E-05	1	Internal	1	29-MAR-2018
12020983 LCSD	29-MAR-2018 22:03	20	2.00E-05	1	Internal	1	29-MAR-2018
12020981 MB	29-MAR-2018 22:52	20	2.00E-05	1	Internal	1	29-MAR-2018
13123001	30-MAR-2018 21:01	20	1.94E-05	1	Internal	1	29-MAR-2018
13123002	30-MAR-2018 21:49	20	2.06E-05	1	Internal	1	29-MAR-2018
13123003	30-MAR-2018 22:38	20	1.97E-05	1	Internal	1	29-MAR-2018
13123004	30-MAR-2018 23:26	20	1.94E-05	1	Internal	1	29-MAR-2018
13123005	31-MAR-2018 00:15	20	1.90E-05	1	Internal	1	29-MAR-2018
13123006	31-MAR-2018 01:03	20	1.95E-05	1	Internal	1	29-MAR-2018
13123007	31-MAR-2018 01:52	20	1.89E-05	1	Internal	1	29-MAR-2018

Type	Sample Id	Description	Serial Number	Spike Amt	Units
REAGENT		8290 Injection Standard	WD180326-03	20	uL
STANDARI		8290 Injection Standard	WD180326-03	20	uL

Comments:

Initial Calibration Data

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Runlog Information

1613 ICAL

16aug17

	Name	Instrument	Run Date	Procedure	Analyst	Batch ID	Sample Info	Injection Volume
•	b15aug17a-1	HRP763_1	15-AUG-2017 10:33	b15aug17a	Chris Presnell		CS3WT UD170522-01.1 CPS6B	1 uL
•	b15aug17a-2	HRP763_1	15-AUG-2017 11:22	b15aug17a	Chris Presnell		SB	1 uL
•	b15aug17a-3	HRP763_1	15-AUG-2017 12:10	b15aug17a	Chris Presnell		CS0.5 UD170815-01.1	1 uL
•	b15aug17a-4	HRP763_1	15-AUG-2017 12:58	b15aug17a	Chris Presnell		CS1 UD170815-02 CS13F	1 uL
•	b15aug17a-5	HRP763_1	15-AUG-2017 13:47	b15aug17a	Chris Presnell		CS2 UD170815-03 CS23E	1 uL
•	b15aug17a-6	HRP763_1	15-AUG-2017 14:35	b15aug17a	Chris Presnell		CS3 UD170815-04 CS3A1	1 uL
•	b15aug17a-7	HRP763_1	15-AUG-2017 15:24	b15aug17a	Chris Presnell		CS4 UD170815-05 CS43D	1 uL
•	b15aug17a-8	HRP763_1	15-AUG-2017 16:12	b15aug17a	Chris Presnell		CS5 UD170815-06 CS53F	1 uL
•	b15aug17a-9	HRP763_1	15-AUG-2017 17:01	b15aug17a	Chris Presnell		SB	1 uL
•	b15aug17a-10	HRP763_1	15-AUG-2017 17:49	b15aug17a	Chris Presnell		CS3WT UD170522-01.1 CPS6C	1 uL

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PFK66 Inst: HRP765-1 CY

Experiment Calibration Report **MassLynx 4.1**

File: Experiment: dioxin_db5ms.exp Reference: pfk.ref Function: 1 @ 200 (ppm)

Printed: Tuesday, August 15, 2017 10:30:27 Eastern Standard Time

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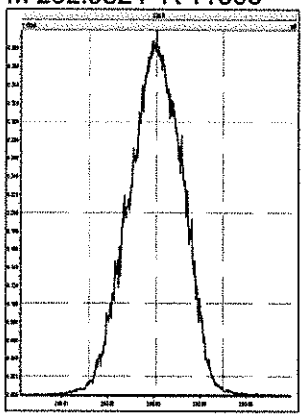
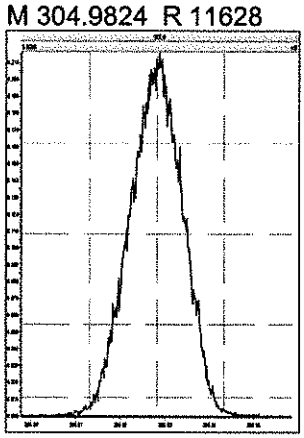
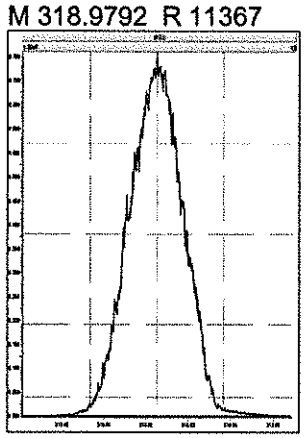


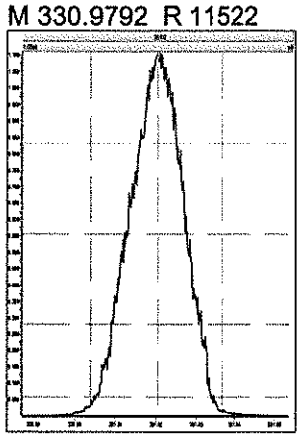
M 304.9824 R 11628



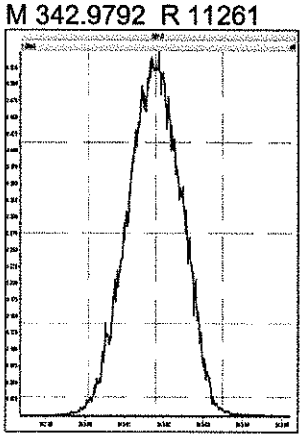
M 318.9792 R 11367



M 330.9792 R 11522



M 342.9792 R 11261



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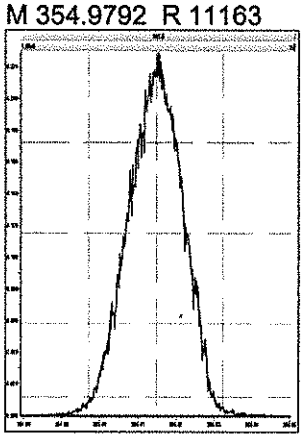
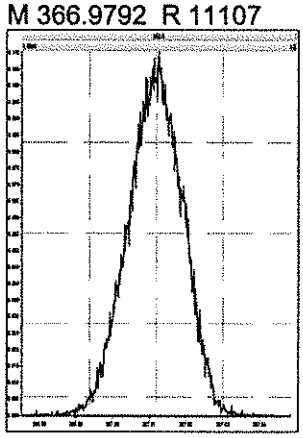
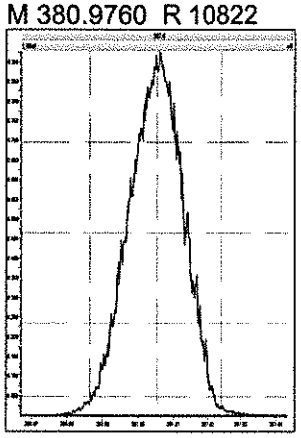


M 366.9792 R 11107



M 380.9760 R 10822



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PFK66 Inst: HRP763-1 CY

Experiment Calibration Report **MassLynx 4.1**

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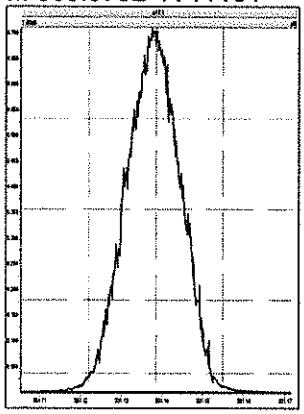
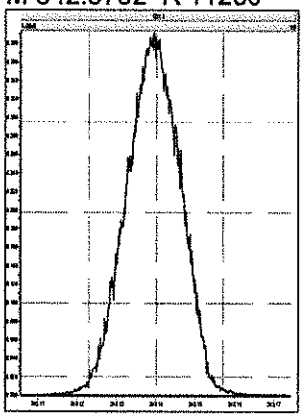


M 342.9792 R 11260



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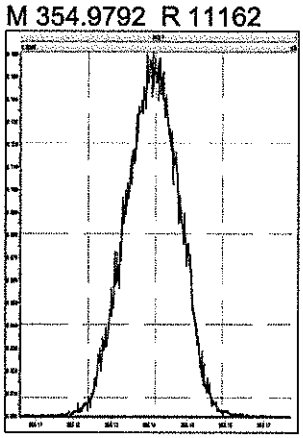

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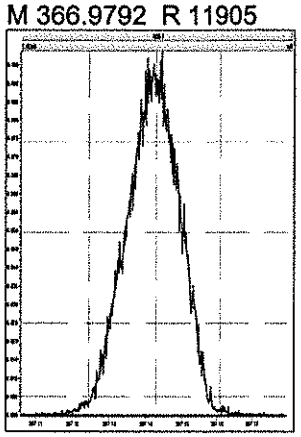

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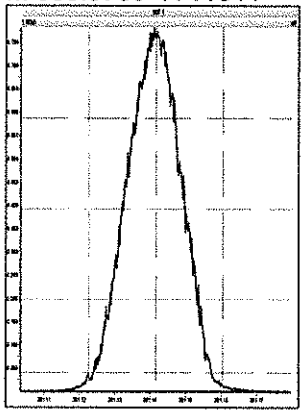

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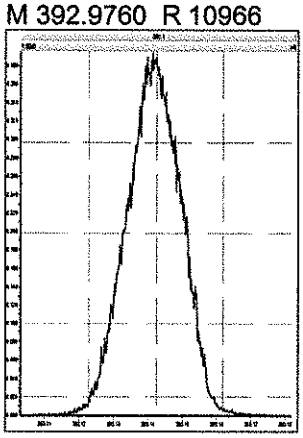

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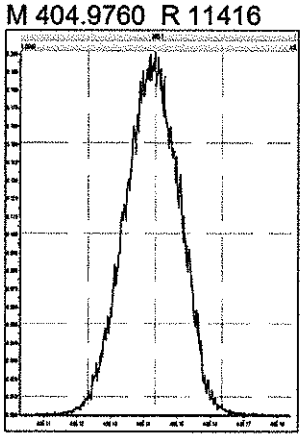
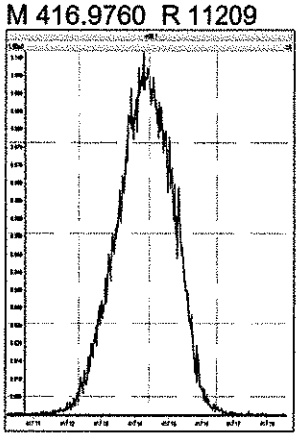


M 416.9760 R 11209



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Experiment Calibration Report **MassLynx 4.1** Page 1 of 1

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Printed: Tuesday, August 15, 2017 10:31:29 Eastern Standard Time

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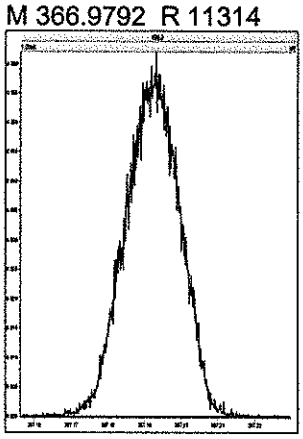

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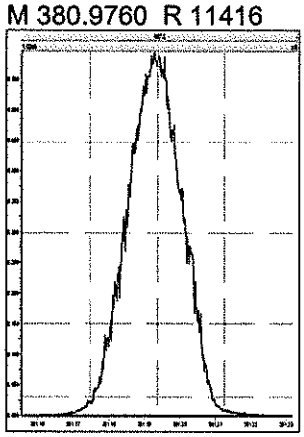

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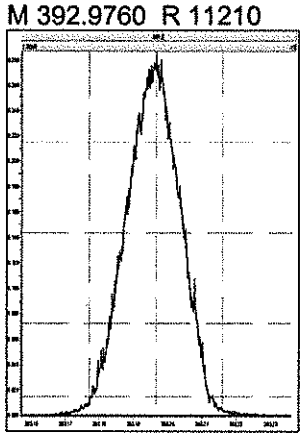

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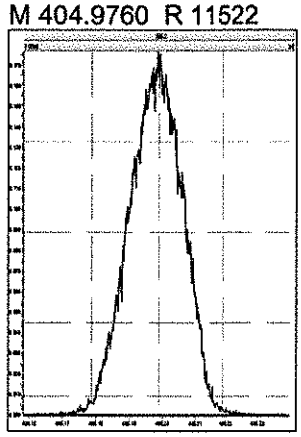

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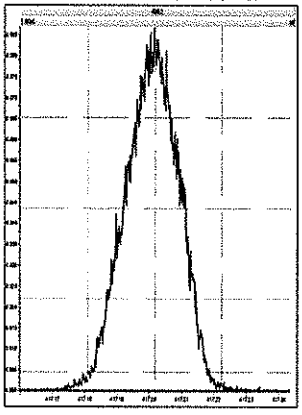
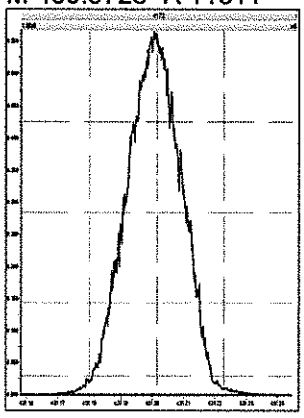
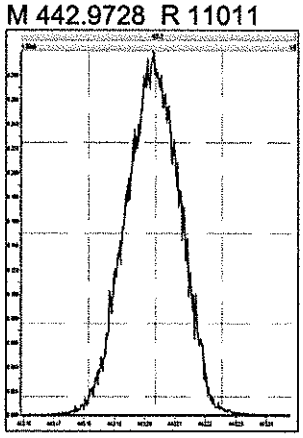


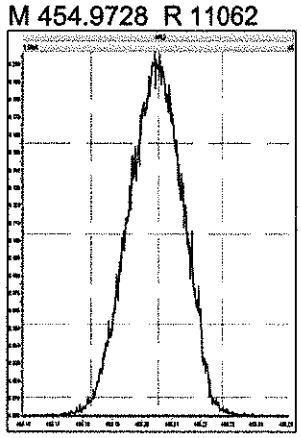
M 430.9728 R 11311



M 442.9728 R 11011



M 454.9728 R 11062



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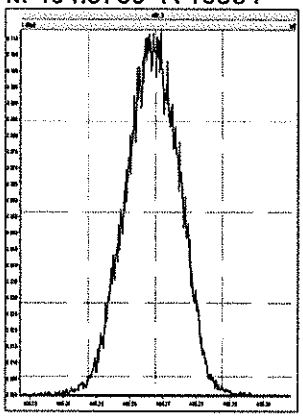
Experiment Calibration Report **MassLynx 4.1**

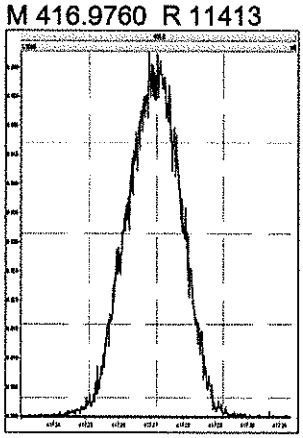
File: Experiment: dioxin_db5ms.exp Reference: pfk.ref Function: 4 @ 200 (ppm)

Printed: Tuesday, August 15, 2017 10:32:04 Eastern Standard Time

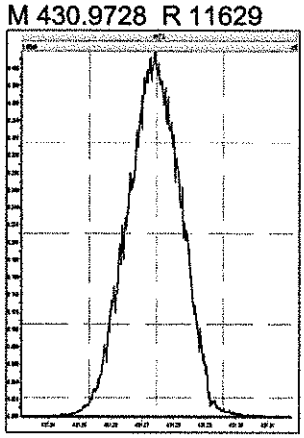
M 404.9760 R 10964



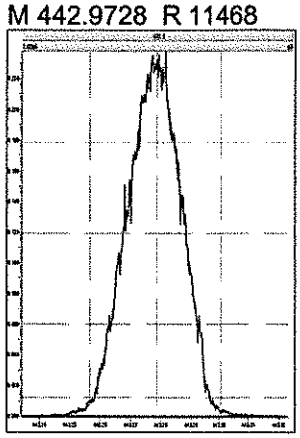
M 416.9760 R 11413



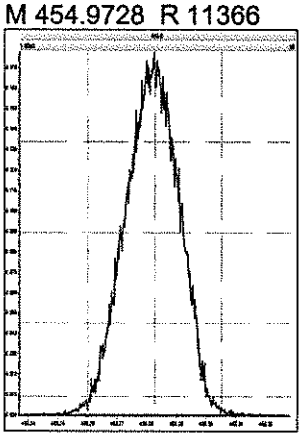
M 430.9728 R 11629



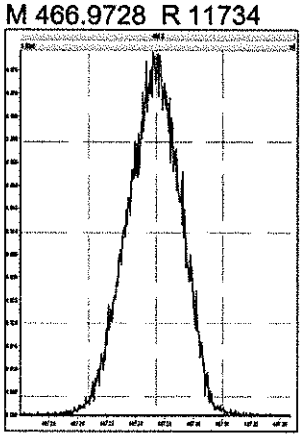
M 442.9728 R 11468



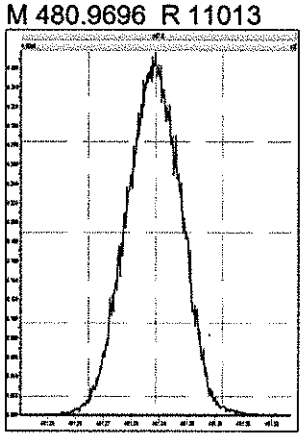
M 454.9728 R 11366



M 466.9728 R 11734



M 480.9696 R 11013



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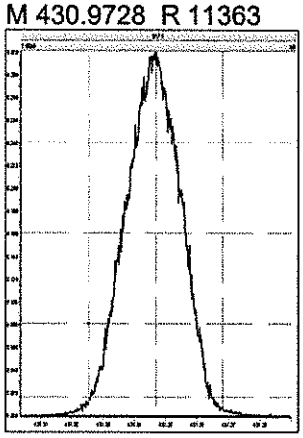
PFK66 Inst: HRP763_1 CY

Experiment Calibration Report **MassLynx 4.1**

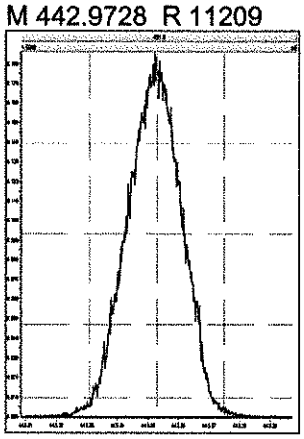
File: Experiment: dioxin_db5ms.exp Reference: pfk.ref Function: 5 @ 200 (ppm)

Printed: Tuesday, August 15, 2017 10:32:39 Eastern Standard Time

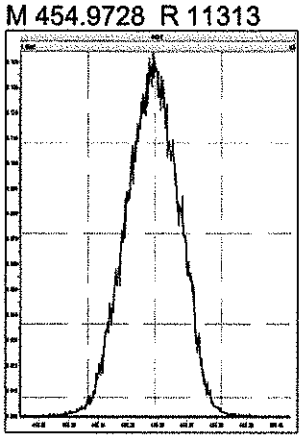
M 430.9728 R 11363



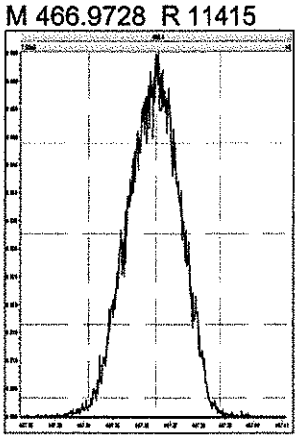
M 442.9728 R 11209



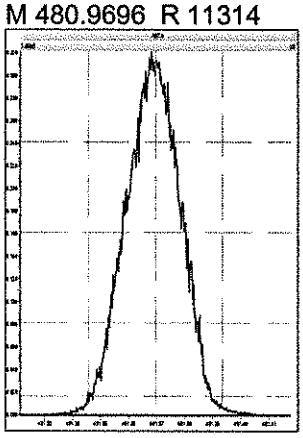
M 454.9728 R 11313



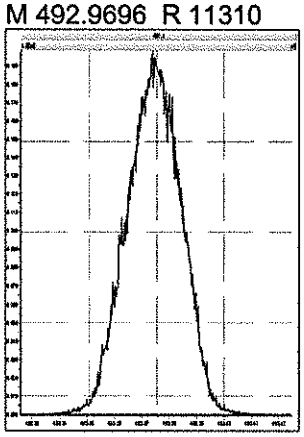
M 466.9728 R 11415



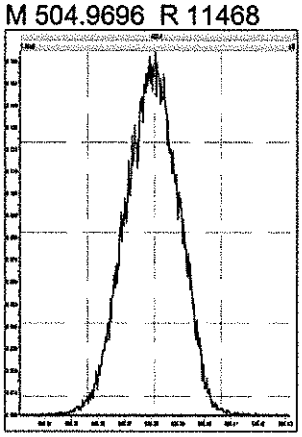
M 480.9696 R 11314



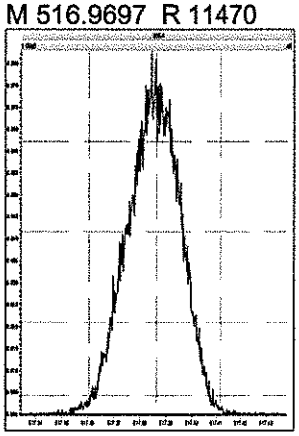
M 492.9696 R 11310



M 504.9696 R 11468



M 516.9697 R 11470



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Resolution Check Report **MassLynx 4.1**

Printed: Tuesday, August 15, 2017 18:46:11 Eastern Standard Time

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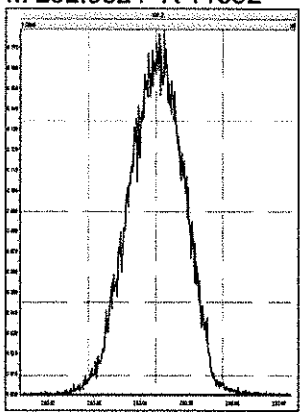
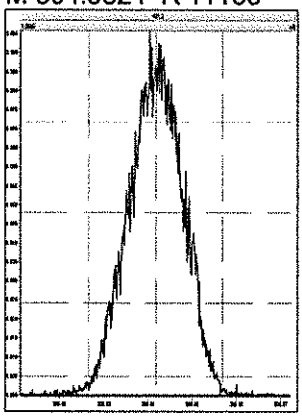
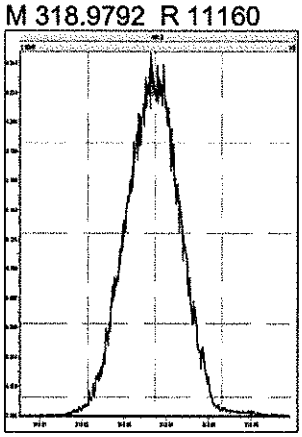


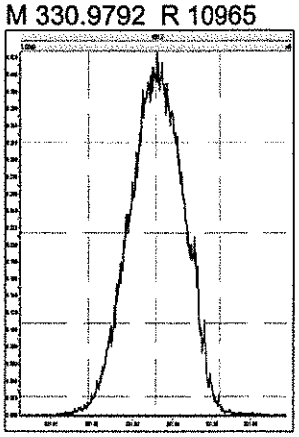
M 304.9824 R 11135



M 318.9792 R 11160



M 330.9792 R 10965



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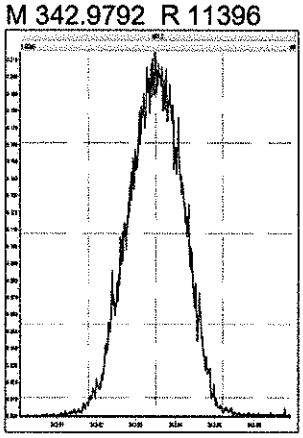
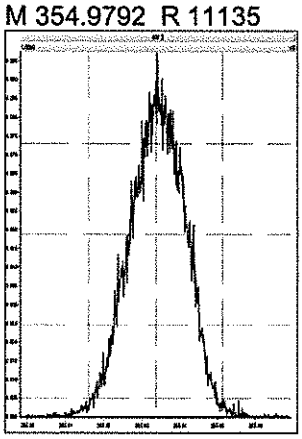
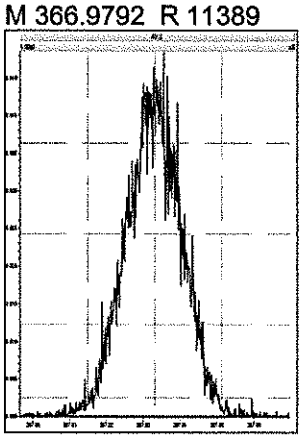


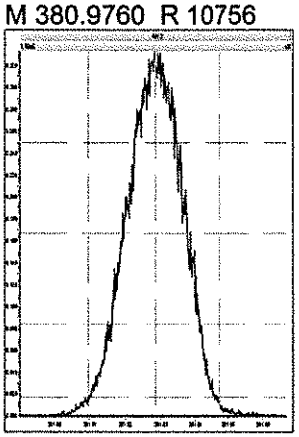
M 354.9792 R 11135



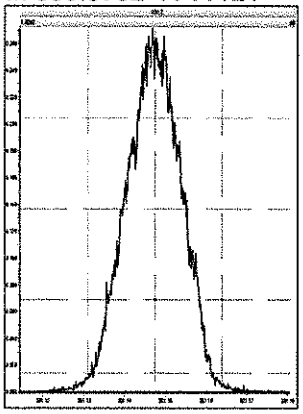
M 366.9792 R 11389



M 380.9760 R 10756



M 330.9792 R 11121



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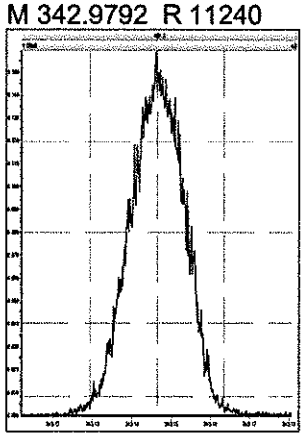

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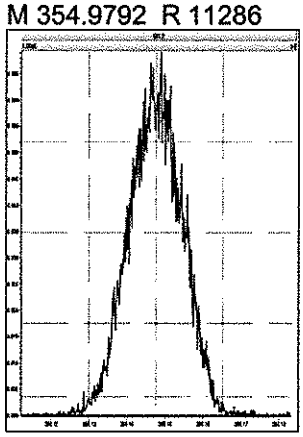
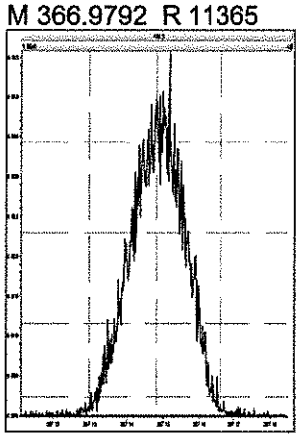
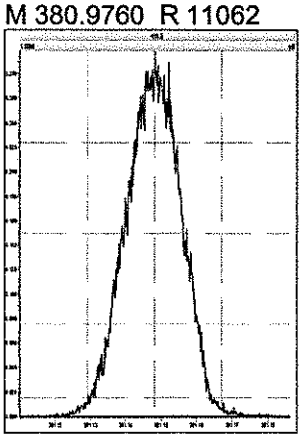


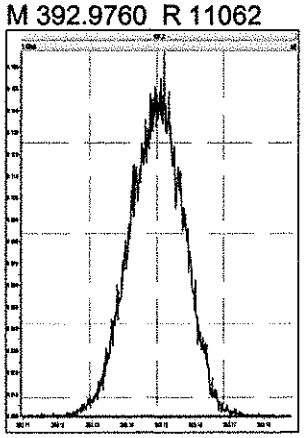
M 366.9792 R 11365



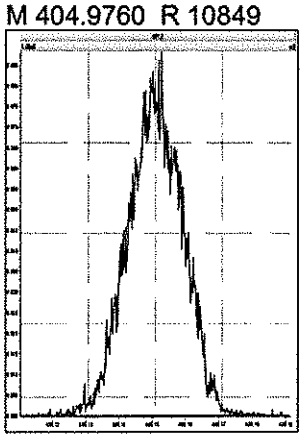
M 380.9760 R 11062



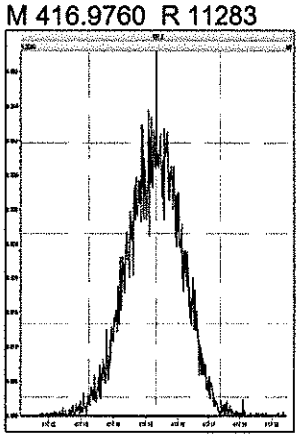
M 392.9760 R 11062



M 404.9760 R 10849



M 416.9760 R 11283



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Resolution Check Report **MassLynx 4.1**

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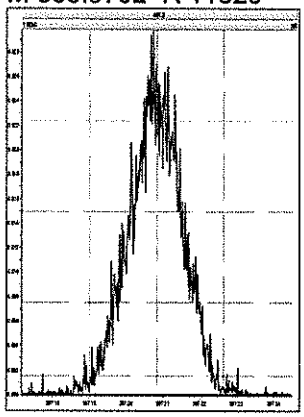
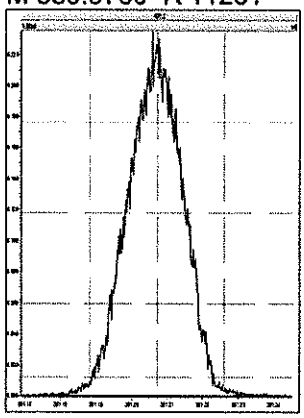
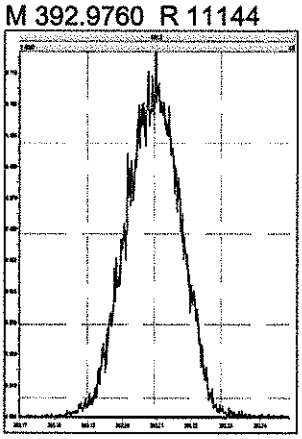


M 380.9760 R 11261



M 392.9760 R 11144



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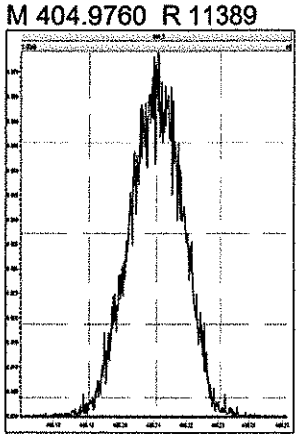
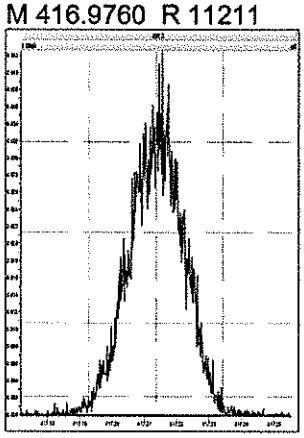
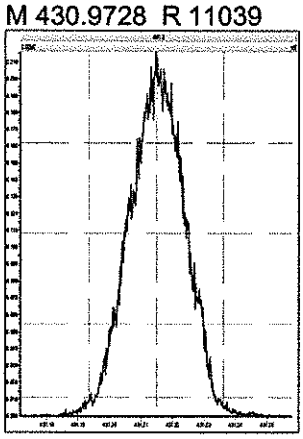


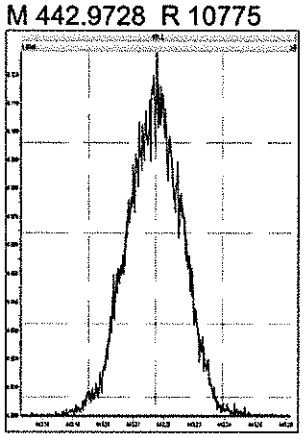
M 416.9760 R 11211



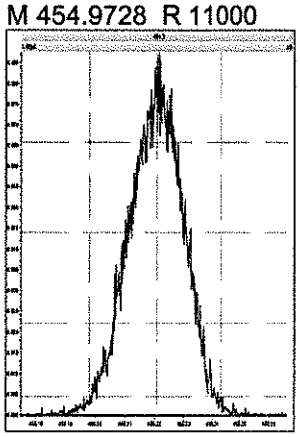
M 430.9728 R 11039



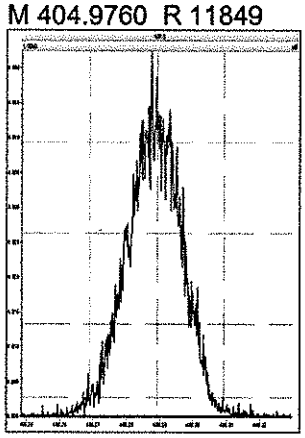
M 442.9728 R 10775



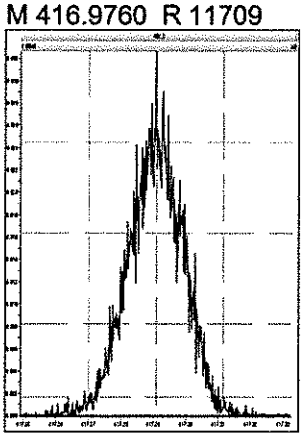
M 454.9728 R 11000



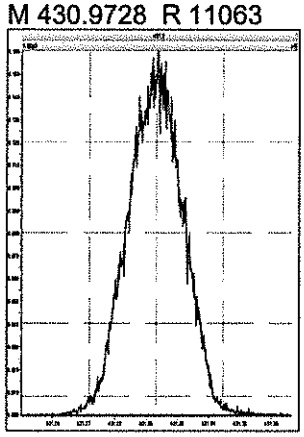
M 404.9760 R 11849



M 416.9760 R 11709



M 430.9728 R 11063



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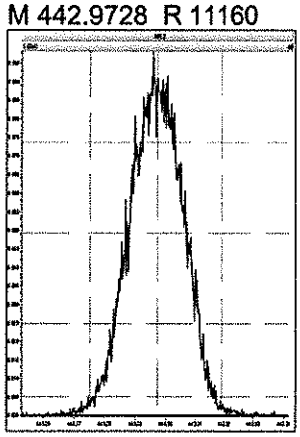

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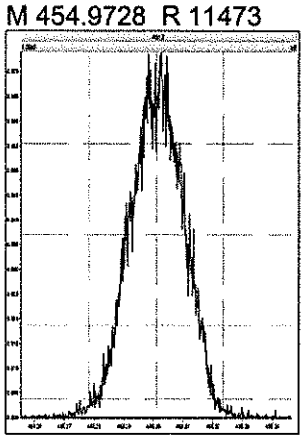
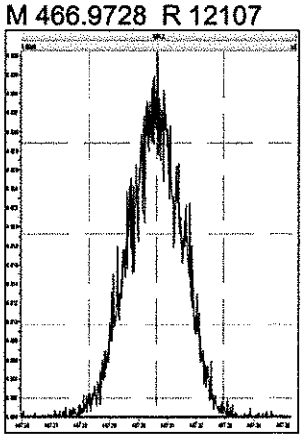
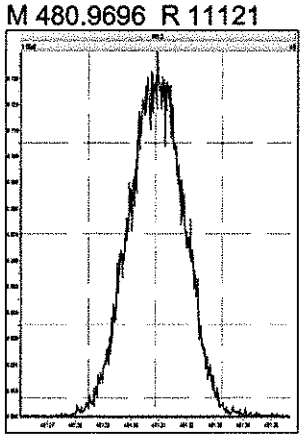


M 466.9728 R 12107



M 480.9696 R 11121



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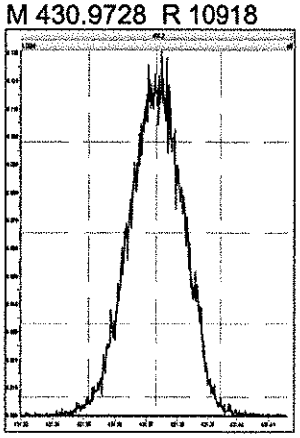

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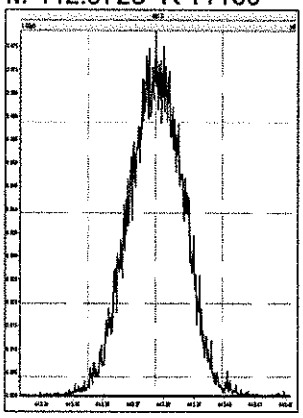
M 442.9728 R 11160



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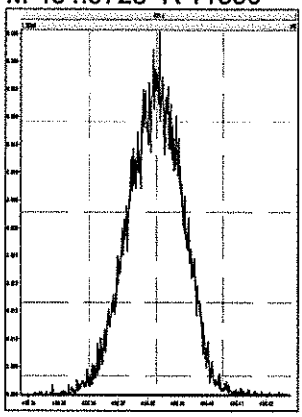

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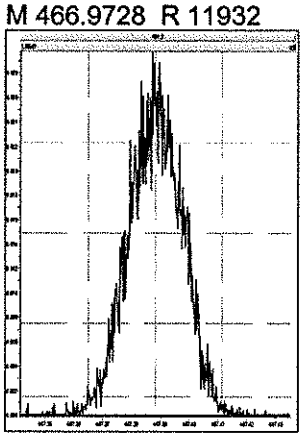

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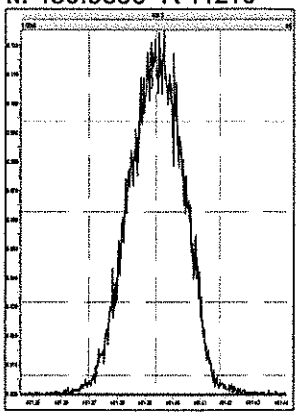
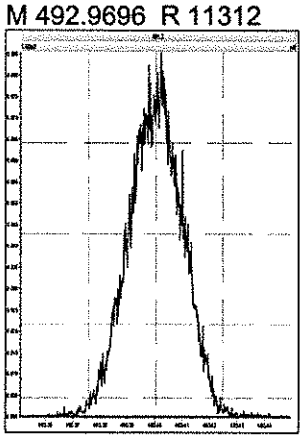
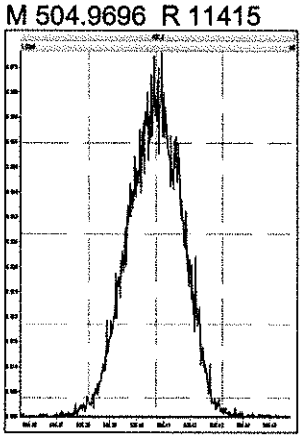


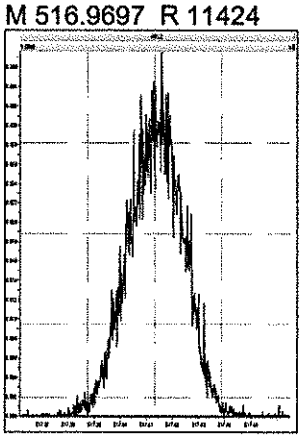
M 492.9696 R 11312



M 504.9696 R 11415



M 516.9697 R 11424



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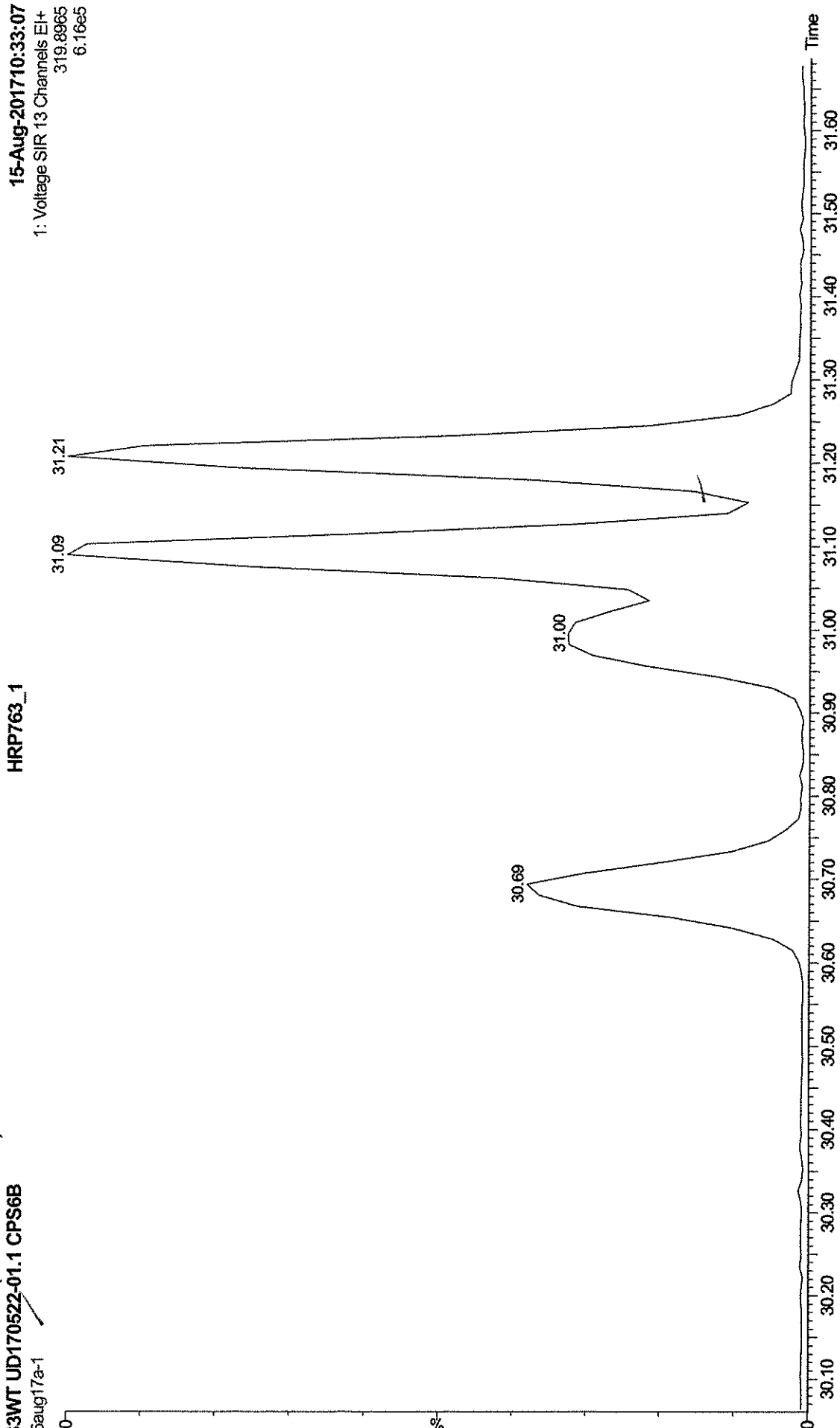

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Quantify Sample Summary Report **MassLynx 4.1**
Method DLM Window Defining Report

Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b15aug17a-1.qld

Last Altered: Wednesday, August 16, 2017 09:29:13 Eastern Standard Time
Printed: Wednesday, August 16, 2017 09:33:04 Eastern Standard Time

Method: C:\MassLynx\Default.pro\Methdb\WDM_b09aug17.mdb 11 Aug 2017 08:52:22
Calibration: C:\MassLynx\DEFAULT.PRO\CurveDB\8290-b15aug17.cdb 16 Aug 2017 08:20:31

Name: b15aug17a-1, Date: 15-Aug-2017, Time: 10:33:07, ID: CS3WT UD170522-01.1 CPS6B, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

	Name	RT
1	First TCDF	26.17
2	Last TCDF	31.87
3	First PeCDF	31.87
4	Last PeCDF	34.51
5	First HxCDF	35.03
6	Last HxCDF	37.29
7	First HpCDF	38.78
8	Last HpCDF	40.67
9	OCDF	44.50
10	First TCDD	27.89
11	2378-TCDD	31.21
12	Last TCDD	31.81
13	First PeCDD	32.76
14	Last PeCDD	34.34
15	First HxCDD	35.44
16	Last HxCDD	36.98
17	First HpCDD	39.11
18	Last HpCDD	40.02
19	OCDD	44.21

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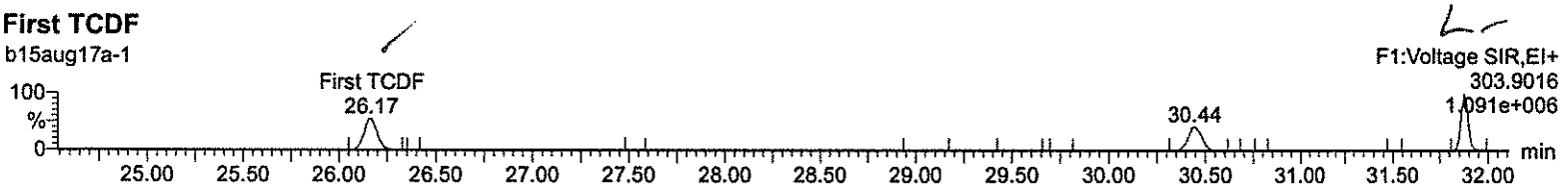
Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b15aug17a-1.qld

Last Altered: Wednesday, August 16, 2017 09:29:13 Eastern Standard Time
Printed: Wednesday, August 16, 2017 09:33:04 Eastern Standard Time

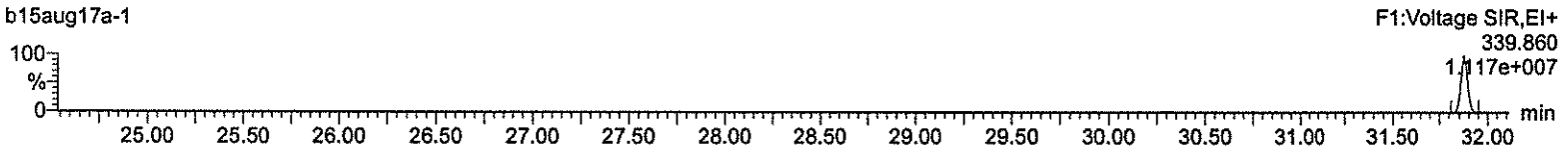
Method: C:\MassLynx\Default.pro\Methdb\WDM_b09aug17.mdb 11 Aug 2017 08:52:22
Calibration: C:\MassLynx\DEFAULT.PRO\CurveDB\8290-b15aug17.cdb 16 Aug 2017 08:20:31

Name: b15aug17a-1, Date: 15-Aug-2017, Time: 10:33:07, ID: CS3WT UD170522-01.1 CPS6B, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

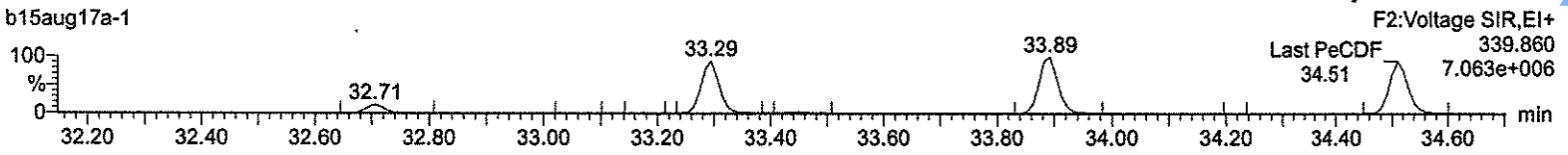
First TCDF



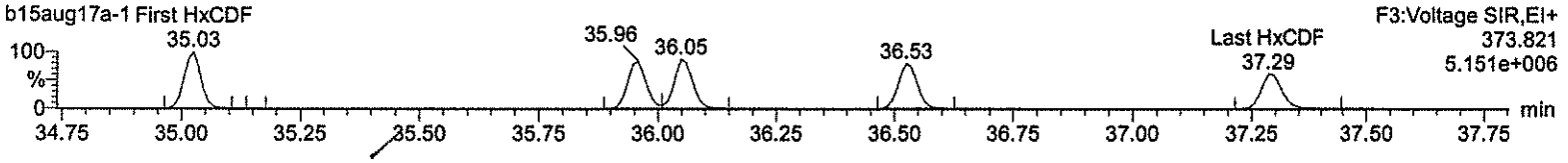
First PeCDF



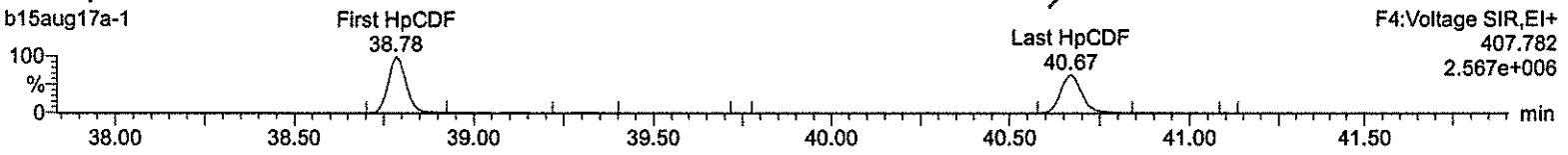
Last PeCDF



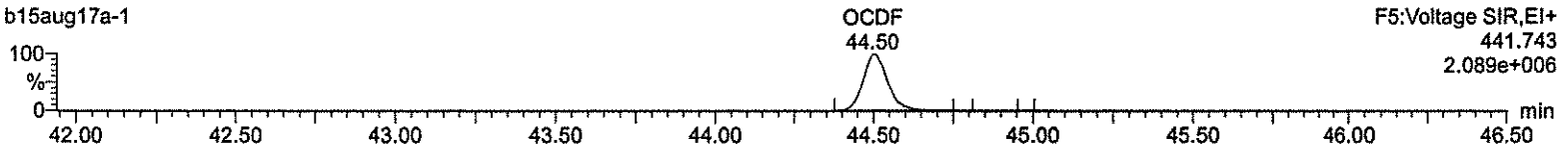
First HxCDF



First HpCDF



OCDF

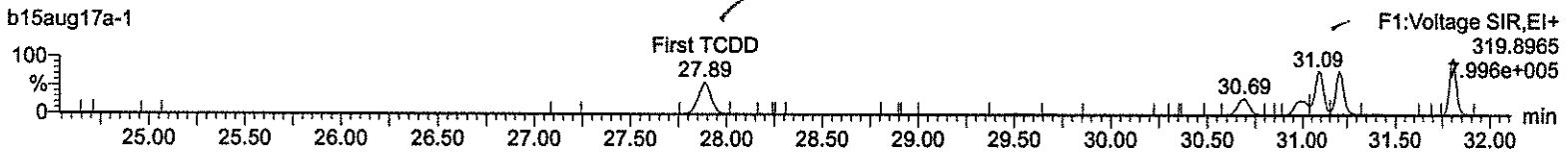


Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b15aug17a-1.qld

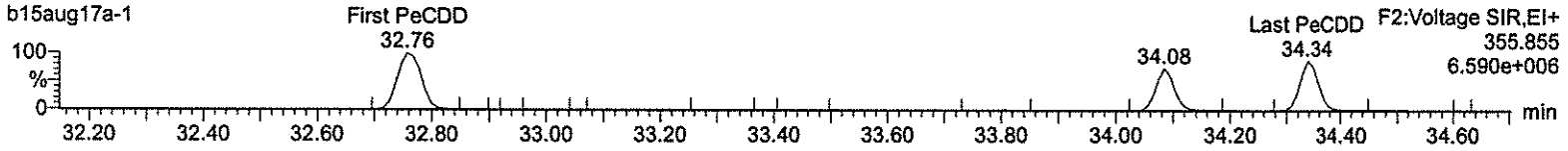
Last Altered: Wednesday, August 16, 2017 09:29:13 Eastern Standard Time
Printed: Wednesday, August 16, 2017 09:33:04 Eastern Standard Time

Name: b15aug17a-1, Date: 15-Aug-2017, Time: 10:33:07, ID: CS3WT UD170522-01.1 CPS6B, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

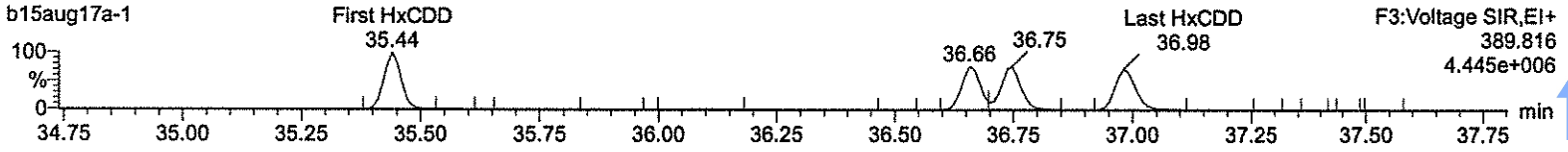
First TCDD



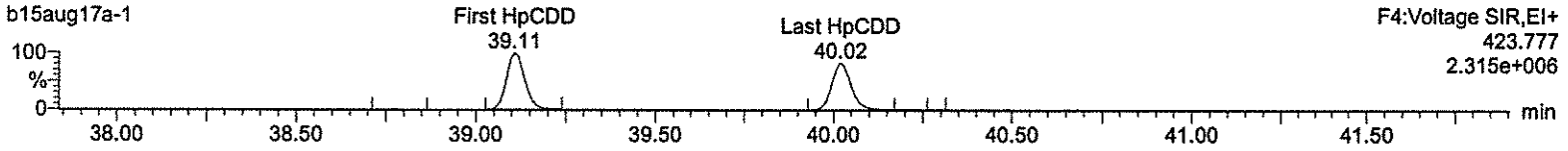
First PeCDD



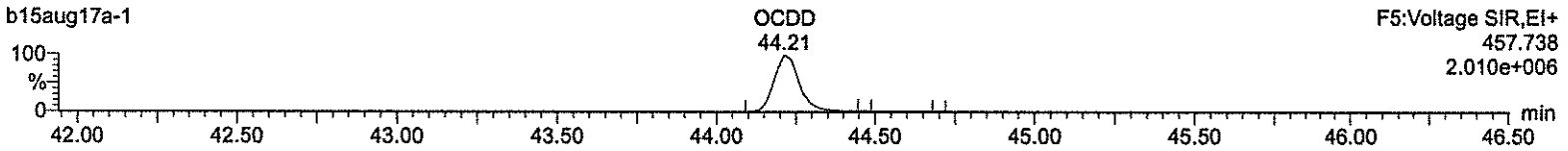
First HxCDD



First HpCDD



OCDD



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Method: C:\MassLynx\Default.pro\Methdb\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: C:\MassLynx\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Date: 15-Aug-2017, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

	Name	ICAL RRF
1	2378-TCDD	0.891
2	12378-PeCDD	0.789
3	123478-HxCDD	0.838
4	123678-HxCDD	0.840
5	123789-HxCDD	0.814
6	1234678-HpCDD	1.003
7	OCDD	0.910
8	2378-TCDF	0.921
9	12378-PeCDF	0.822
10	23478-PeCDF	0.926
11	123478-HxCDF	0.998
12	123678-HxCDF	0.934
13	234678-HxCDF	1.033
14	123789-HxCDF	0.953
15	1234678-HpCDF	1.097
16	1234789-HpCDF	1.109
17	OCDF	0.922
18	13C-2378-TCDD	1.142
19	13C-12378-PeCDD	0.962
20	13C-123478-HxCDD	1.027
21	13C-123678-HxCDD	1.123
22	13C-1234678-HpCDD	0.753
23	13C-OCDD	0.726
24	13C-2378-TCDF	1.337
25	13C-12378-PeCDF	1.242
26	13C-23478-PeCDF	1.234
27	13C-123478-HxCDF	1.099
28	13C-123678-HxCDF	1.272
29	13C-234678-HxCDF	1.079
30	13C-123789-HxCDF	0.987
31	13C-1234678-HpCDF	0.849
32	13C-1234789-HpCDF	0.675
33	13C-1234-TCDD	1.000
34	13C-123789-HxCDD	1.000
35	37Cl-2378-TCDD	1.161

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Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Method: C:\MassLynx\Default.pro\Methdb\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: 16 Aug 2017 10:15:01

Compound name: 2378-TCDD
Response Factor: 0.890842
RRF SD: 0.0396812, Relative SD: 4.45434
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	0.250	31.21	0.26	0.911	0.891	bd
b15aug17a-4	CS1 UD170815-02 CS13F	0.500	31.19	0.47	0.831	0.891	bb
b15aug17a-5	CS2 UD170815-03 CS23E	2.000	31.19	1.92	0.855	0.891	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	10.000	31.19	10.14	0.903	0.891	bb
b15aug17a-7	CS4 UD170815-05 CS43D	40.000	31.21	40.71	0.907	0.891	bb
b15aug17a-8	CS5 UD170815-06 CS53F	200.000	31.19	210.53	0.938	0.891	bb

Compound name: 12378-PeCDD
Response Factor: 0.789284
RRF SD: 0.0267149, Relative SD: 3.3847
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	34.09	1.21	0.767	0.789	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	34.08	2.42	0.763	0.789	bb
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	34.08	9.70	0.766	0.789	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	34.07	51.56	0.814	0.789	bb
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	34.09	204.99	0.809	0.789	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	34.07	1035.89	0.818	0.789	bb

Compound name: 123478-HxCDD
Response Factor: 0.837576
RRF SD: 0.040189, Relative SD: 4.79825
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	36.65	1.20	0.804	0.838	bd
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	36.66	2.35	0.786	0.838	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	36.65	9.78	0.819	0.838	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	36.65	51.21	0.858	0.838	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	36.66	209.06	0.876	0.838	bd
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	36.65	1054.48	0.883	0.838	bd

Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Compound name: 123678-HxCDD
Response Factor: 0.840171
RRF SD: 0.0396039, Relative SD: 4.71379
Response type: Internal Std (Ref 21), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	36.74	1.23	0.827	0.840	db
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	36.74	2.31	0.777	0.840	db
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	36.73	9.76	0.820	0.840	db
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	36.73	51.26	0.861	0.840	db
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	36.74	207.82	0.873	0.840	db
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	36.73	1050.15	0.882	0.840	db

Compound name: 123789-HxCDD
Response Factor: 0.814232
RRF SD: 0.0259724, Relative SD: 3.18981
Response type: Internal Std (Ref Multiple), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	36.98	1.21	0.787	0.814	bd
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	36.98	2.44	0.794	0.814	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	36.97	9.74	0.793	0.814	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	36.97	51.49	0.838	0.814	bb
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	36.98	202.67	0.825	0.814	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	36.97	1040.62	0.847	0.814	bb

Compound name: 1234678-HpCDD
Response Factor: 1.00252
RRF SD: 0.0375376, Relative SD: 3.74431
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	40.02	1.24	0.993	1.003	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	40.02	2.34	0.938	1.003	bb
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	40.00	10.03	1.006	1.003	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	40.01	49.94	1.001	1.003	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	40.01	204.63	1.026	1.003	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	40.00	1047.70	1.050	1.003	bb

Compound name: OCDD
Response Factor: 0.910326
RRF SD: 0.0345333, Relative SD: 3.79351
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	2.500	44.20	2.39	0.870	0.910	bb
b15aug17a-4	CS1 UD170815-02 CS13F	5.000	44.21	5.25	0.955	0.910	bb
b15aug17a-5	CS2 UD170815-03 CS23E	20.000	44.19	19.18	0.873	0.910	bd

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Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
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Compound name: OCDD

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	44.19	99.64	0.907	0.910	bd
b15aug17a-7	CS4 UD170815-05 CS43D	400.000	44.20	402.90	0.917	0.910	bb
b15aug17a-8	CS5 UD170815-06 CS53F	2000.000	44.20	2064.41	0.940	0.910	bb

Compound name: 2378-TCDF
Response Factor: 0.920717
RRF SD: 0.0230046, Relative SD: 2.49856
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	0.250	30.44	0.25	0.930	0.921	bb
b15aug17a-4	CS1 UD170815-02 CS13F	0.500	30.44	0.49	0.909	0.921	bb
b15aug17a-5	CS2 UD170815-03 CS23E	2.000	30.42	1.94	0.895	0.921	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	10.000	30.43	9.78	0.900	0.921	bb
b15aug17a-7	CS4 UD170815-05 CS43D	40.000	30.43	40.60	0.935	0.921	bd
b15aug17a-8	CS5 UD170815-06 CS53F	200.000	30.42	207.43	0.955	0.921	bb

Compound name: 12378-PeCDF
Response Factor: 0.822065
RRF SD: 0.0343931, Relative SD: 4.18375
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	33.28	1.21	0.795	0.822	bd
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	33.29	2.34	0.770	0.822	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	33.28	9.99	0.822	0.822	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	33.28	51.50	0.847	0.822	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	33.28	203.42	0.836	0.822	bd
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	33.28	1049.73	0.863	0.822	bb

Compound name: 23478-PeCDF
Response Factor: 0.926478
RRF SD: 0.0266043, Relative SD: 2.87155
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	33.88	1.21	0.896	0.926	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	33.89	2.43	0.900	0.926	bb
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	33.88	9.87	0.914	0.926	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	33.88	50.64	0.938	0.926	bb
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	33.88	205.38	0.951	0.926	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	33.88	1034.54	0.958	0.926	bb

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Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Compound name: 123478-HxCDF
Response Factor: 0.99831
RRF SD: 0.0501135, Relative SD: 5.01983
Response type: Internal Std (Ref 27), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	35.95	1.15	0.917	0.998	bd
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	35.95	2.41	0.964	0.998	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	35.94	9.96	0.994	0.998	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	35.95	51.80	1.034	0.998	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	35.95	207.28	1.035	0.998	bd
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	35.94	1046.83	1.045	0.998	bd

Compound name: 123678-HxCDF
Response Factor: 0.934018
RRF SD: 0.0397506, Relative SD: 4.25587
Response type: Internal Std (Ref 28), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	36.05	1.20	0.896	0.934	db
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	36.06	2.34	0.874	0.934	db
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	36.04	10.29	0.961	0.934	dd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	36.04	50.49	0.943	0.934	db
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	36.05	204.44	0.955	0.934	db
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	36.04	1043.88	0.975	0.934	db

Compound name: 234678-HxCDF
Response Factor: 1.03257
RRF SD: 0.0448711, Relative SD: 4.34556
Response type: Internal Std (Ref 29), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	36.53	1.17	0.966	1.033	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	36.52	2.41	0.994	1.033	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	36.51	9.97	1.029	1.033	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	36.51	51.49	1.063	1.033	bb
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	36.53	206.77	1.068	1.033	bd
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	36.51	1041.92	1.076	1.033	bd

Compound name: 123789-HxCDF
Response Factor: 0.953148
RRF SD: 0.0461039, Relative SD: 4.83701
Response type: Internal Std (Ref 30), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	37.29	1.18	0.904	0.953	bd
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	37.28	2.34	0.893	0.953	bb
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	37.28	9.95	0.948	0.953	bb

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Compound name: 123789-HxCDF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	37.28	51.52	0.982	0.953	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	37.29	209.46	0.998	0.953	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	37.28	1042.81	0.994	0.953	bb

Compound name: 1234678-HpCDF
Response Factor: 1.09654
RRF SD: 0.0436776, Relative SD: 3.9832
Response type: Internal Std (Ref 31), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	38.78	1.20	1.051	1.097	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	38.78	2.41	1.056	1.097	bb
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	38.77	9.72	1.066	1.097	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	38.77	51.39	1.127	1.097	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	38.78	206.92	1.134	1.097	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	38.77	1044.92	1.146	1.097	bb

Compound name: 1234789-HpCDF
Response Factor: 1.10889
RRF SD: 0.0723086, Relative SD: 6.52078
Response type: Internal Std (Ref 32), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	1.250	40.66	1.15	1.024	1.109	bb
b15aug17a-4	CS1 UD170815-02 CS13F	2.500	40.67	2.36	1.046	1.109	bd
b15aug17a-5	CS2 UD170815-03 CS23E	10.000	40.65	9.59	1.064	1.109	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	50.000	40.65	52.14	1.156	1.109	bd
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	40.66	213.29	1.183	1.109	bb
b15aug17a-8	CS5 UD170815-06 CS53F	1000.000	40.65	1065.11	1.181	1.109	bb

Compound name: OCDF
Response Factor: 0.922127
RRF SD: 0.067038, Relative SD: 7.26993
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	2.500	44.51	2.34	0.863	0.922	bd
b15aug17a-4	CS1 UD170815-02 CS13F	5.000	44.50	4.59	0.847	0.922	bd
b15aug17a-5	CS2 UD170815-03 CS23E	20.000	44.48	19.31	0.890	0.922	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	44.49	101.37	0.935	0.922	bb
b15aug17a-7	CS4 UD170815-05 CS43D	400.000	44.49	428.39	0.988	0.922	bd
b15aug17a-8	CS5 UD170815-06 CS53F	2000.000	44.49	2191.73	1.011	0.922	bb

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Compound name: 13C-2378-TCDD
Response Factor: 1.14196
RRF SD: 0.0335753, Relative SD: 2.94016
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	31.18	98.80	1.128	1.142	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	31.19	99.23	1.133	1.142	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	31.18	98.33	1.123	1.142	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	31.18	98.42	1.124	1.142	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	31.18	99.27	1.134	1.142	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	31.18	105.95	1.210	1.142	bb

Compound name: 13C-12378-PeCDD
Response Factor: 0.961508
RRF SD: 0.0420986, Relative SD: 4.37839
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	34.08	102.17	0.982	0.962	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	34.07	100.66	0.968	0.962	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	34.07	98.29	0.945	0.962	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	34.06	95.02	0.914	0.962	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	34.08	96.66	0.929	0.962	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	34.06	107.20	1.031	0.962	bb

Compound name: 13C-123478-HxCDD
Response Factor: 1.02706
RRF SD: 0.00755639, Relative SD: 0.735729
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	36.65	100.86	1.036	1.027	bd
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	36.65	100.19	1.029	1.027	bd
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	36.64	99.33	1.020	1.027	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	36.64	99.25	1.019	1.027	bd
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	36.65	100.83	1.036	1.027	bd
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	36.64	99.53	1.022	1.027	bd

Compound name: 13C-123678-HxCDD
Response Factor: 1.12337
RRF SD: 0.0203759, Relative SD: 1.81382
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	36.73	96.88	1.088	1.123	db
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	36.73	100.58	1.130	1.123	db
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	36.72	99.03	1.112	1.123	db

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Compound name: 13C-123678-HxCDD

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	36.72	100.50	1.129	1.123	db
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	36.73	100.93	1.134	1.123	db
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	36.72	102.09	1.147	1.123	db

Compound name: 13C-1234678-HpCDD
Response Factor: 0.753246
RRF SD: 0.0155947, Relative SD: 2.07033
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	40.00	97.66	0.736	0.753	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	40.00	103.58	0.780	0.753	bd
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	39.99	99.55	0.750	0.753	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	39.99	100.74	0.759	0.753	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	40.00	98.45	0.742	0.753	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	39.99	100.01	0.753	0.753	bb

Compound name: 13C-OCDD
Response Factor: 0.725528
RRF SD: 0.0296316, Relative SD: 4.08414
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	200.000	44.19	192.73	0.699	0.726	bb
b15aug17a-4	CS1 UD170815-02 CS13F	200.000	44.19	202.47	0.735	0.726	bb
b15aug17a-5	CS2 UD170815-03 CS23E	200.000	44.18	203.53	0.738	0.726	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	200.000	44.18	196.57	0.713	0.726	bb
b15aug17a-7	CS4 UD170815-05 CS43D	200.000	44.19	191.41	0.694	0.726	bb
b15aug17a-8	CS5 UD170815-06 CS53F	200.000	44.19	213.29	0.774	0.726	bb

Compound name: 13C-2378-TCDF
Response Factor: 1.33654
RRF SD: 0.0214119, Relative SD: 1.60204
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	30.42	100.77	1.347	1.337	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	30.42	99.30	1.327	1.337	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	30.41	98.22	1.313	1.337	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	30.41	99.28	1.327	1.337	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	30.41	99.62	1.331	1.337	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	30.39	102.81	1.374	1.337	bb

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Compound name: 13C-12378-PeCDF
Response Factor: 1.24228
RRF SD: 0.0382551, Relative SD: 3.07942
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	33.27	99.24	1.233	1.242	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	33.28	101.20	1.257	1.242	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	33.27	99.04	1.230	1.242	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	33.27	96.45	1.198	1.242	bd
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	33.28	98.60	1.225	1.242	bd
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	33.27	105.47	1.310	1.242	bb

Compound name: 13C-23478-PeCDF
Response Factor: 1.23372
RRF SD: 0.0518066, Relative SD: 4.19922
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	33.87	101.02	1.246	1.234	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	33.88	100.54	1.240	1.234	db
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	33.86	98.66	1.217	1.234	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	33.87	96.08	1.185	1.234	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	33.87	96.25	1.187	1.234	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	33.87	107.46	1.326	1.234	bb

Compound name: 13C-123478-HxCDF
Response Factor: 1.09893
RRF SD: 0.00909923, Relative SD: 0.828008
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	35.94	100.46	1.104	1.099	bd
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	35.94	100.34	1.103	1.099	bd
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	35.93	99.20	1.090	1.099	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	35.93	99.82	1.097	1.099	bd
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	35.94	101.19	1.112	1.099	bd
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	35.93	98.99	1.088	1.099	bd

Compound name: 13C-123678-HxCDF
Response Factor: 1.27191
RRF SD: 0.0313079, Relative SD: 2.46149
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	36.04	97.54	1.241	1.272	db
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	36.04	100.16	1.274	1.272	db
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	36.03	96.45	1.227	1.272	db

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Compound name: 13C-123678-HxCDF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	36.03	101.93	1.296	1.272	dd
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	36.04	102.28	1.301	1.272	dd
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	36.03	101.64	1.293	1.272	dd

Compound name: 13C-234678-HxCDF
Response Factor: 1.07916
RRF SD: 0.0110759, Relative SD: 1.02635
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	36.52	98.73	1.065	1.079	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	36.51	99.55	1.074	1.079	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	36.51	100.00	1.079	1.079	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	36.50	99.53	1.074	1.079	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	36.51	101.74	1.098	1.079	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	36.51	100.45	1.084	1.079	bd

Compound name: 13C-123789-HxCDF
Response Factor: 0.987065
RRF SD: 0.012397, Relative SD: 1.25595
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	37.28	101.90	1.006	0.987	bd
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	37.27	99.09	0.978	0.987	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	37.27	99.17	0.979	0.987	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	37.26	99.56	0.983	0.987	bd
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	37.28	99.02	0.977	0.987	bd
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	37.26	101.26	0.999	0.987	bd

Compound name: 13C-1234678-HpCDF
Response Factor: 0.849447
RRF SD: 0.01276, Relative SD: 1.50215
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	38.76	98.13	0.834	0.849	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	38.76	102.49	0.871	0.849	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	38.76	100.30	0.852	0.849	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	38.76	100.07	0.850	0.849	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	38.76	98.80	0.839	0.849	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	38.76	100.20	0.851	0.849	bb

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Compound name: 13C-1234789-HpCDF
Response Factor: 0.675226
RRF SD: 0.0139153, Relative SD: 2.06084
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	40.65	97.13	0.656	0.675	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	40.65	102.19	0.690	0.675	bd
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	40.64	102.01	0.689	0.675	bd
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	40.64	99.50	0.672	0.675	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	40.65	98.25	0.663	0.675	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	40.64	100.91	0.681	0.675	bb

Compound name: 13C-1234-TCDD
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	30.65	100.00	1.000	1.000	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	30.65	100.00	1.000	1.000	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	30.64	100.00	1.000	1.000	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	30.65	100.00	1.000	1.000	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	30.66	100.00	1.000	1.000	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	30.64	100.00	1.000	1.000	bb

Compound name: 13C-123789-HxCDD
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	100.000	36.97	100.00	1.000	1.000	bb
b15aug17a-4	CS1 UD170815-02 CS13F	100.000	36.97	100.00	1.000	1.000	bb
b15aug17a-5	CS2 UD170815-03 CS23E	100.000	36.96	100.00	1.000	1.000	bb
b15aug17a-6	CS3 UD170815-04 CS3A1	100.000	36.96	100.00	1.000	1.000	bb
b15aug17a-7	CS4 UD170815-05 CS43D	100.000	36.97	100.00	1.000	1.000	bb
b15aug17a-8	CS5 UD170815-06 CS53F	100.000	36.96	100.00	1.000	1.000	bb

Compound name: 37Cl-2378-TCDD
Response Factor: 1.16079
RRF SD: 0.0627548, Relative SD: 5.40623
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-3	CS0.5 UD170815-01.1	0.250	31.21	0.24	1.113	1.161	bb
b15aug17a-4	CS1 UD170815-02 CS13F	0.500	31.19	0.52	1.197	1.161	bb
b15aug17a-5	CS2 UD170815-03 CS23E	2.000	31.19	1.88	1.089	1.161	bb

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Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Compound name: 37Cl-2378-TCDD

Filename	Sample ID	Std. Conc	RT	pg/uL	RRF	AvgRRF	M
b15aug17a-6	CS3 UD170815-04 CS3A1	10.000	31.19	9.82	1.140	1.161	bb
b15aug17a-7	CS4 UD170815-05 CS43D	40.000	31.21	40.10	1.164	1.161	bb
b15aug17a-8	CS5 UD170815-06 CS53F	200.000	31.19	217.62	1.263	1.161	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Method: C:\MassLynx\Default.pro\Methdb\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: 16 Aug 2017 10:15:01

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	7.99e2	1.11e3	1.91e3	31.21	1.001	0.72	NO	0.256	0.911	0.891	4.45	0.0393	1.71e4	1365	12.6	2.04e4	711	28.6	bd	bb
2	12378-PeCDD	4.22e3	2.79e3	7.00e3	34.09	1.000	1.51	NO	1.214	0.767	0.789	3.38	0.0259	9.89e4	866	114.2	6.68e4	562	118.8	bb	bb
3	123478-HxCDD	3.70e3	2.79e3	6.49e3	36.65	1.000	1.32	NO	1.199	0.804	0.838	4.80	0.0487	7.80e4	1179	66.2	6.11e4	1073	57.0	bd	bd
4	123678-HxCDD	3.85e3	3.17e3	7.02e3	36.74	1.000	1.21	NO	1.230	0.827	0.840	4.71	0.0475	8.69e4	1179	73.7	6.30e4	1073	58.7	db	db
5	123789-HxCDD	3.72e3	2.80e3	6.52e3	36.98	1.007	1.33	NO	1.209	0.787	0.814	3.19	0.0496	7.10e4	1179	60.2	5.43e4	1073	50.7	bd	bb
6	1234678-HpCDD	2.88e3	2.82e3	5.70e3	40.02	1.001	1.02	NO	1.238	0.993	1.003	3.74	0.0504	4.31e4	754	57.1	4.48e4	713	62.9	bb	bb
7	OCDD	4.41e3	5.08e3	9.49e3	44.20	1.000	0.87	NO	2.390	0.870	0.910	3.79	0.0804	5.48e4	698	78.4	5.67e4	707	80.2	bb	bb
8	2378-TCDF	1.06e3	1.27e3	2.33e3	30.44	1.001	0.84	NO	0.252	0.930	0.921	2.50	0.0462	1.70e4	653	26.0	1.62e4	1353	12.0	bb	bb
9	12378-PeCDF	5.65e3	3.46e3	9.11e3	33.28	1.000	1.64	NO	1.209	0.795	0.822	4.18	0.0301	1.37e5	861	158.7	9.38e4	1377	68.2	bd	bb
10	23478-PeCDF	6.29e3	4.09e3	1.04e4	33.88	1.000	1.54	NO	1.209	0.896	0.926	2.87	0.0258	1.61e5	861	187.0	1.05e5	1377	75.9	bb	bb
11	123478-HxCDF	4.38e3	3.52e3	7.89e3	35.95	1.000	1.24	NO	1.148	0.917	0.998	5.02	0.0260	9.69e4	814	119.0	7.69e4	798	96.5	bd	bd
12	123678-HxCDF	4.78e3	3.89e3	8.67e3	36.05	1.000	1.23	NO	1.199	0.896	0.934	4.26	0.0264	1.12e5	814	138.1	8.36e4	798	104.8	db	db
13	234678-HxCDF	4.56e3	3.46e3	8.02e3	36.53	1.000	1.32	NO	1.169	0.966	1.033	4.35	0.0283	1.04e5	814	127.4	7.28e4	798	91.3	bb	bb
14	123789-HxCDF	3.91e3	3.17e3	7.09e3	37.29	1.000	1.23	NO	1.185	0.904	0.953	4.84	0.0359	7.88e4	814	96.7	5.87e4	798	73.6	bd	bb
15	1234678-HpCDF	3.50e3	3.33e3	6.83e3	38.78	1.001	1.05	NO	1.198	1.051	1.097	3.98	0.0303	6.27e4	635	98.7	5.27e4	555	95.0	bb	bb
16	1234789-HpCDF	2.54e3	2.69e3	5.24e3	40.66	1.000	0.95	NO	1.154	1.024	1.109	6.52	0.0459	3.74e4	635	59.0	3.85e4	555	69.3	bb	bb
17	OCDF	4.61e3	4.80e3	9.41e3	44.51	1.007	0.96	NO	2.339	0.863	0.922	7.27	0.0826	5.00e4	562	89.0	5.35e4	901	59.4	bd	bb
18	13C-2378-TCDD	3.68e5	4.71e5	8.39e5	31.18	1.017	0.78	NO	98.805	1.128	1.142	2.94	0.134	6.49e6	3518	1846.2	8.30e6	2565	3233.5	bb	bb
19	13C-12378-PeCDD	4.51e5	2.79e5	7.31e5	34.08	1.112	1.61	NO	102.166	0.982	0.962	4.38	0.0924	1.08e7	1781	6056.3	6.64e6	1755	3785.0	bb	bb
20	13C-123478-HxCDD	3.54e5	2.93e5	6.46e5	36.65	0.991	1.21	NO	100.862	1.036	1.027	0.74	0.0824	7.56e6	2188	3453.9	6.21e6	1962	3166.2	bd	bd
21	13C-123678-HxCDD	3.72e5	3.07e5	6.79e5	36.73	0.993	1.21	NO	96.883	1.088	1.123	1.81	0.0753	7.71e6	2188	3526.3	6.33e6	1962	3224.6	db	db
22	13C-1234678-HpCDD	2.33e5	2.26e5	4.59e5	40.00	1.082	1.03	NO	97.664	0.736	0.753	2.07	0.0719	3.68e6	1335	2756.7	3.61e6	1321	2732.5	bb	bb
23	13C-OCDD	3.97e5	4.75e5	8.72e5	44.19	1.195	0.84	NO	192.726	0.699	0.726	4.08	0.0953	4.37e6	1643	2659.6	5.05e6	1749	2887.0	bb	bd
24	13C-2378-TCDF	4.33e5	5.69e5	1.00e6	30.42	0.992	0.76	NO	100.768	1.347	1.337	1.60	0.159	5.10e6	5543	919.7	6.72e6	2897	2318.4	bb	bb
25	13C-12378-PeCDF	5.63e5	3.54e5	9.17e5	33.27	1.085	1.59	NO	99.241	1.233	1.242	3.08	0.127	1.39e7	2710	5135.4	8.91e6	3584	2485.5	bb	bb
26	13C-23478-PeCDF	5.68e5	3.59e5	9.27e5	33.87	1.105	1.58	NO	101.016	1.246	1.234	4.20	0.128	1.43e7	2710	5289.5	9.14e6	3584	2551.2	bb	bb
27	13C-123478-HxCDF	2.34e5	4.55e5	6.89e5	35.94	0.972	0.51	NO	100.461	1.104	1.099	0.83	0.118	5.28e6	4141	1274.2	1.02e7	2199	4651.0	bd	bd
28	13C-123678-HxCDF	2.64e5	5.10e5	7.74e5	36.04	0.975	0.52	NO	97.540	1.241	1.272	2.46	0.102	5.58e6	4141	1347.7	1.06e7	2199	4834.3	db	dd
29	13C-234678-HxCDF	2.28e5	4.37e5	6.65e5	36.52	0.988	0.52	NO	98.730	1.065	1.079	1.03	0.120	4.72e6	4141	1139.9	9.17e6	2199	4170.3	bb	bb
30	13C-123789-HxCDF	2.14e5	4.13e5	6.27e5	37.28	1.008	0.52	NO	101.905	1.006	0.987	1.26	0.131	4.02e6	4141	971.7	7.59e6	2199	3453.5	bd	bd
31	13C-1234678-HpCDF	1.57e5	3.63e5	5.20e5	38.76	1.048	0.43	NO	98.128	0.834	0.849	1.50	0.0876	2.70e6	1285	2101.3	6.16e6	2366	2604.3	bb	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	1.24e5	2.85e5	4.09e5	40.65	1.099	0.43	NO	97.131	0.656	0.675	2.06	0.110	1.76e6	1285	1372.8	4.12e6	2366	1742.4	bb	bb
33	13C-1234-TCDD	3.29e5	4.15e5	7.44e5	30.65	0.000	0.79	NO	100.000	1.000	1.000	0.00	0.153	4.40e6	3518	1250.2	5.51e6	2565	2148.8	bb	bb
34	13C-123789-HxCDD	3.41e5	2.83e5	6.24e5	36.97	0.000	1.20	NO	100.000	1.000	1.000	0.00	0.0846	6.70e6	2188	3062.5	5.56e6	1962	2833.8	bb	bb
35	37Cl-2378-TCDD	2.07e3		2.07e3	31.21	1.018			0.240	1.113	1.161	5.41	0.0289	3.76e4	1335	28.1				bb	

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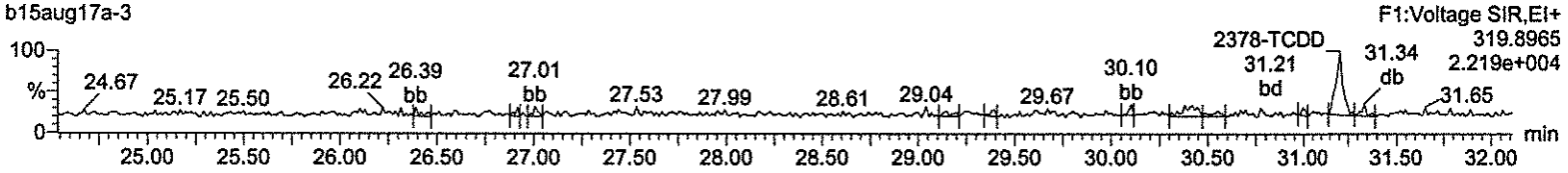
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

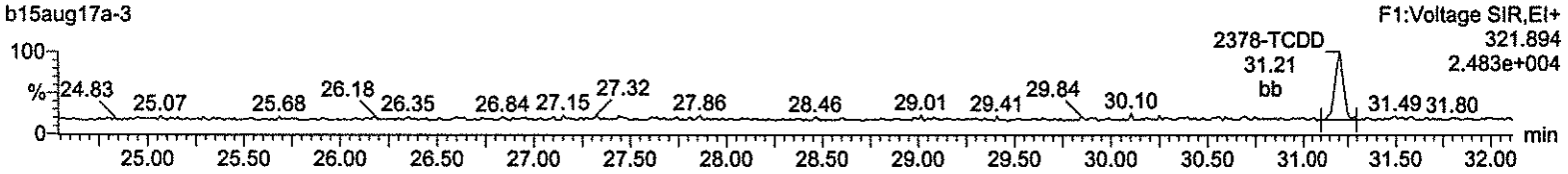
Method: C:\MassLynx\Default.pro\Methdb\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: 16 Aug 2017 10:15:01

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-tetradioxins



Total-tetradioxins



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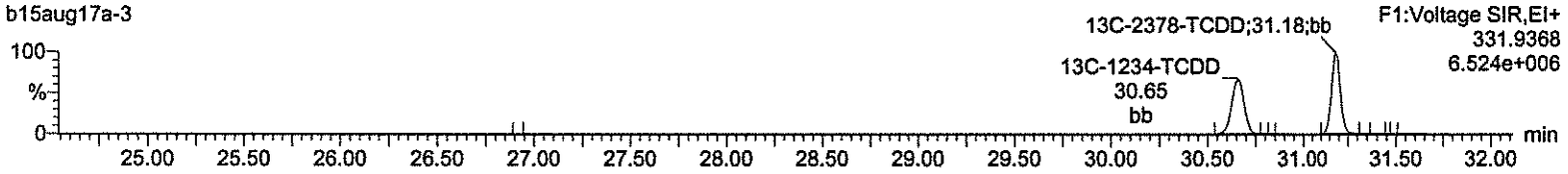

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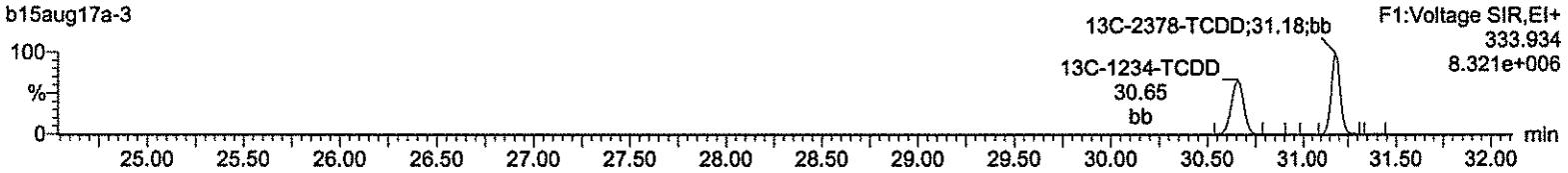
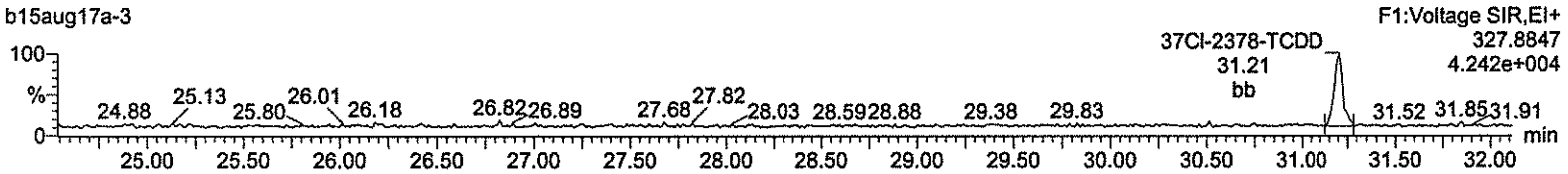


37Cl-2378-TCDD



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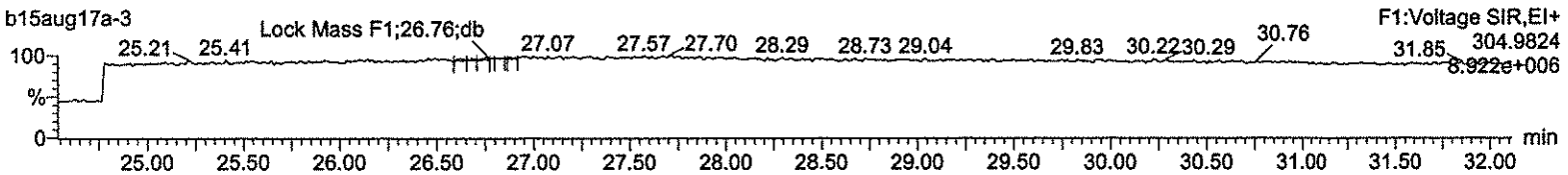

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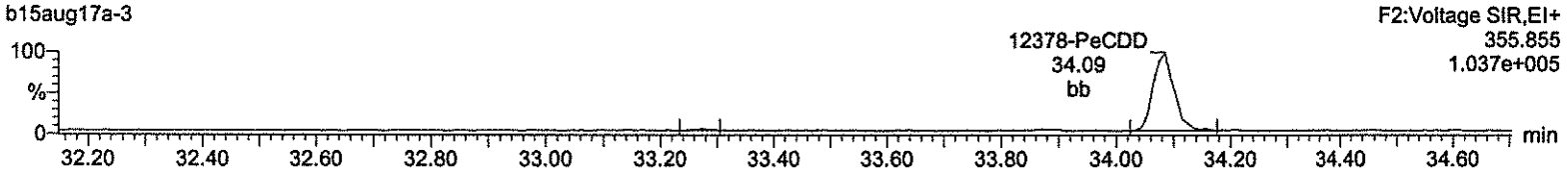
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-pentadioxins



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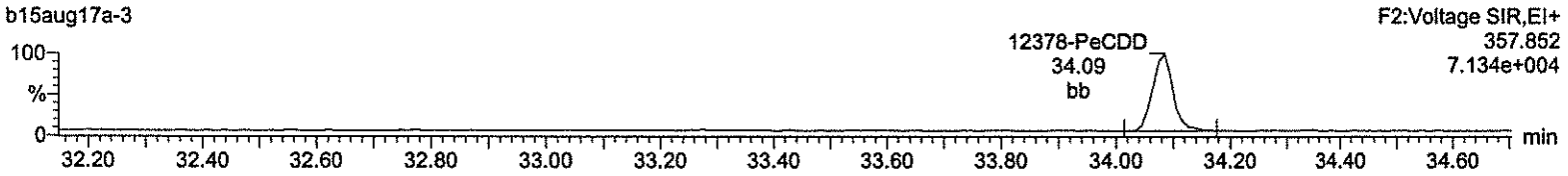

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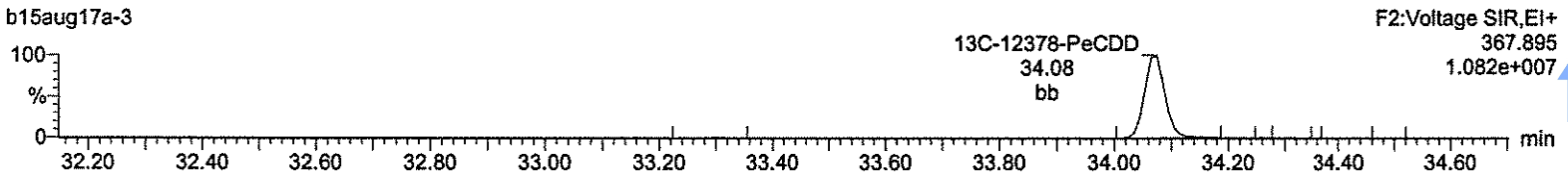

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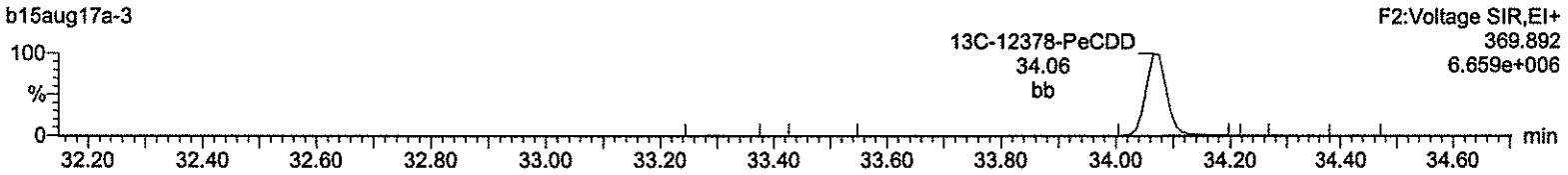

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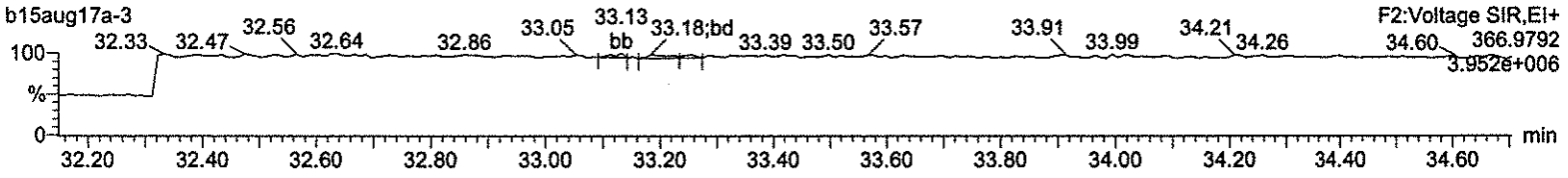

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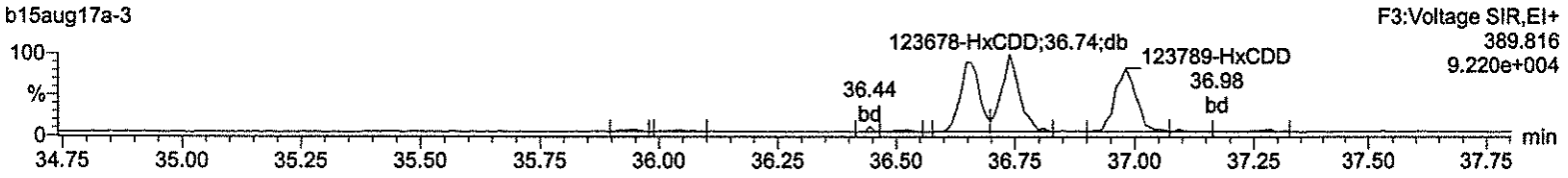
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

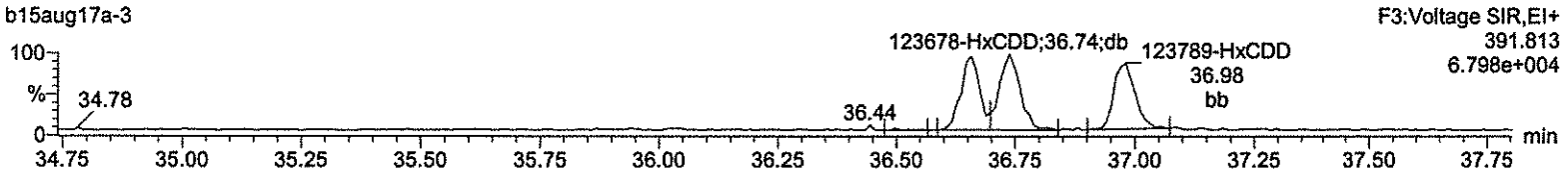
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-hexadioxins



Total-hexadioxins



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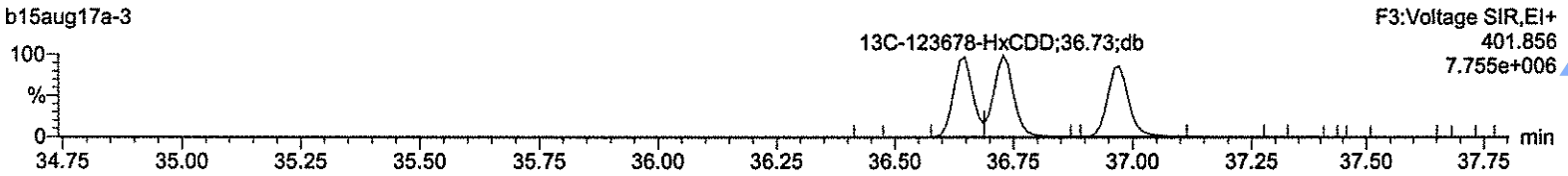

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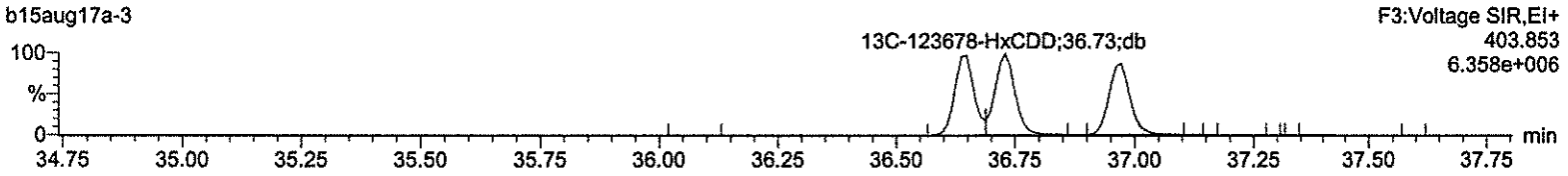

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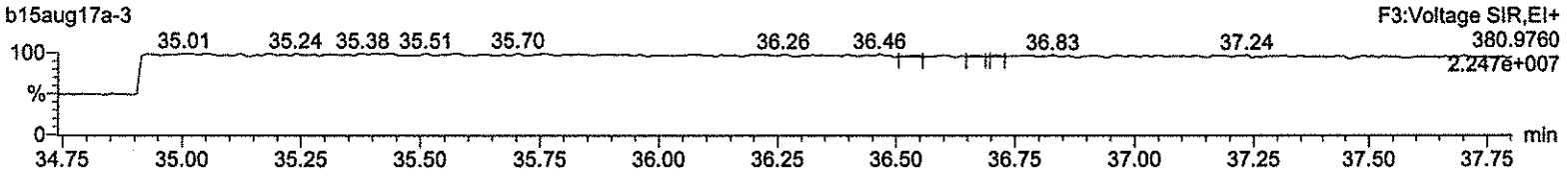

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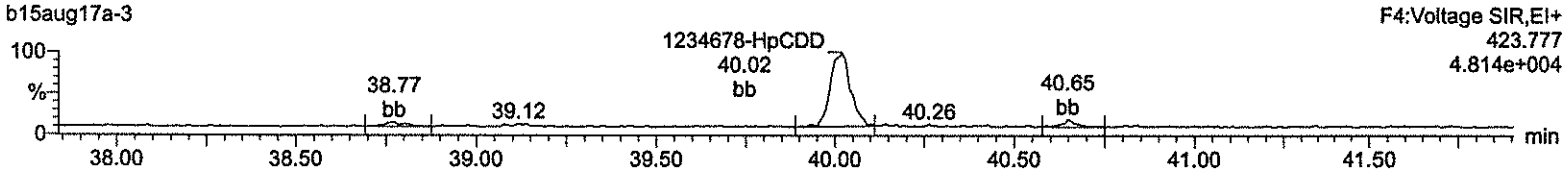
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-heptadioxins



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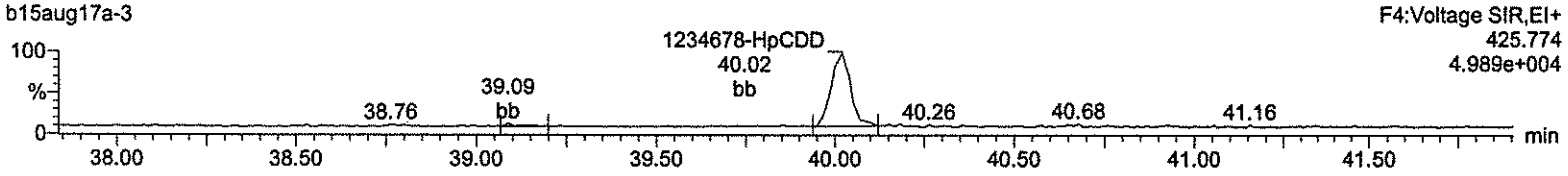

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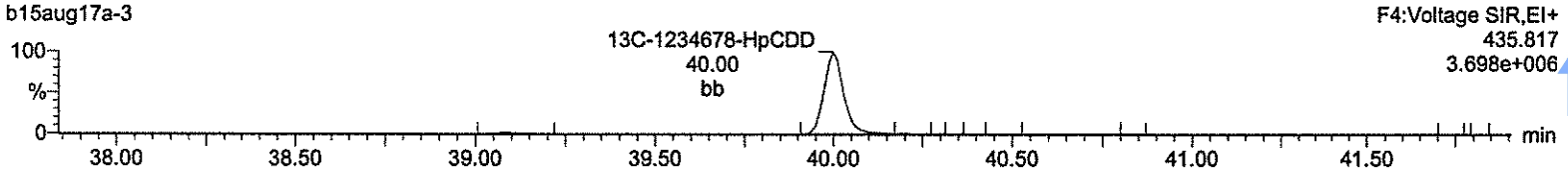

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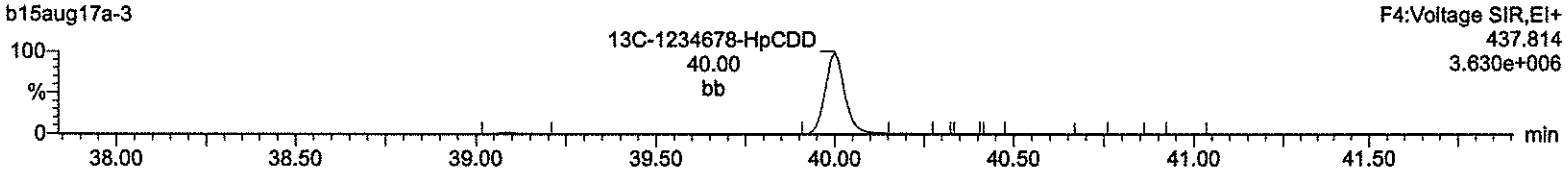

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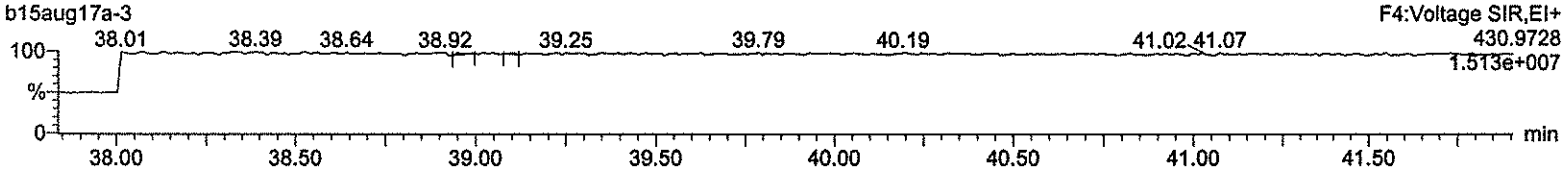

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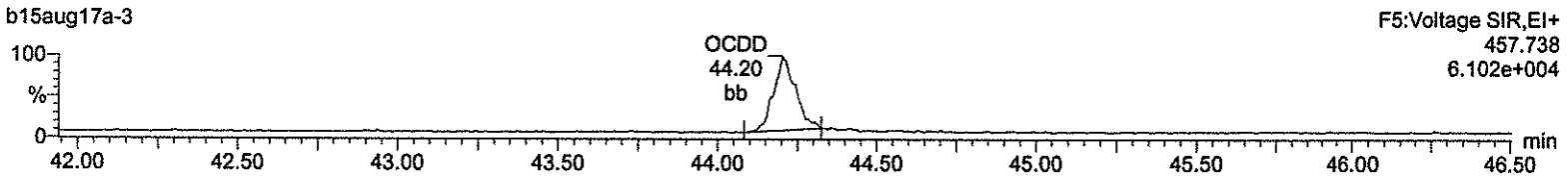
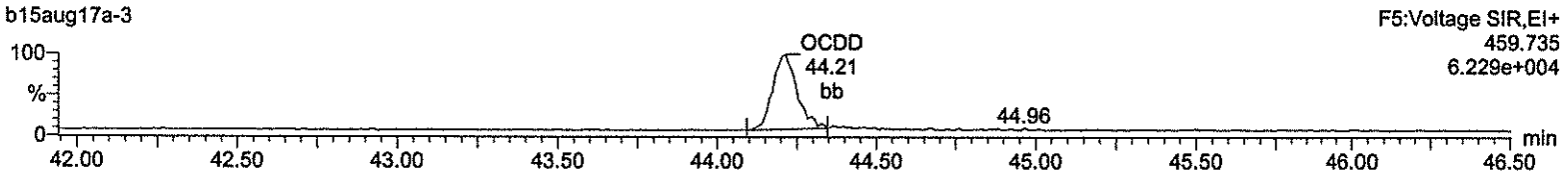
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

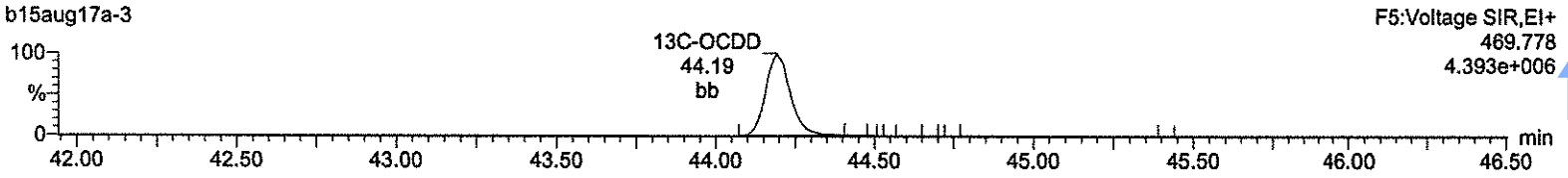
OCDD



OCDD



13C-OCDD



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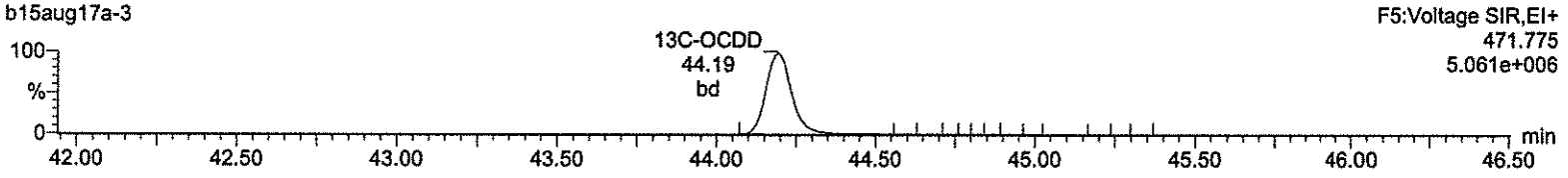
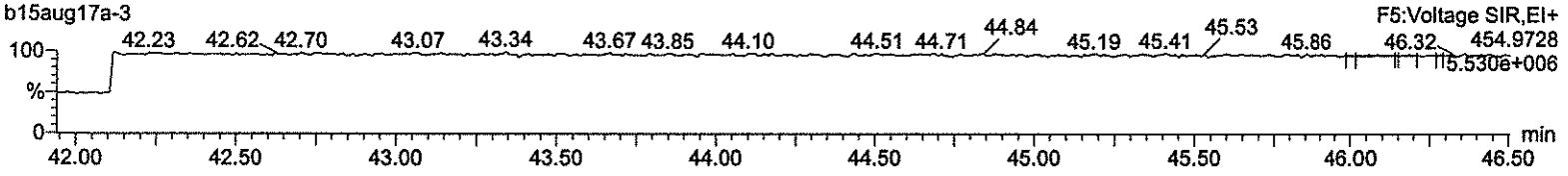


Lock Mass F5



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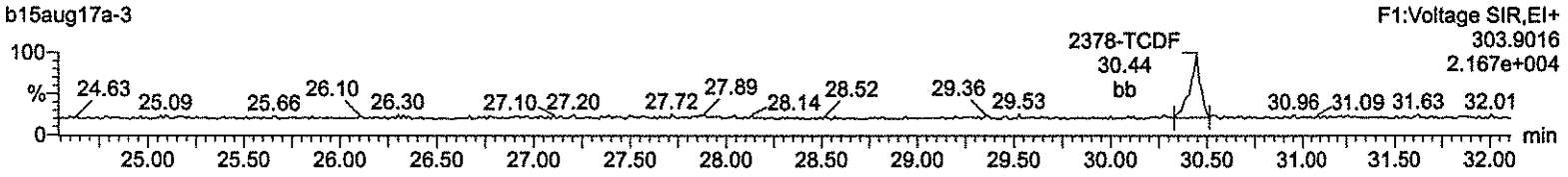
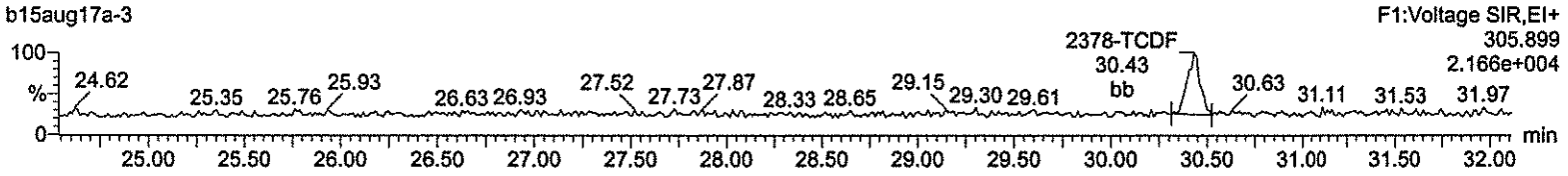
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-tetrafurans



Total-tetrafurans



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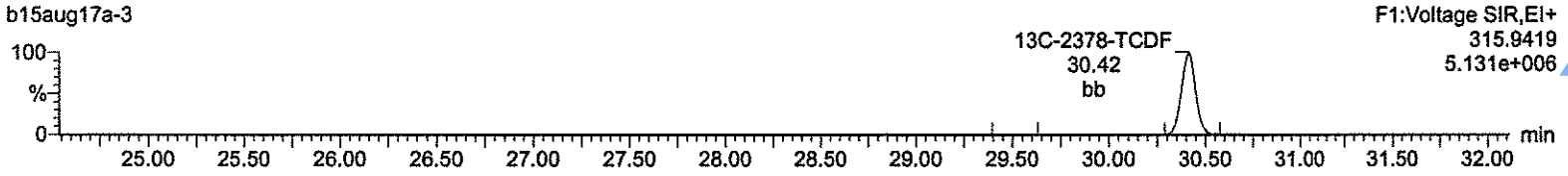

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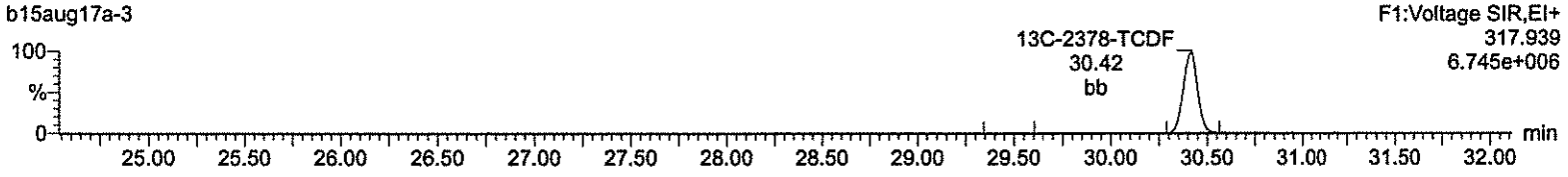
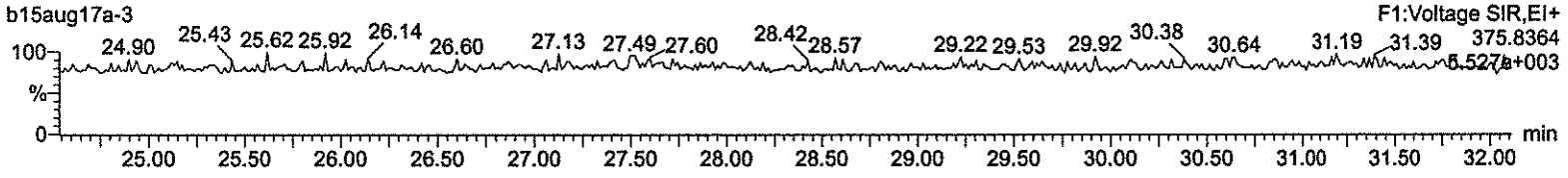
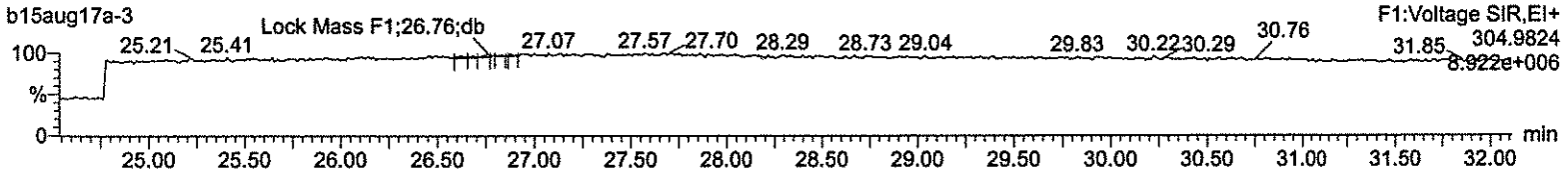


HxDPE



Lock Mass F1



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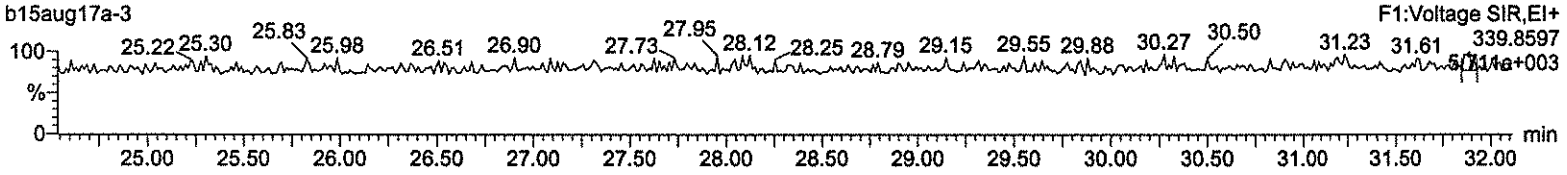
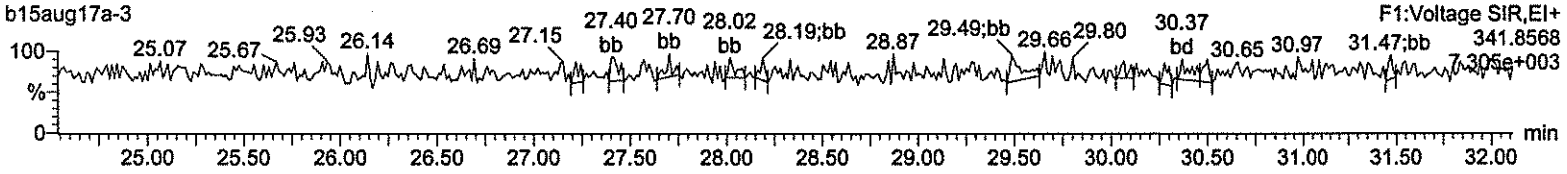
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-pentafurans (F1)



Total-pentafurans (F1)



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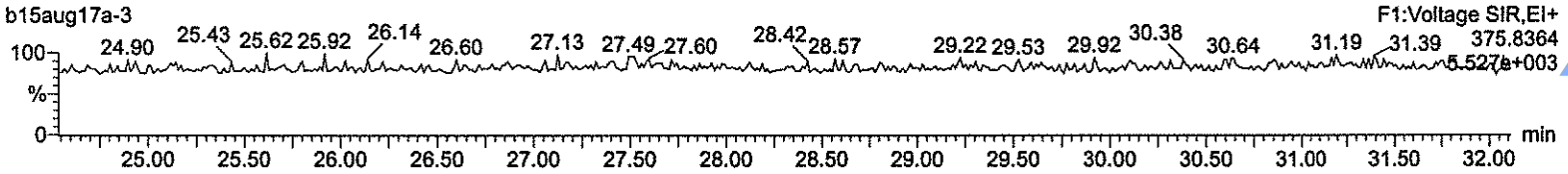
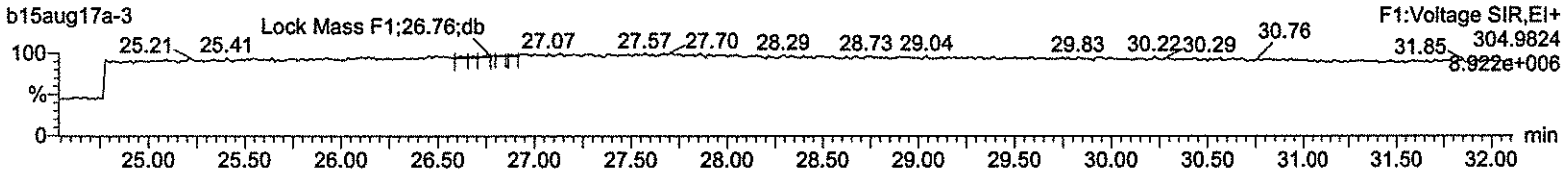


Lock Mass F1



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Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

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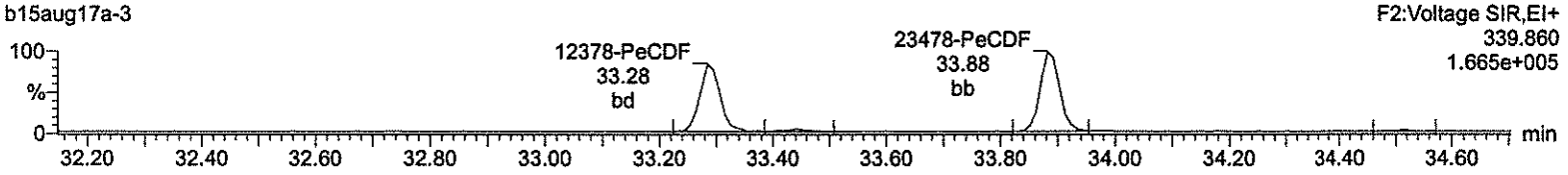
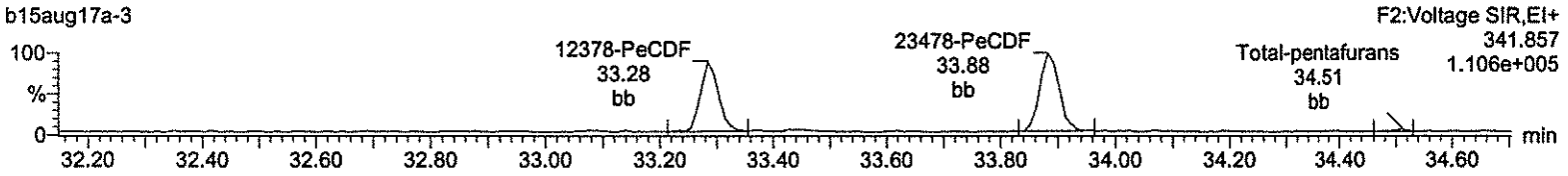
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

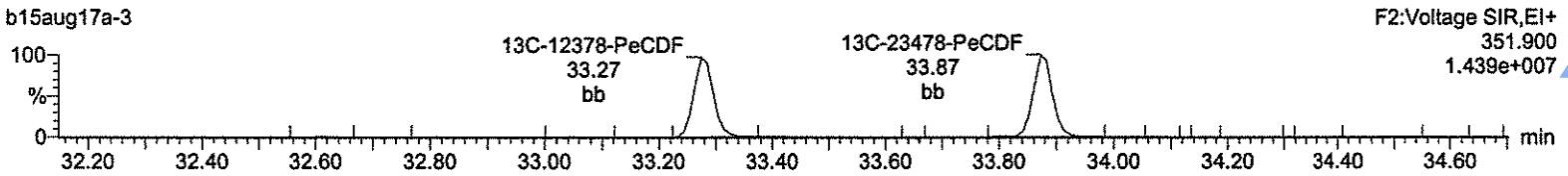
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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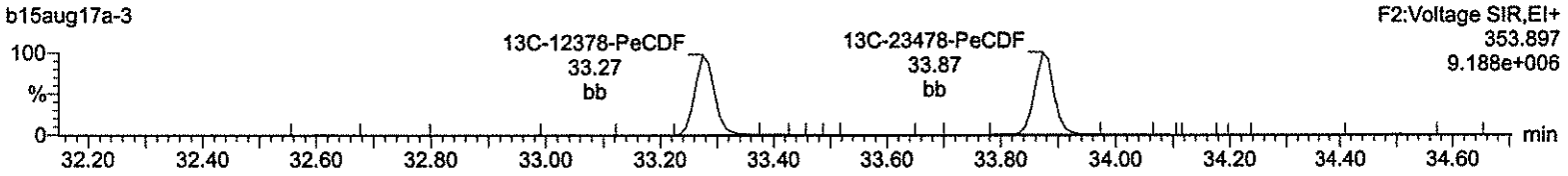
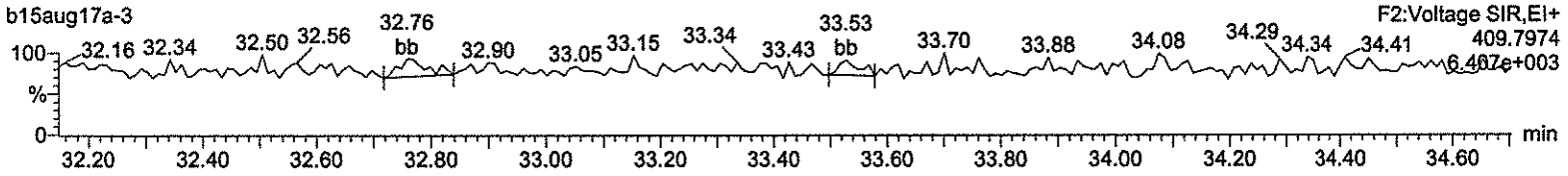
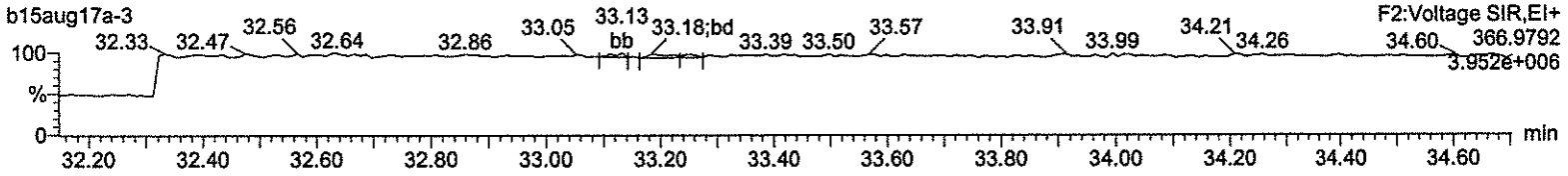


HpDPE



Lock Mass F2



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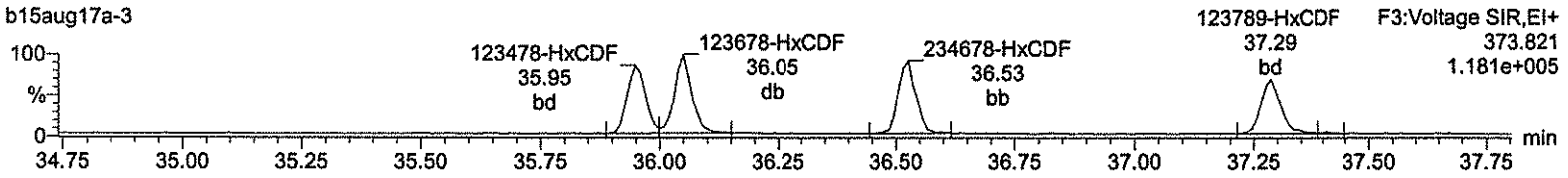
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

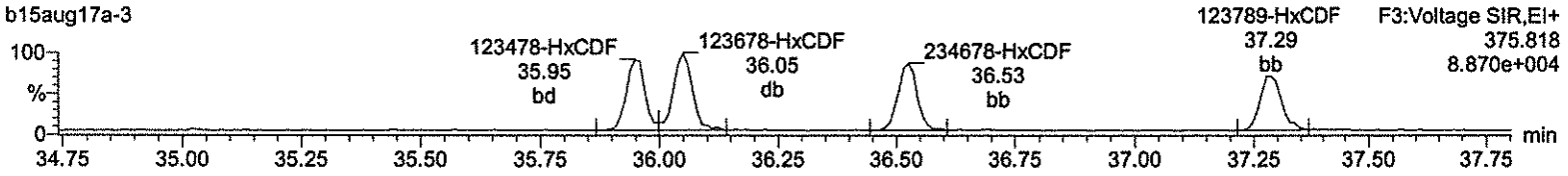
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-hexafurans



Total-hexafurans



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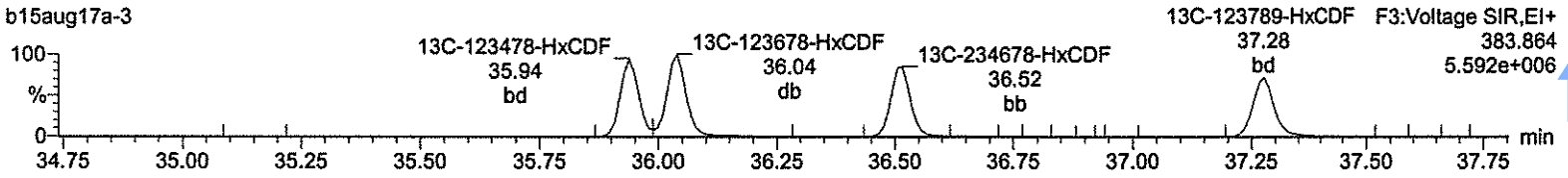

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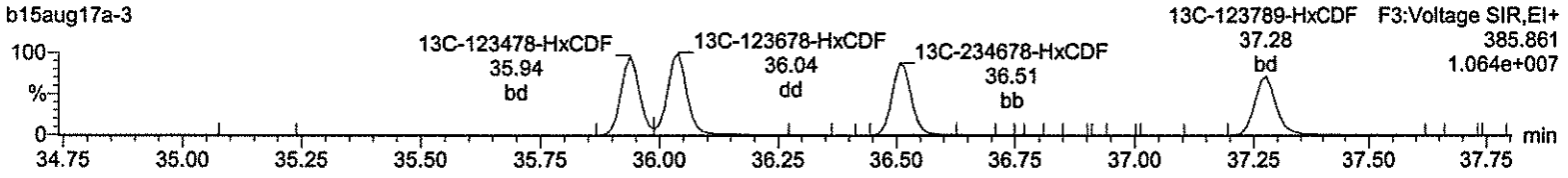
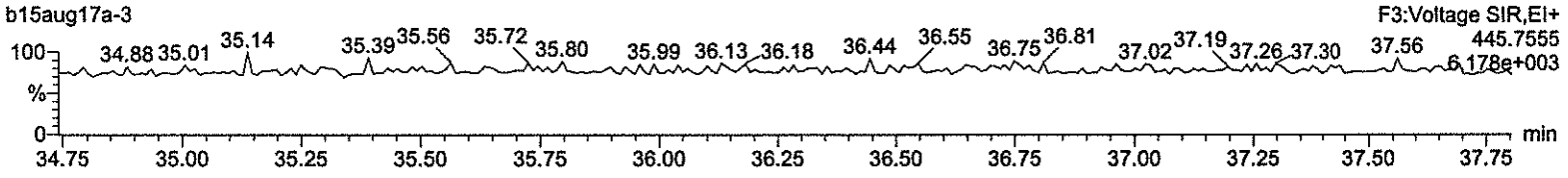
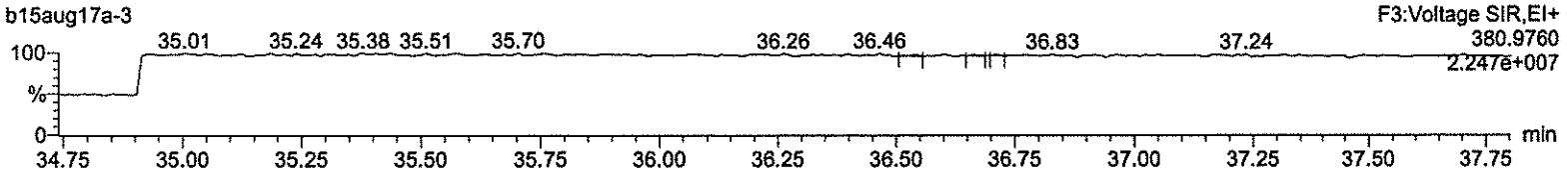


OcDPE



Lock Mass F3



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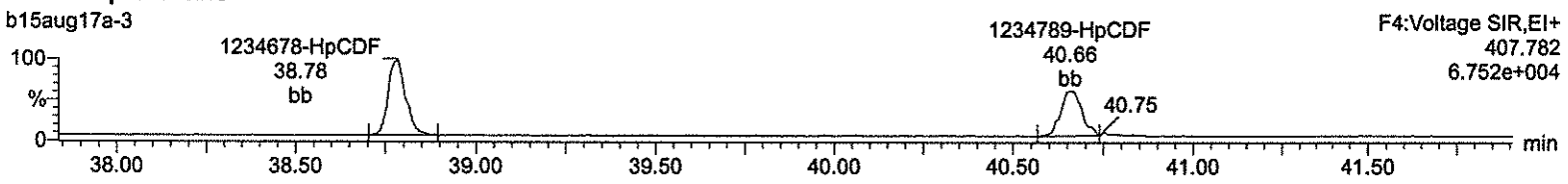
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

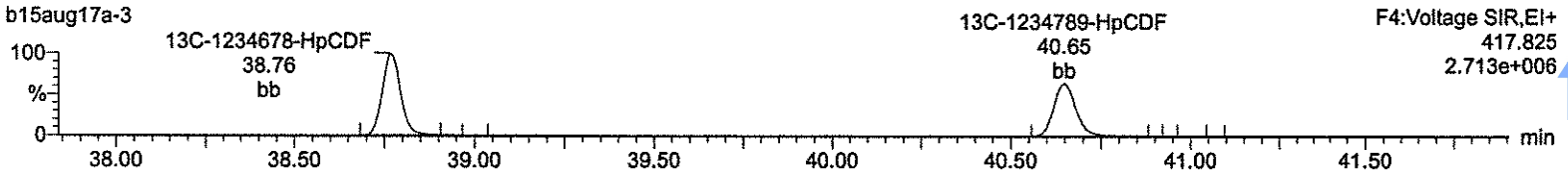
Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

Total-heptafurans



Total-heptafurans

13C-1234678-HpCDF



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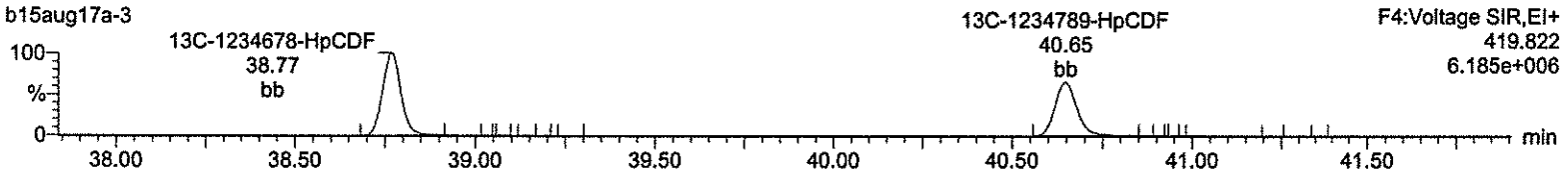
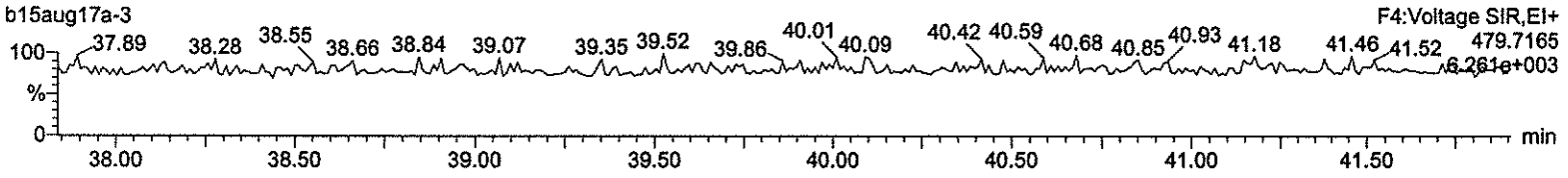
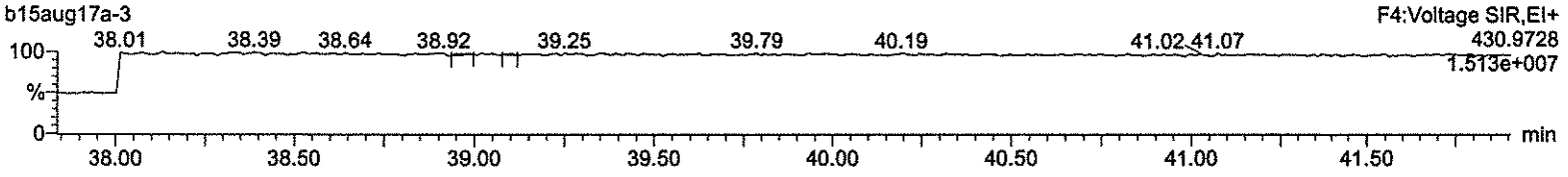


NoDPE



Lock Mass F4



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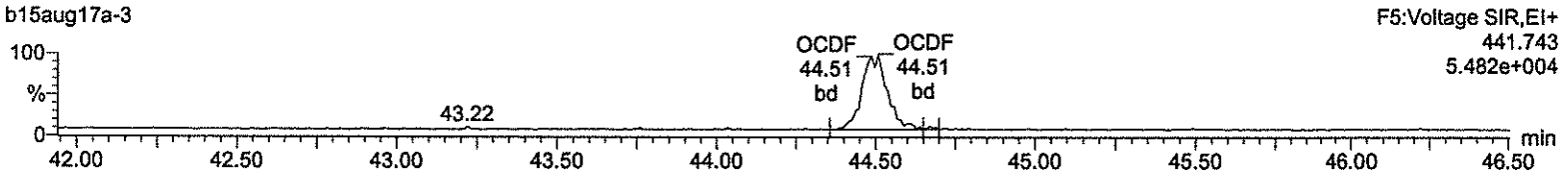
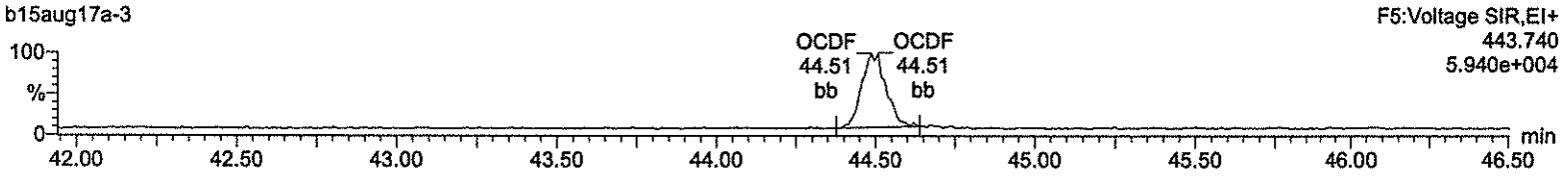
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-3, Date: 15-Aug-2017, Time: 12:10:38, ID: CS0.5 UD170815-01.1

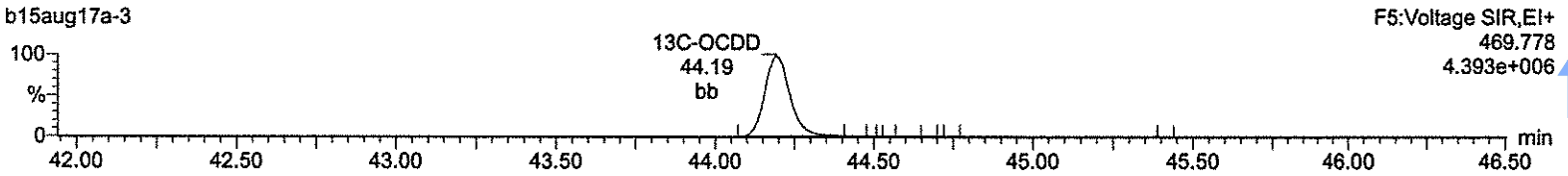
OCDF



OCDF



13C-OCDD



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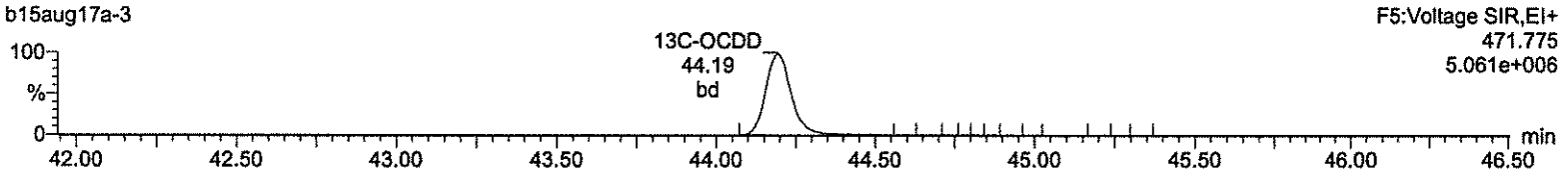

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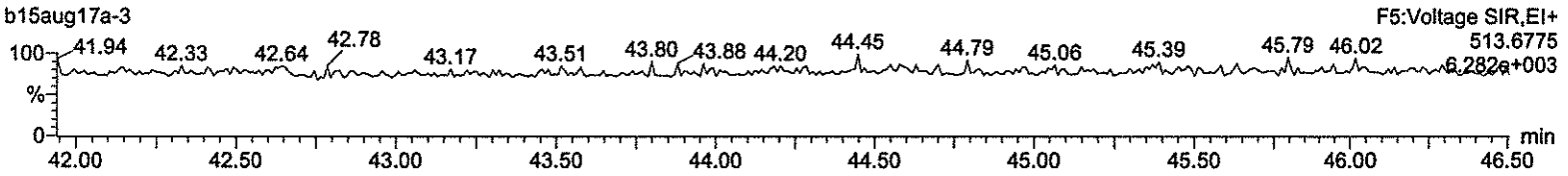
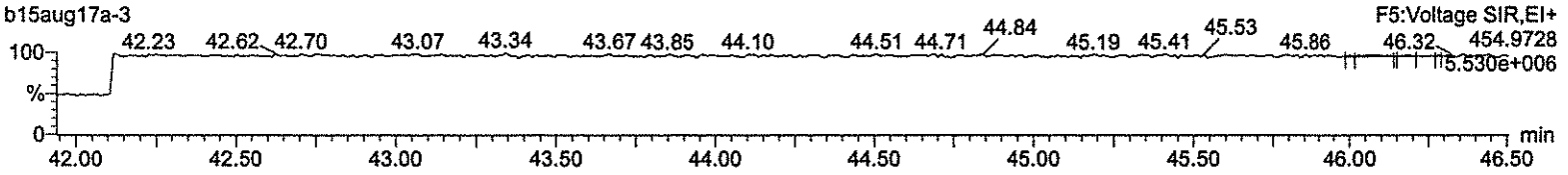


Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

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Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	1.38e3	1.75e3	3.13e3	31.19	1.000	0.79	NO	0.466	0.831	0.891	4.45	0.0422	2.31e4	1338	17.2	3.32e4	678	49.0	bb	bb
2	12378-PeCDD	7.28e3	5.00e3	1.23e4	34.08	1.000	1.46	NO	2.416	0.763	0.789	3.38	0.0268	1.85e5	926	199.5	1.28e5	450	283.2	bb	bb
3	123478-HxCDD	6.26e3	4.89e3	1.11e4	36.66	1.000	1.28	NO	2.347	0.786	0.838	4.80	0.0437	1.37e5	780	175.6	1.12e5	1023	109.1	bd	bd
4	123678-HxCDD	6.87e3	5.23e3	1.21e4	36.74	1.000	1.31	NO	2.313	0.777	0.840	4.71	0.0435	1.42e5	780	181.8	1.03e5	1023	100.5	db	db
5	123789-HxCDD	6.55e3	5.27e3	1.18e4	36.98	1.007	1.24	NO	2.438	0.794	0.814	3.19	0.0449	1.25e5	780	160.0	1.00e5	1023	97.8	bd	bb
6	1234678-HpCDD	5.09e3	5.00e3	1.01e4	40.02	1.001	1.02	NO	2.340	0.938	1.003	3.74	0.0605	8.06e4	785	102.7	7.80e4	762	102.4	bb	bb
7	OCDD	9.25e3	1.01e4	1.93e4	44.21	1.000	0.92	NO	5.247	0.955	0.910	3.79	0.0922	1.03e5	684	150.0	1.13e5	794	141.7	bb	bd
8	2378-TCDF	1.70e3	2.32e3	4.02e3	30.44	1.001	0.73	NO	0.494	0.909	0.921	2.50	0.0497	2.23e4	610	36.6	2.94e4	1297	22.7	bb	bb
9	12378-PeCDF	9.83e3	6.27e3	1.61e4	33.29	1.000	1.57	NO	2.342	0.770	0.822	4.18	0.0290	2.44e5	823	296.1	1.67e5	1220	136.5	bd	bb
10	23478-PeCDF	1.13e4	7.23e3	1.86e4	33.89	1.000	1.57	NO	2.429	0.900	0.926	2.87	0.0264	2.84e5	823	345.6	1.80e5	1220	147.6	bb	bb
11	123478-HxCDF	7.98e3	6.67e3	1.47e4	35.95	1.000	1.20	NO	2.415	0.964	0.998	5.02	0.0300	1.80e5	841	213.8	1.49e5	800	186.0	bd	bd
12	123678-HxCDF	8.62e3	6.73e3	1.54e4	36.06	1.001	1.28	NO	2.341	0.874	0.934	4.26	0.0313	1.78e5	841	211.1	1.46e5	800	182.1	db	db
13	234678-HxCDF	8.08e3	6.63e3	1.47e4	36.52	1.000	1.22	NO	2.406	0.994	1.033	4.35	0.0302	1.86e5	841	221.4	1.40e5	800	175.3	bd	bb
14	123789-HxCDF	6.84e3	5.19e3	1.20e4	37.28	1.000	1.32	NO	2.342	0.893	0.953	4.84	0.0429	1.31e5	841	155.6	1.05e5	800	130.9	bb	bb
15	1234678-HpCDF	6.48e3	6.18e3	1.27e4	38.78	1.001	1.05	NO	2.406	1.056	1.097	3.98	0.0351	1.05e5	574	183.3	1.09e5	686	158.4	bb	bd
16	1234789-HpCDF	4.92e3	5.02e3	9.95e3	40.67	1.000	0.98	NO	2.358	1.046	1.109	6.52	0.0522	7.39e4	574	128.7	8.53e4	686	124.4	bd	bb
17	OCDF	8.27e3	8.87e3	1.71e4	44.50	1.007	0.93	NO	4.591	0.847	0.922	7.27	0.0882	9.11e4	632	144.2	1.02e5	800	127.9	bd	bb
18	13C-2378-TCDD	3.28e5	4.26e5	7.54e5	31.19	1.018	0.77	NO	99.228	1.133	1.142	2.94	0.124	5.84e6	3075	1899.9	7.53e6	1963	3837.7	bb	bb
19	13C-12378-PeCDD	3.98e5	2.46e5	6.44e5	34.07	1.112	1.61	NO	100.664	0.968	0.962	4.38	0.0901	1.01e7	1891	5316.4	6.19e6	1185	5224.7	bb	bb
20	13C-123478-HxCDD	3.12e5	2.55e5	5.67e5	36.65	0.991	1.22	NO	100.193	1.029	1.027	0.74	0.0936	6.76e6	2280	2966.8	5.48e6	1902	2882.6	bd	bd
21	13C-123678-HxCDD	3.40e5	2.83e5	6.23e5	36.73	0.993	1.20	NO	100.577	1.130	1.123	1.81	0.0856	6.73e6	2280	2949.5	5.72e6	1902	3004.7	db	db
22	13C-1234678-HpCDD	2.19e5	2.11e5	4.30e5	40.00	1.082	1.04	NO	103.583	0.780	0.753	2.07	0.102	3.25e6	1528	2126.8	3.14e6	1831	1715.3	bd	bd
23	13C-OCDD	3.73e5	4.37e5	8.10e5	44.19	1.195	0.85	NO	202.474	0.735	0.726	4.08	0.102	4.05e6	1484	2730.8	4.78e6	1746	2739.6	bb	bd
24	13C-2378-TCDF	3.80e5	5.03e5	8.83e5	30.42	0.992	0.76	NO	99.303	1.327	1.337	1.60	0.171	4.48e6	5437	824.5	5.91e6	2673	2212.1	bb	bb
25	13C-12378-PeCDF	5.15e5	3.22e5	8.37e5	33.28	1.086	1.60	NO	101.201	1.257	1.242	3.08	0.139	1.32e7	3525	3741.3	8.08e6	2598	3111.5	bb	bb
26	13C-23478-PeCDF	5.06e5	3.19e5	8.25e5	33.88	1.105	1.58	NO	100.543	1.240	1.234	4.20	0.140	1.28e7	3525	3630.5	7.84e6	2598	3016.4	db	db
27	13C-123478-HxCDF	2.05e5	4.02e5	6.08e5	35.94	0.972	0.51	NO	100.343	1.103	1.099	0.83	0.106	4.63e6	1726	2684.2	9.11e6	3328	2737.1	bd	bd
28	13C-123678-HxCDF	2.41e5	4.62e5	7.02e5	36.04	0.975	0.52	NO	100.159	1.274	1.272	2.46	0.0913	4.81e6	1726	2784.5	9.35e6	3328	2809.3	db	dd
29	13C-234678-HxCDF	2.02e5	3.90e5	5.92e5	36.51	0.988	0.52	NO	99.550	1.074	1.079	1.03	0.108	4.49e6	1726	2600.2	8.55e6	3328	2570.2	bb	bb
30	13C-123789-HxCDF	1.82e5	3.57e5	5.39e5	37.27	1.008	0.51	NO	99.086	0.978	0.987	1.26	0.118	3.39e6	1726	1963.8	6.76e6	3328	2031.6	bb	bb
31	13C-1234678-HpCDF	1.43e5	3.37e5	4.80e5	38.76	1.048	0.42	NO	102.492	0.871	0.849	1.50	0.0972	2.44e6	1596	1525.7	5.54e6	1996	2773.6	bb	bd
32	13C-1234789-HpCDF	1.15e5	2.65e5	3.80e5	40.65	1.099	0.43	NO	102.195	0.690	0.675	2.06	0.122	1.64e6	1596	1029.4	3.76e6	1996	1881.5	bd	bd
33	13C-1234-TCDD	2.93e5	3.73e5	6.65e5	30.65	0.000	0.79	NO	100.000	1.000	1.000	0.00	0.142	3.91e6	3075	1270.2	4.97e6	1963	2534.4	bb	bb
34	13C-123789-HxCDD	3.02e5	2.49e5	5.51e5	36.97	0.000	1.21	NO	100.000	1.000	1.000	0.00	0.0961	5.96e6	2280	2611.8	4.85e6	1902	2550.7	bb	bb
35	37Cl-2378-TCDD	3.98e3		3.98e3	31.19	1.018			0.516	1.197	1.161	5.41	0.0288	6.63e4	1187	55.8				bb	

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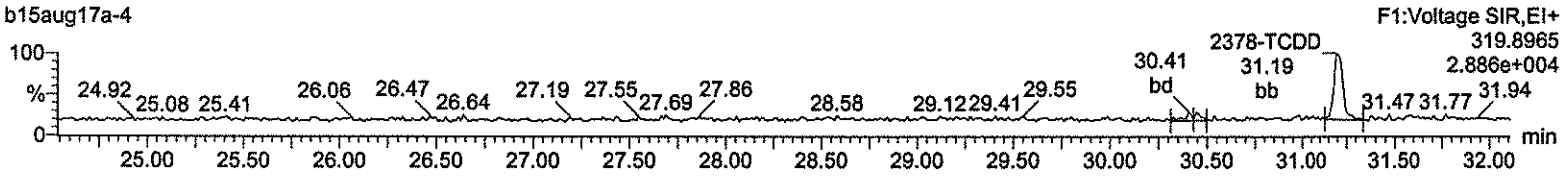
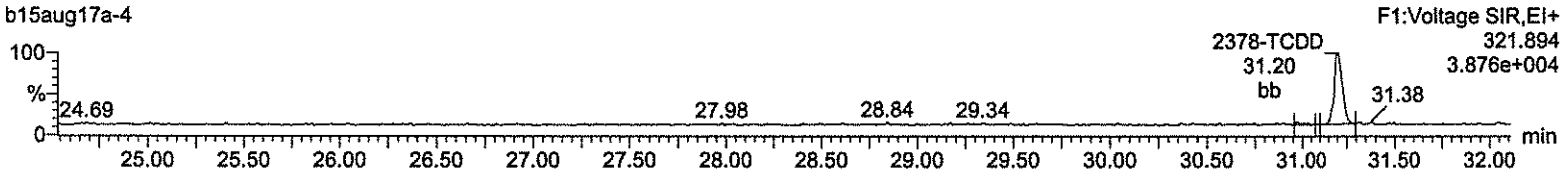
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-tetradioxins



Total-tetradioxins



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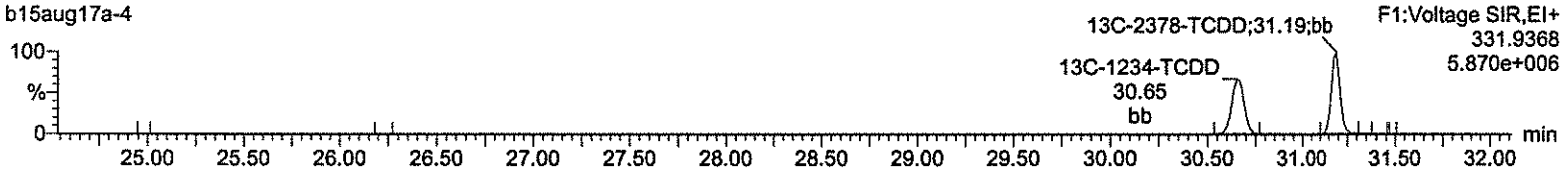

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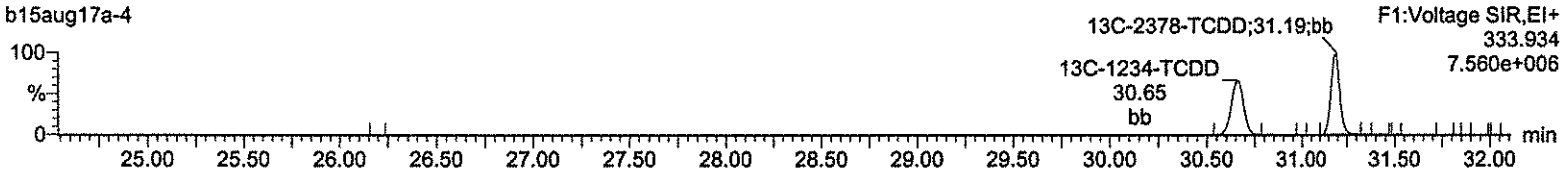

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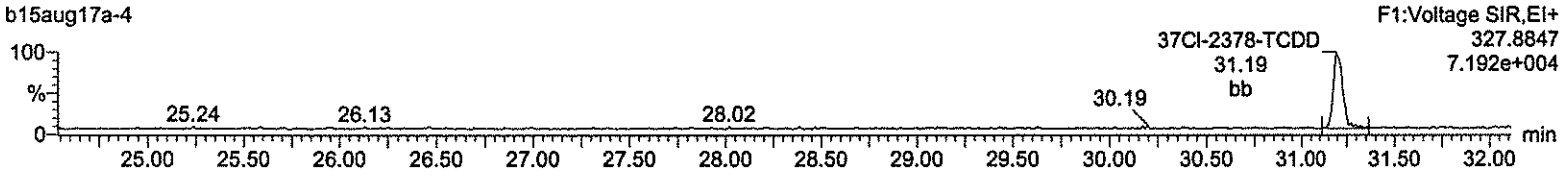
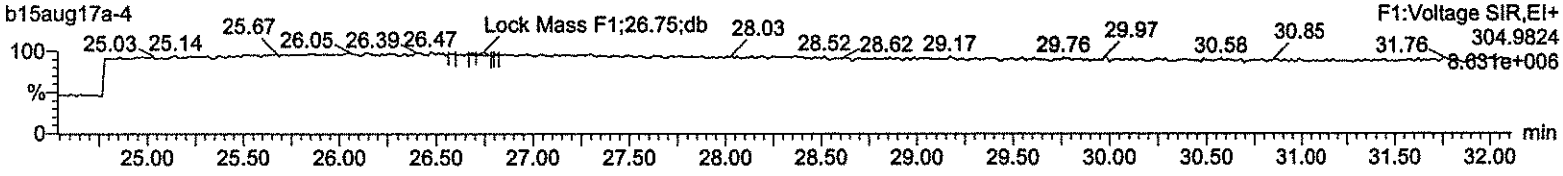


Lock Mass F1



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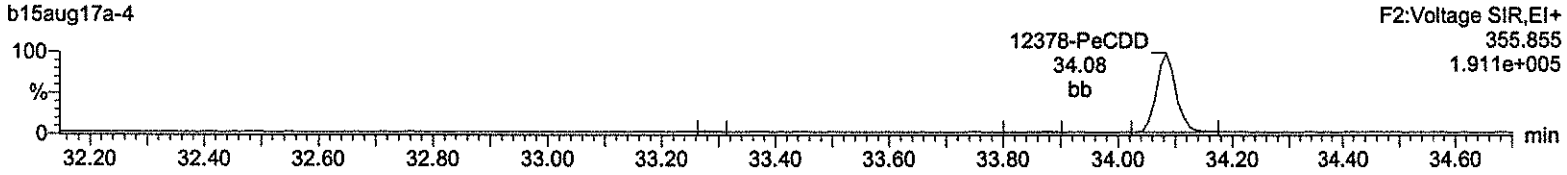
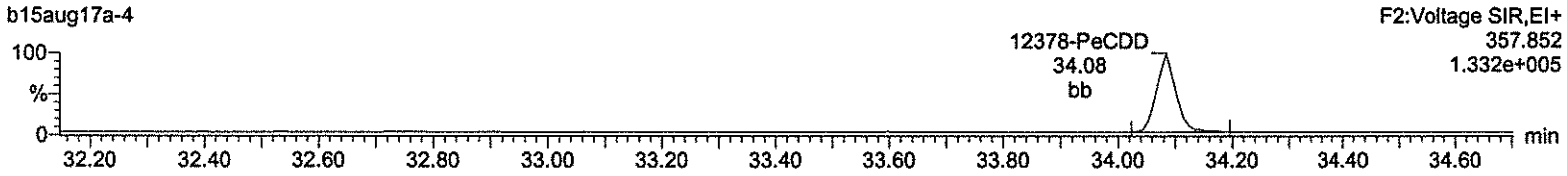
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-pentadioxins



Total-pentadioxins



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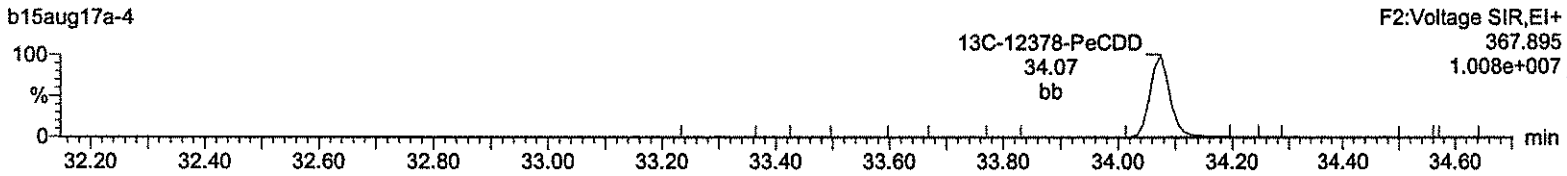

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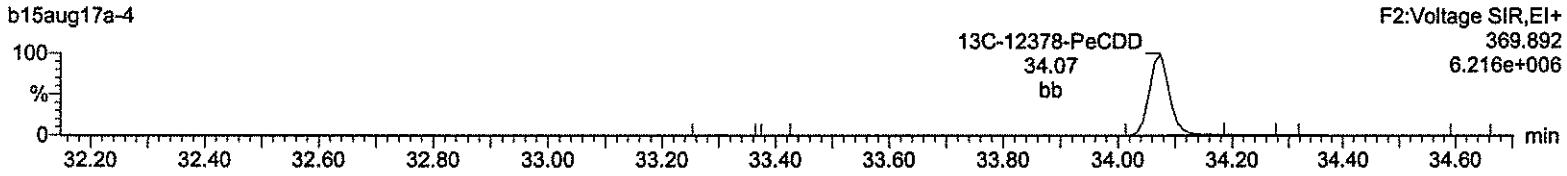

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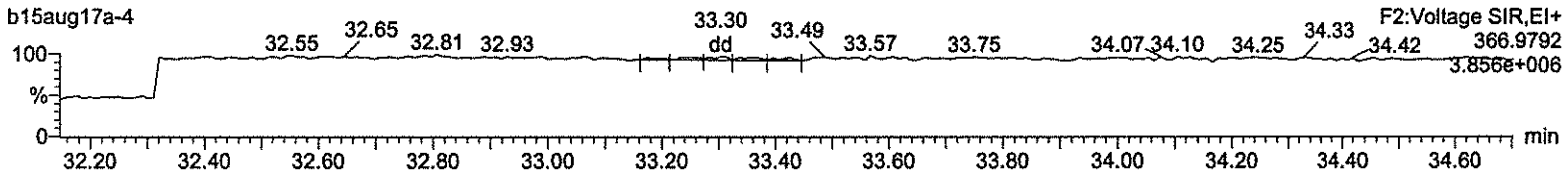

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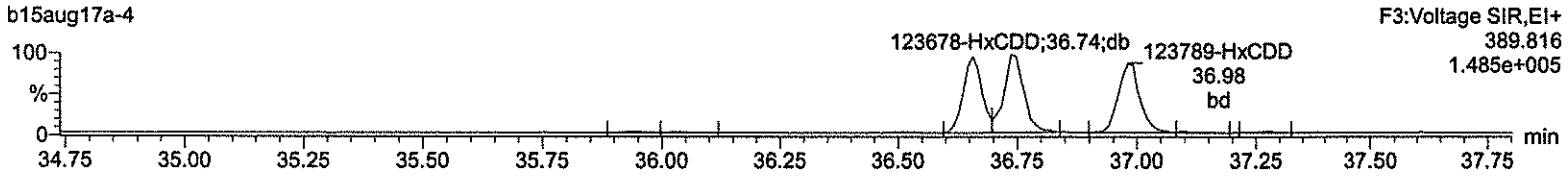
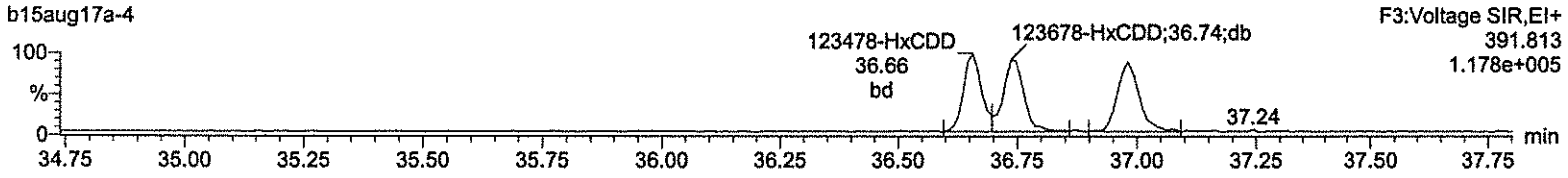
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-hexadioxins



Total-hexadioxins



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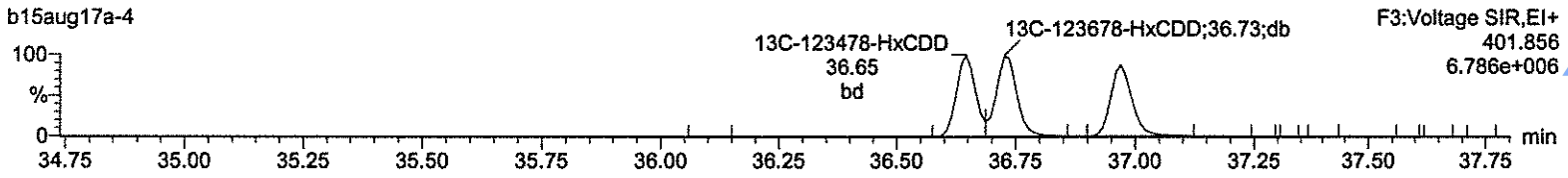

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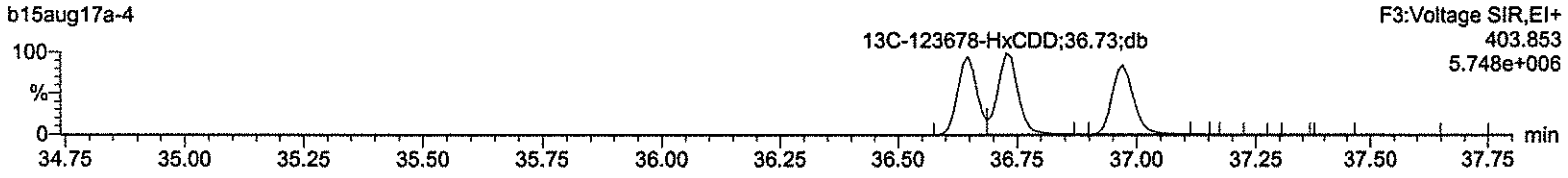
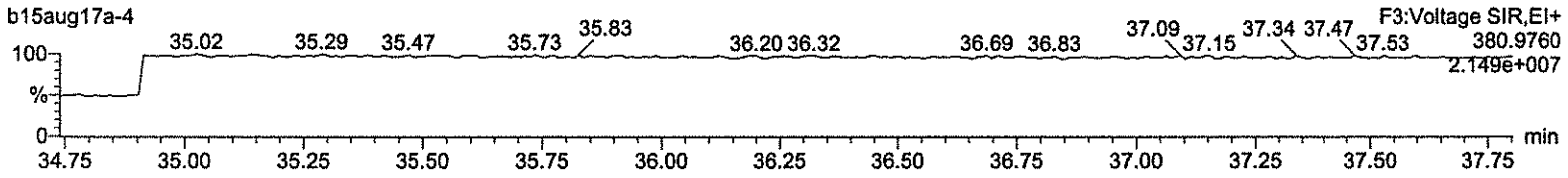


Lock Mass F3



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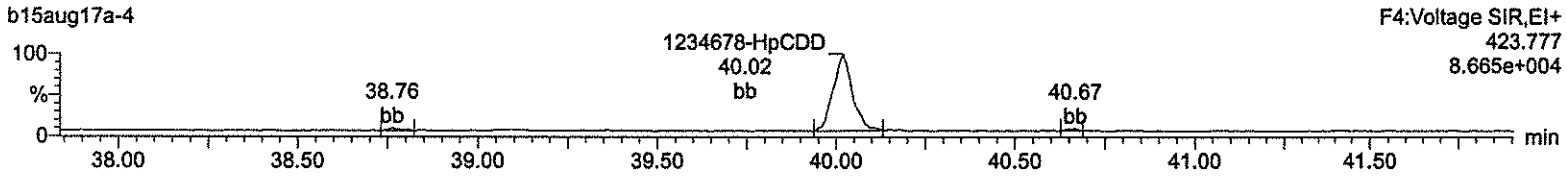
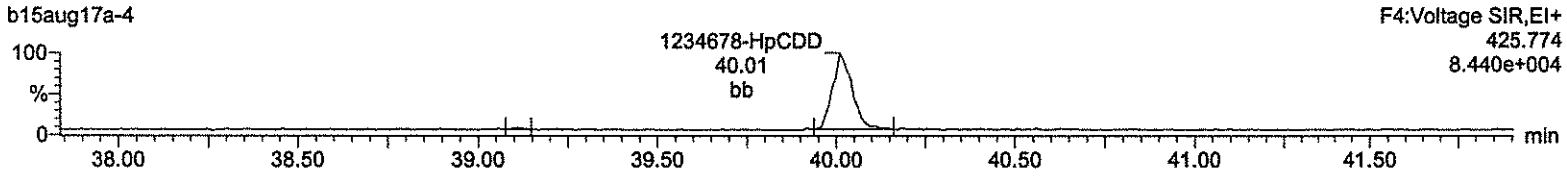
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-heptadioxins



Total-heptadioxins



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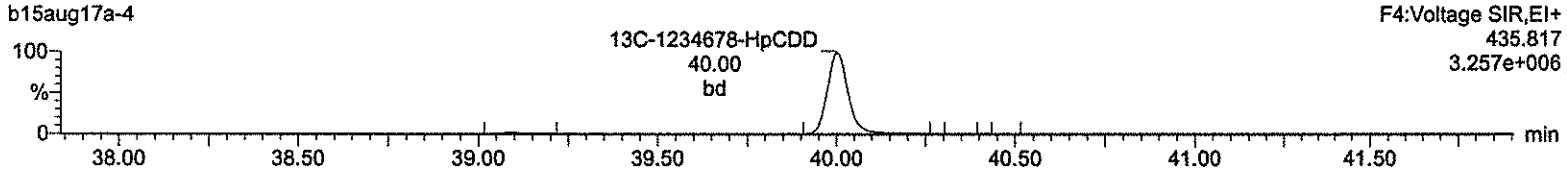

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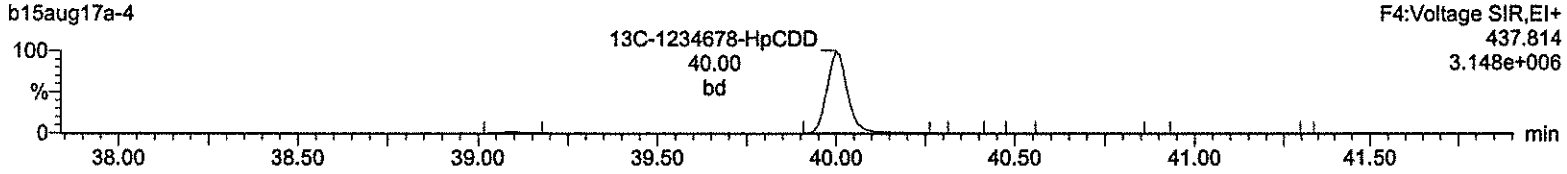
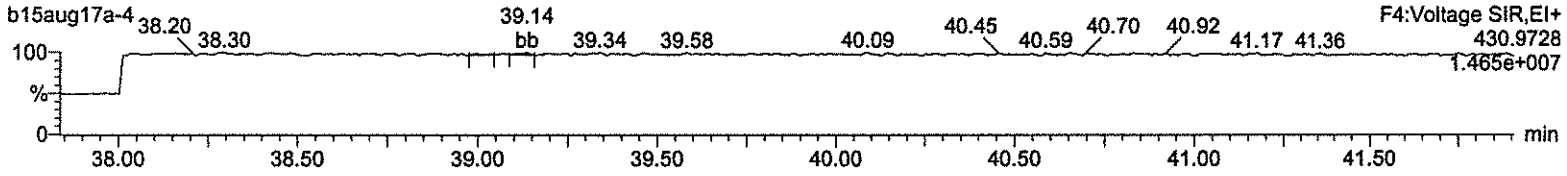


Lock Mass F4



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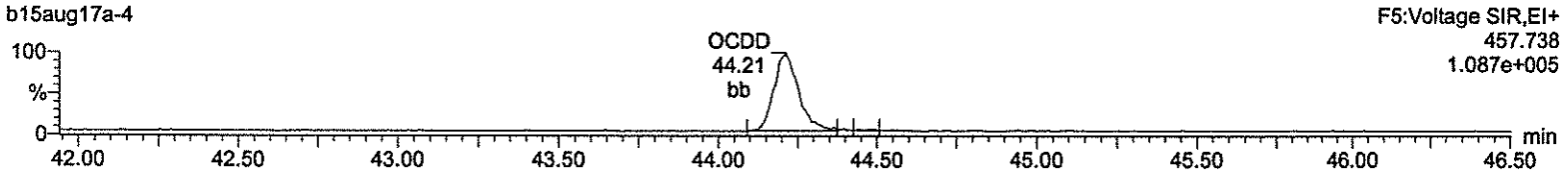
OCDD



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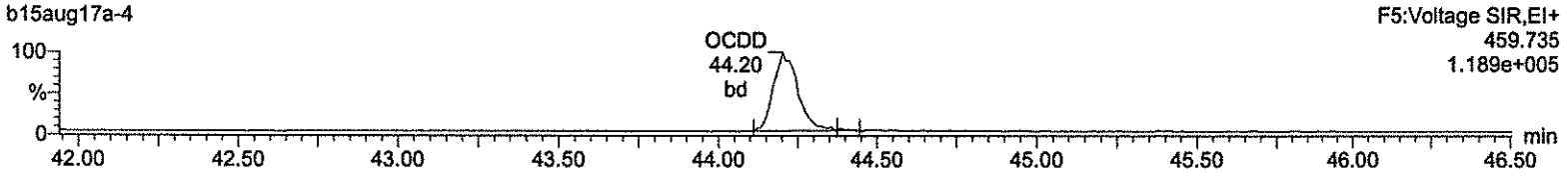

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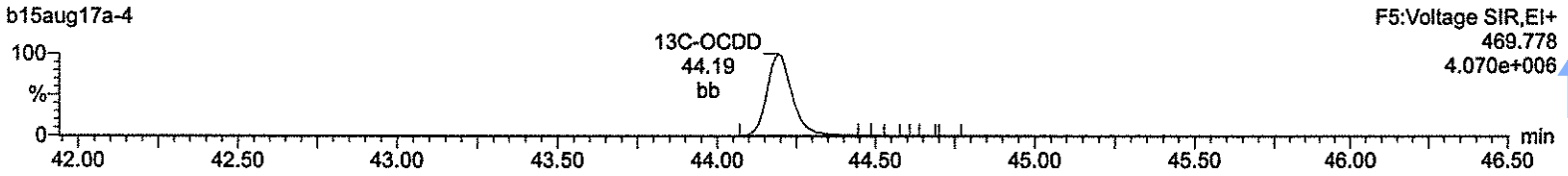

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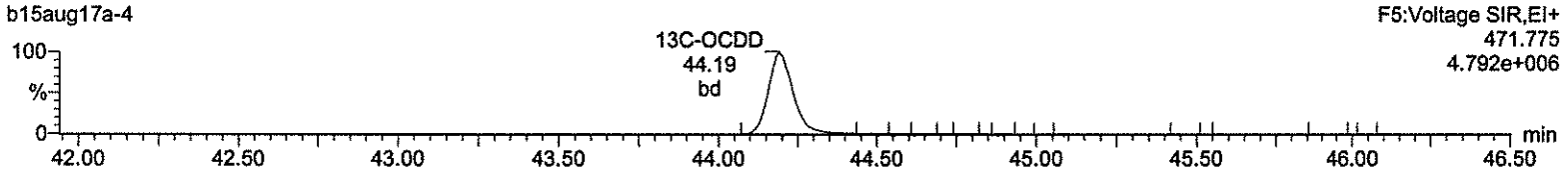
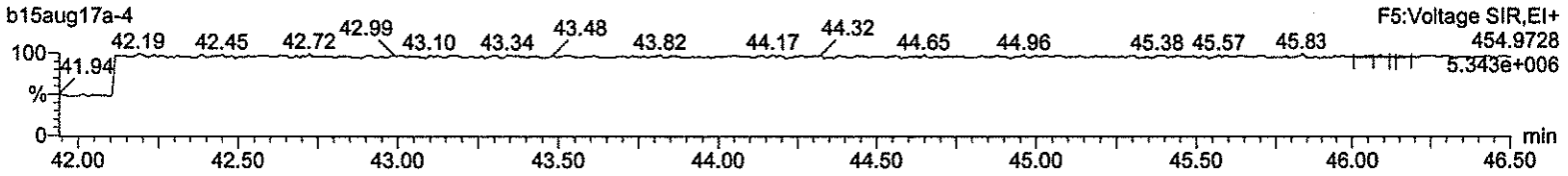


Lock Mass F5



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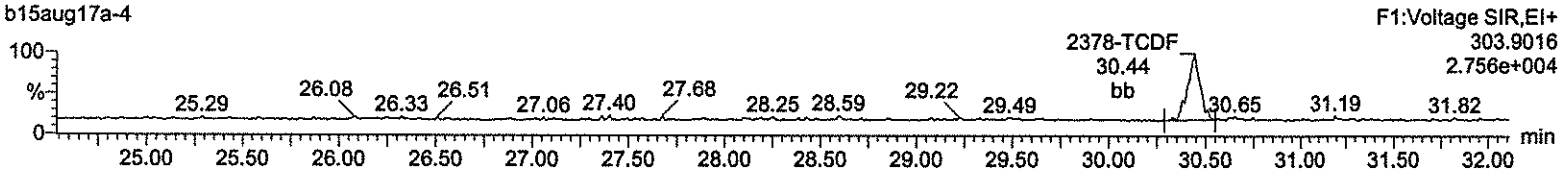
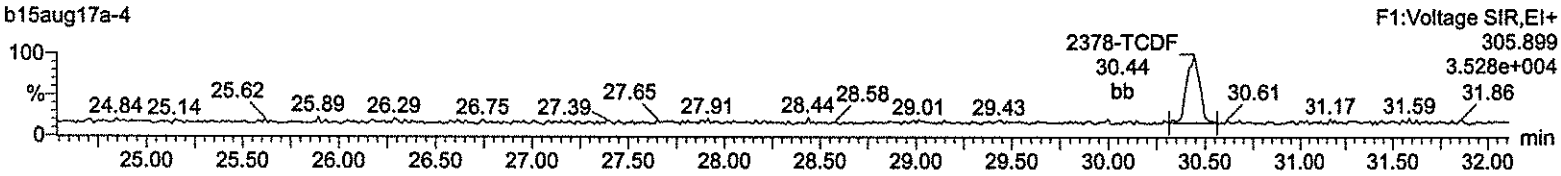
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-tetrafurans



Total-tetrafurans



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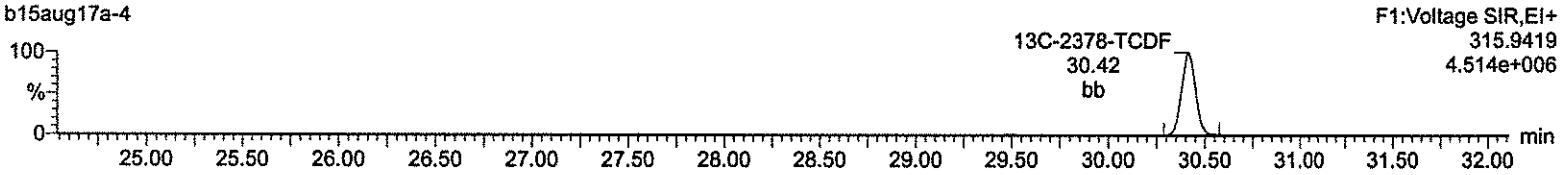

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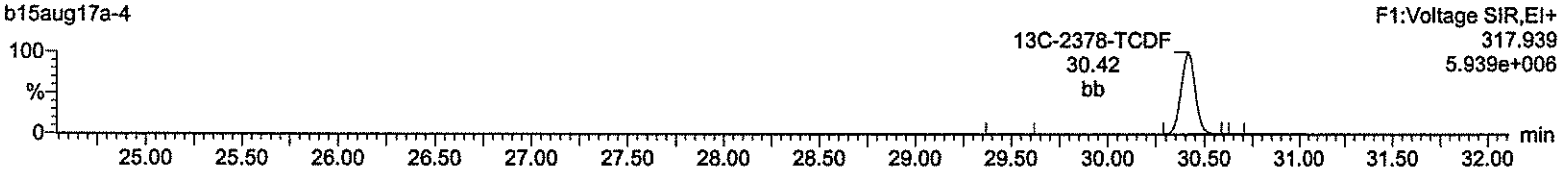
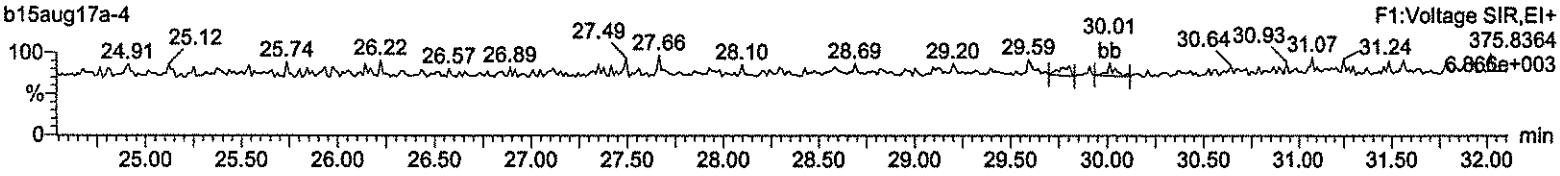
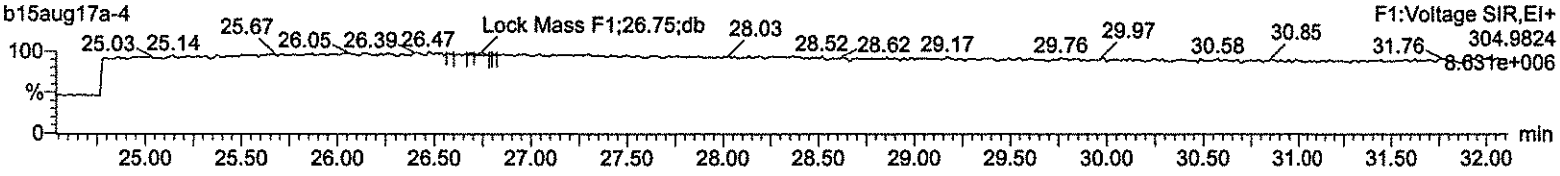


HxDPE



Lock Mass F1



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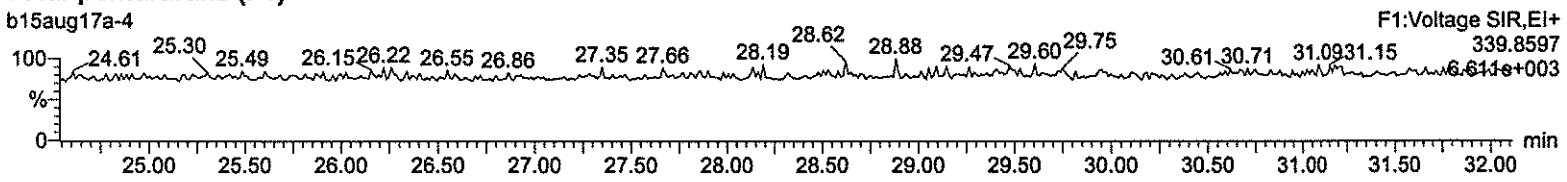
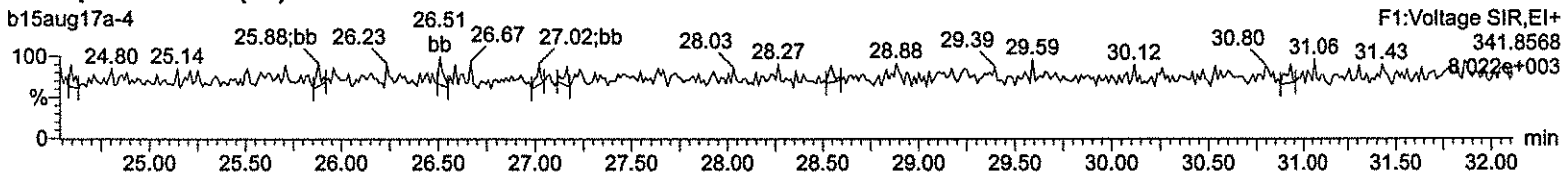
Total-pentafurans (F1)



Total-pentafurans (F1)



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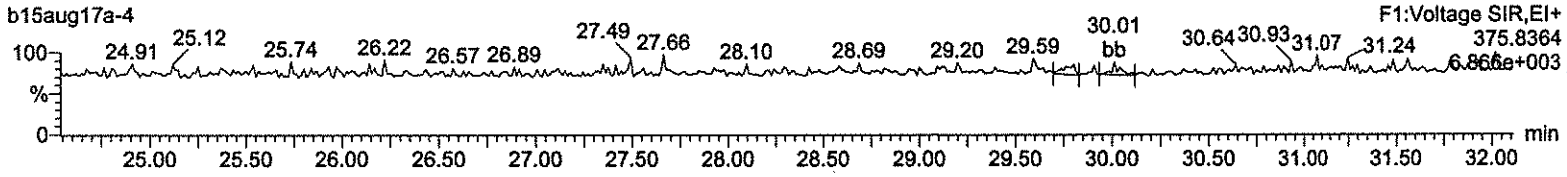
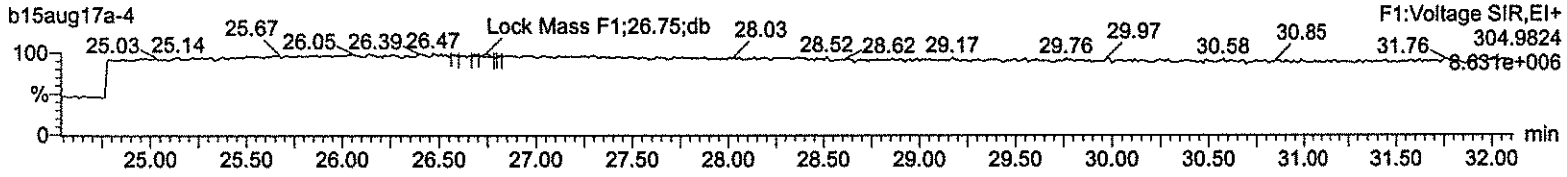


Lock Mass F1



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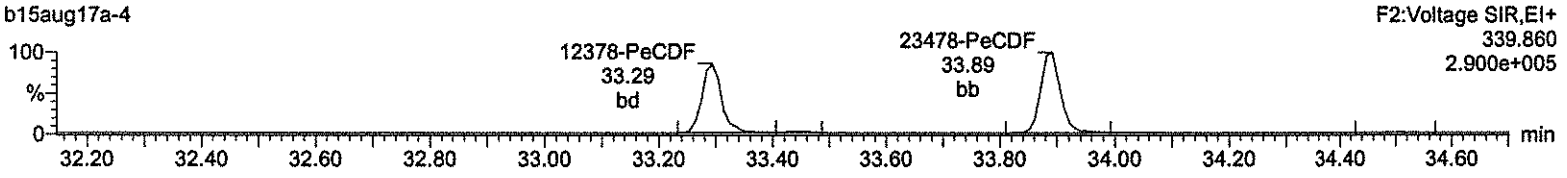
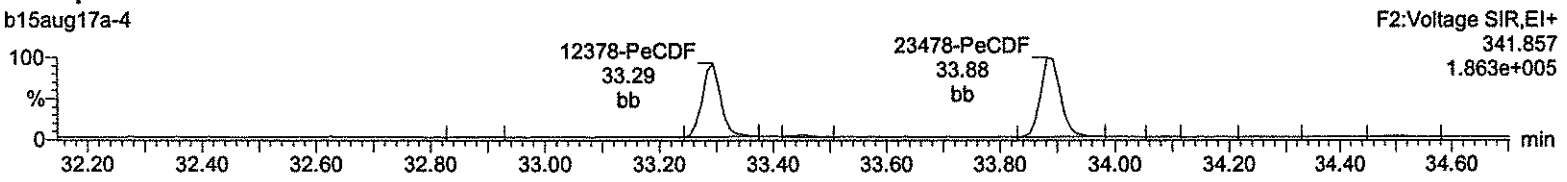
Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-pentafurans



Total-pentafurans



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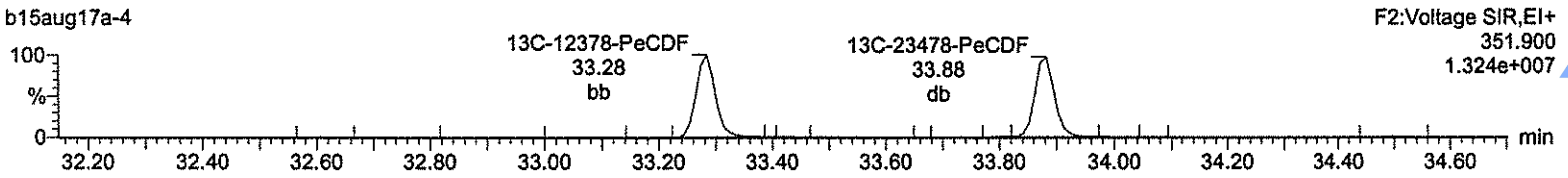

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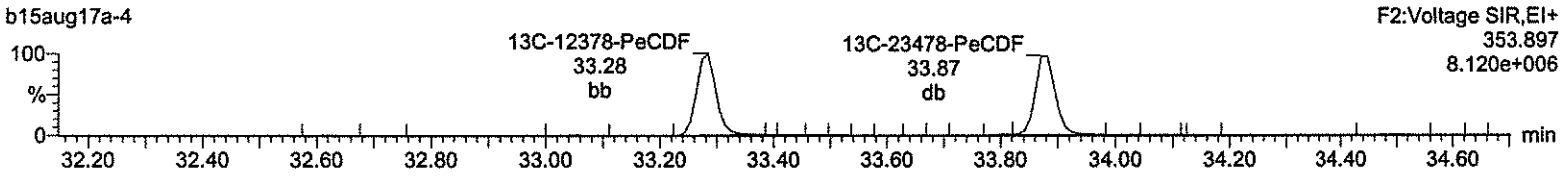
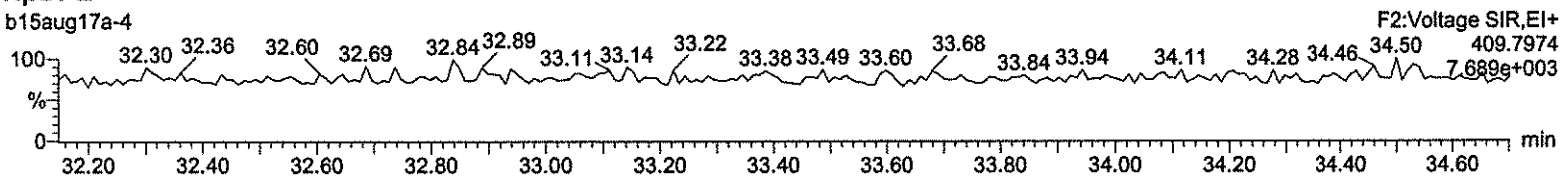


HpDPE



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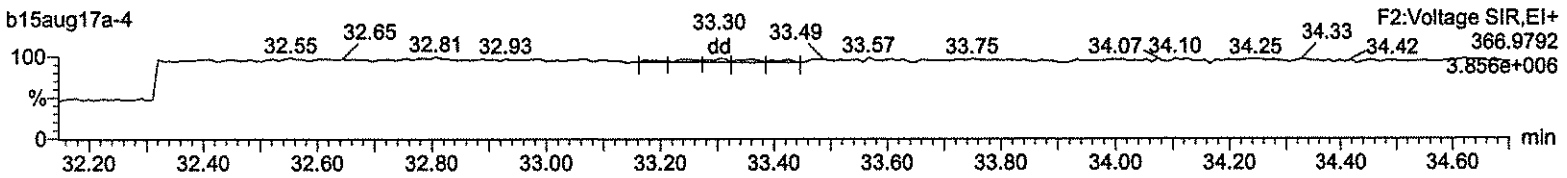

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Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

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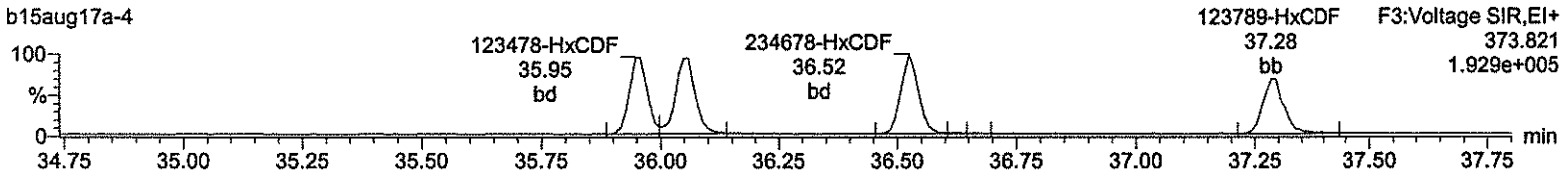
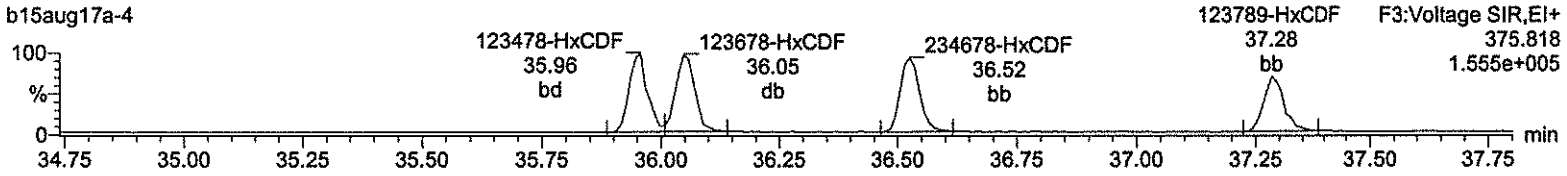


Total-hexafurans



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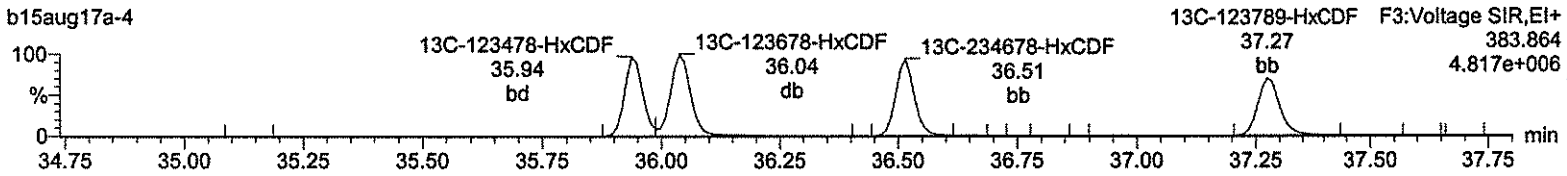

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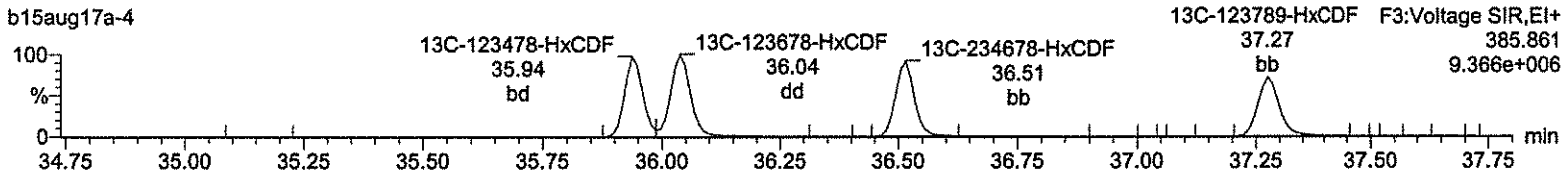

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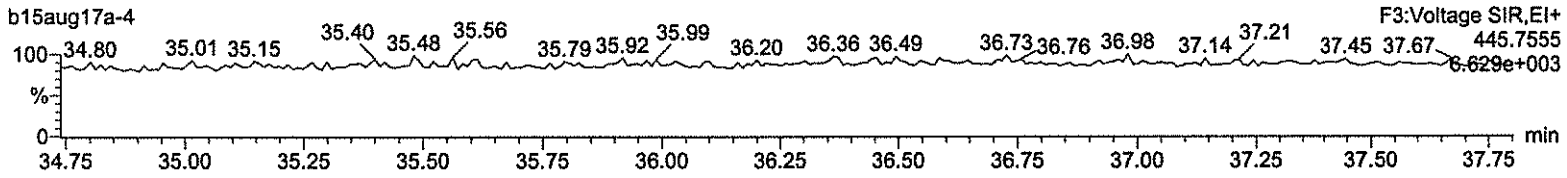

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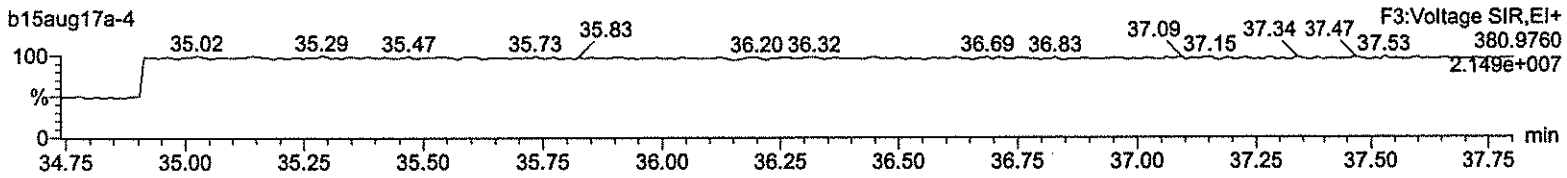

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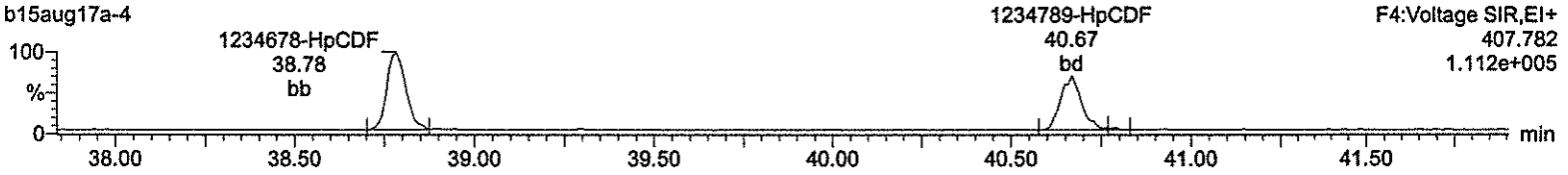
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

Total-heptafurans



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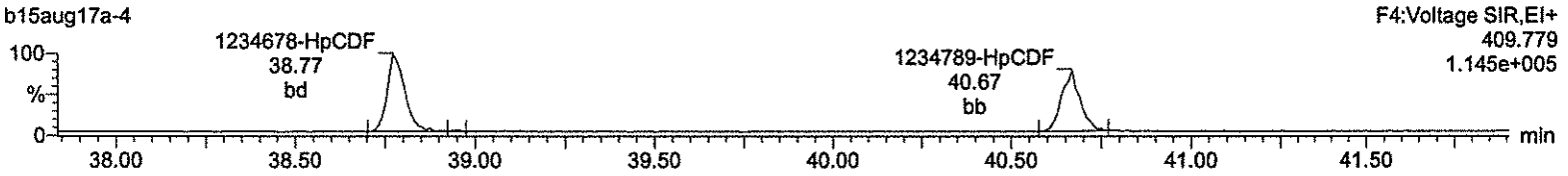

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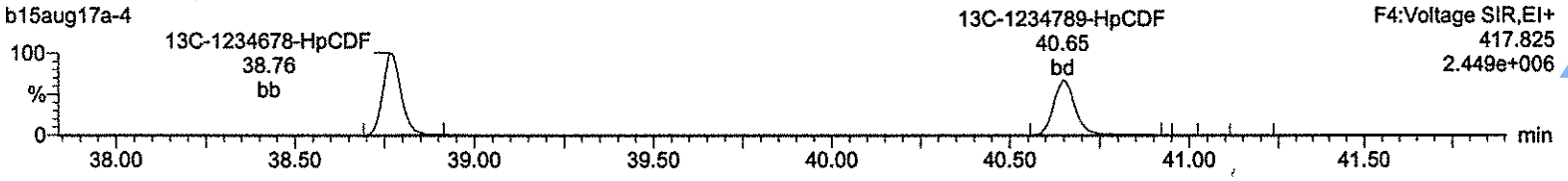

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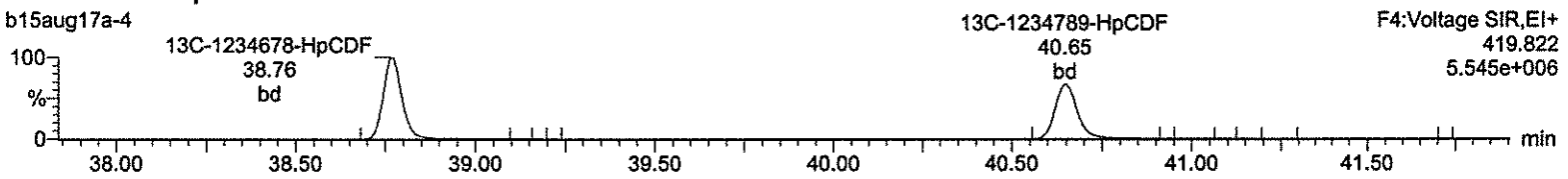

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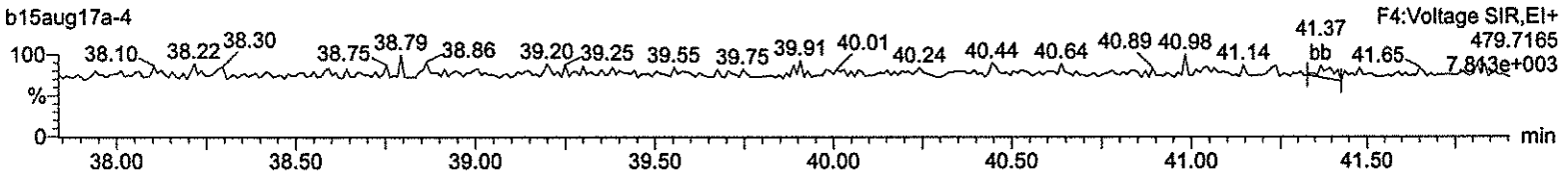

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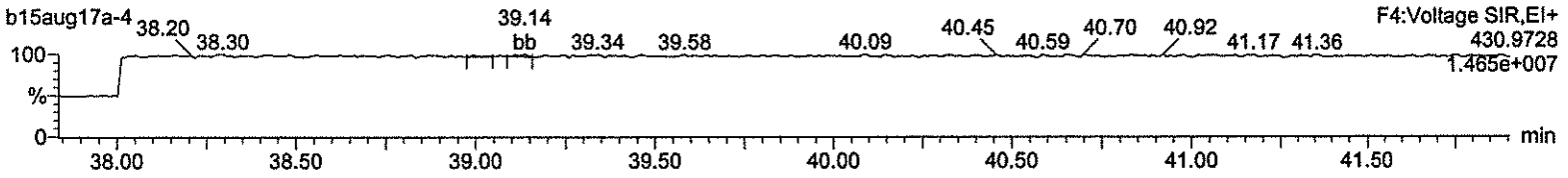

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Name: b15aug17a-4, Date: 15-Aug-2017, Time: 12:58:58, ID: CS1 UD170815-02 CS13F

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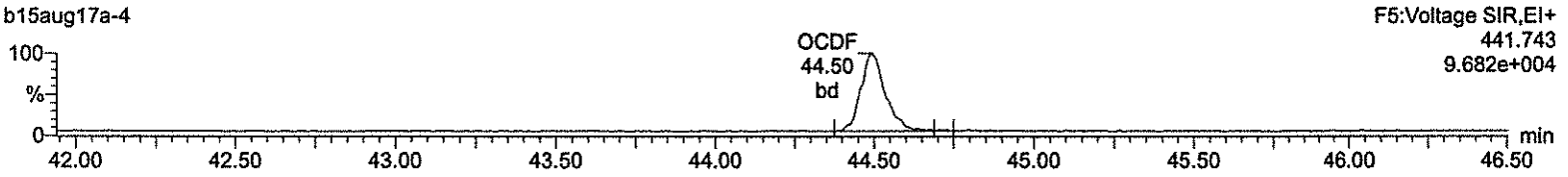

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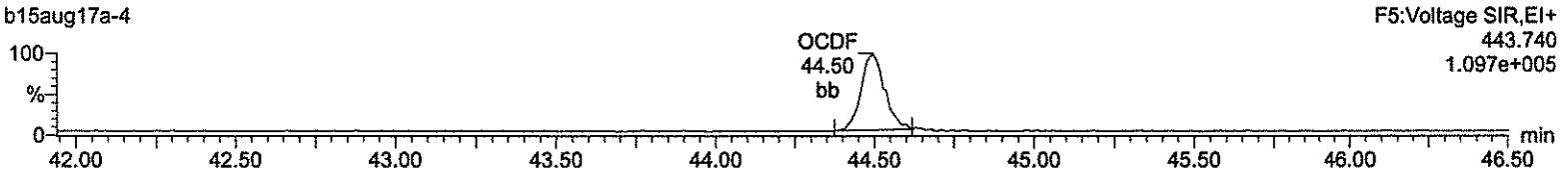

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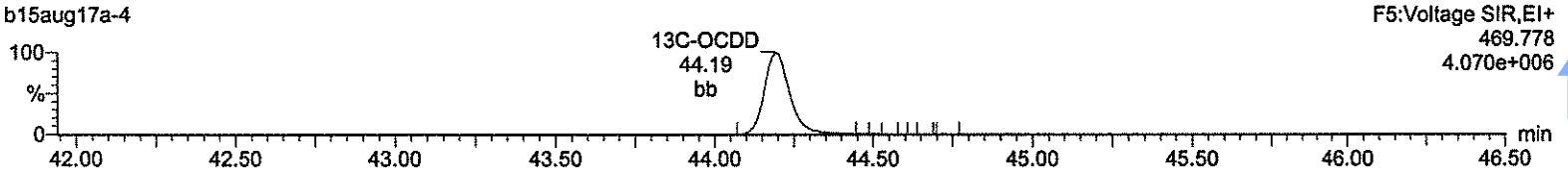

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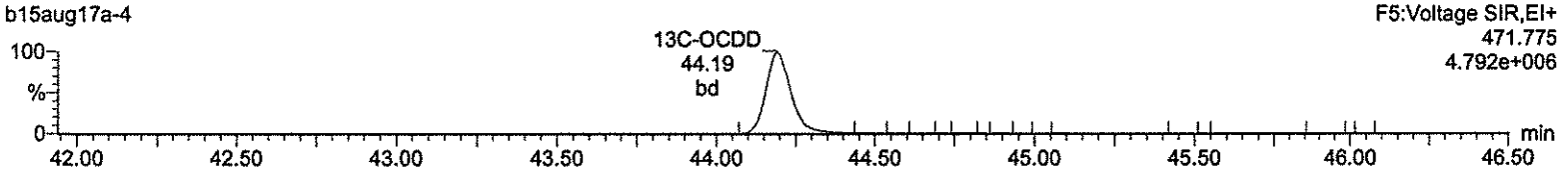
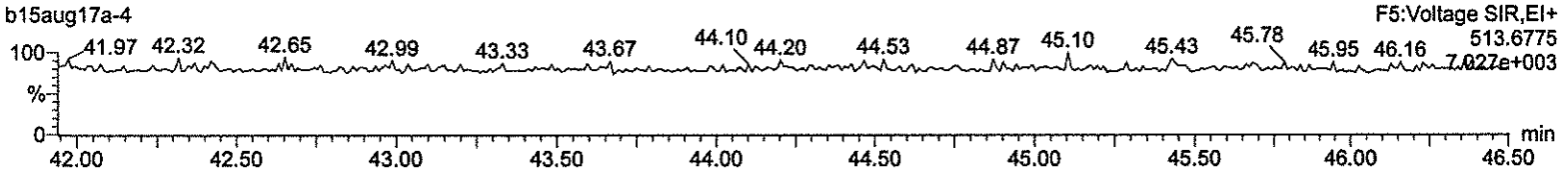
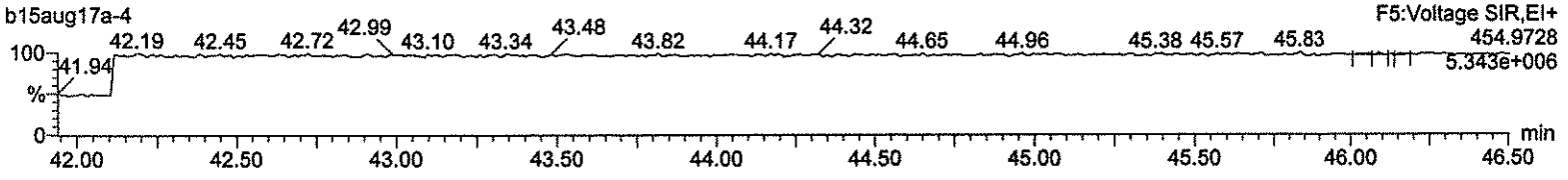


DeDPE



Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld
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Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	5.60e3	7.68e3	1.33e4	31.19	1.000	0.73	NO	1.921	0.855	0.891	4.45	0.0428	9.40e4	1378	68.2	1.32e5	671	197.3	bb	bb
2	12378-PeCDD	3.04e4	1.96e4	5.00e4	34.08	1.000	1.55	NO	9.702	0.766	0.789	3.38	0.0342	7.47e5	993	752.7	4.92e5	741	663.5	bb	bb
3	123478-HxCDD	2.58e4	2.09e4	4.67e4	36.65	1.000	1.24	NO	9.780	0.819	0.838	4.80	0.0590	5.64e5	1323	426.4	4.40e5	1035	424.8	bd	bd
4	123678-HxCDD	2.83e4	2.26e4	5.09e4	36.73	1.000	1.25	NO	9.760	0.820	0.840	4.71	0.0561	5.75e5	1323	434.7	4.79e5	1035	462.6	db	db
5	123789-HxCDD	2.69e4	2.04e4	4.72e4	36.97	1.007	1.32	NO	9.740	0.793	0.814	3.19	0.0592	5.25e5	1323	397.0	3.78e5	1035	365.6	bd	bb
6	1234678-HpCDD	2.14e4	2.07e4	4.21e4	40.00	1.000	1.04	NO	10.035	1.006	1.003	3.74	0.0744	3.30e5	1061	311.0	3.08e5	824	373.5	bb	bd
7	OCDD	3.36e4	3.83e4	7.20e4	44.19	1.000	0.88	NO	19.175	0.873	0.910	3.79	0.119	3.67e5	840	437.3	4.27e5	1045	408.9	bd	bb
8	2378-TCDF	7.05e3	9.20e3	1.62e4	30.42	1.000	0.77	NO	1.944	0.895	0.921	2.50	0.0528	8.27e4	746	110.8	1.06e5	1290	82.2	bb	bb
9	12378-PeCDF	4.20e4	2.78e4	6.99e4	33.28	1.000	1.51	NO	9.995	0.822	0.822	4.18	0.0279	1.04e6	787	1315.1	6.99e5	1119	624.8	bd	bd
10	23478-PeCDF	4.62e4	3.07e4	7.69e4	33.88	1.001	1.50	NO	9.868	0.914	0.926	2.87	0.0260	1.14e6	787	1448.4	7.74e5	1119	691.8	bb	bb
11	123478-HxCDF	3.31e4	2.75e4	6.05e4	35.94	1.000	1.20	NO	9.961	0.994	0.998	5.02	0.0502	7.33e5	1435	510.6	6.12e5	1288	475.2	bd	bd
12	123678-HxCDF	3.55e4	3.04e4	6.58e4	36.04	1.000	1.17	NO	10.287	0.961	0.934	4.26	0.0508	7.44e5	1435	518.6	6.08e5	1288	472.1	dd	dd
13	234678-HxCDF	3.42e4	2.78e4	6.20e4	36.51	1.000	1.23	NO	9.970	1.029	1.033	4.35	0.0536	6.67e5	1435	464.7	5.71e5	1288	443.1	bd	bd
14	123789-HxCDF	2.83e4	2.35e4	5.18e4	37.28	1.000	1.21	NO	9.947	0.948	0.953	4.84	0.0713	5.44e5	1435	379.4	4.54e5	1288	352.4	bb	bd
15	1234678-HpCDF	2.53e4	2.54e4	5.07e4	38.77	1.000	1.00	NO	9.719	1.066	1.097	3.98	0.0459	4.41e5	769	573.3	4.35e5	862	504.1	bb	bd
16	1234789-HpCDF	2.05e4	2.04e4	4.09e4	40.65	1.000	1.00	NO	9.592	1.064	1.109	6.52	0.0671	2.90e5	769	377.3	2.91e5	862	337.6	bb	bb
17	OCDF	3.43e4	3.91e4	7.34e4	44.48	1.007	0.88	NO	19.312	0.890	0.922	7.27	0.122	3.70e5	986	374.8	4.18e5	959	435.6	bd	bb
18	13C-2378-TCDD	3.41e5	4.35e5	7.76e5	31.18	1.018	0.78	NO	98.327	1.123	1.142	2.94	0.121	5.90e6	3077	1918.1	7.45e6	1899	3924.0	bb	bb
19	13C-12378-PeCDD	4.04e5	2.50e5	6.53e5	34.07	1.112	1.62	NO	98.290	0.945	0.962	4.38	0.0779	9.91e6	1252	7915.4	5.93e6	1453	4080.3	bb	bb
20	13C-123478-HxCDD	3.14e5	2.56e5	5.70e5	36.64	0.991	1.22	NO	99.329	1.020	1.027	0.74	0.100	6.56e6	2119	3098.4	5.26e6	2231	2358.5	bd	bd
21	13C-123678-HxCDD	3.40e5	2.82e5	6.21e5	36.72	0.993	1.21	NO	99.030	1.112	1.123	1.81	0.0916	6.83e6	2119	3225.3	5.73e6	2231	2568.6	db	db
22	13C-1234678-HpCDD	2.12e5	2.06e5	4.19e5	39.99	1.082	1.03	NO	99.547	0.750	0.753	2.07	0.120	3.21e6	2109	1520.4	3.10e6	1697	1828.1	bb	bb
23	13C-OCDD	3.83e5	4.42e5	8.25e5	44.18	1.195	0.87	NO	203.529	0.738	0.726	4.08	0.102	4.02e6	1522	2644.8	4.81e6	1614	2982.2	bb	bb
24	13C-2378-TCDF	3.90e5	5.18e5	9.07e5	30.41	0.992	0.75	NO	98.216	1.313	1.337	1.60	0.164	4.50e6	5073	886.4	6.04e6	2837	2128.5	bb	bb
25	13C-12378-PeCDF	5.23e5	3.27e5	8.51e5	33.27	1.086	1.60	NO	99.042	1.230	1.242	3.08	0.154	1.28e7	3750	3411.7	7.92e6	3169	2498.8	bd	bd
26	13C-23478-PeCDF	5.17e5	3.24e5	8.41e5	33.86	1.105	1.59	NO	98.655	1.217	1.234	4.20	0.155	1.21e7	3750	3237.8	7.75e6	3169	2446.3	bb	bb
27	13C-123478-HxCDF	2.05e5	4.03e5	6.09e5	35.93	0.972	0.51	NO	99.197	1.090	1.099	0.83	0.134	4.58e6	2981	1536.2	9.05e6	3257	2778.7	bd	bd
28	13C-123678-HxCDF	2.33e5	4.52e5	6.85e5	36.03	0.975	0.51	NO	96.451	1.227	1.272	2.46	0.116	4.88e6	2981	1635.6	9.41e6	3257	2887.9	db	db
29	13C-234678-HxCDF	2.02e5	4.00e5	6.03e5	36.51	0.988	0.51	NO	100.005	1.079	1.079	1.03	0.137	4.13e6	2981	1385.2	7.94e6	3257	2437.7	bb	bd
30	13C-123789-HxCDF	1.89e5	3.57e5	5.47e5	37.27	1.008	0.53	NO	99.175	0.979	0.987	1.26	0.150	3.47e6	2981	1164.8	6.63e6	3257	2034.0	bb	bb
31	13C-1234678-HpCDF	1.44e5	3.32e5	4.76e5	38.76	1.049	0.44	NO	100.298	0.852	0.849	1.50	0.105	2.46e6	1654	1486.0	5.55e6	2110	2632.4	bb	bb
32	13C-1234789-HpCDF	1.17e5	2.68e5	3.85e5	40.64	1.099	0.43	NO	102.010	0.689	0.675	2.06	0.132	1.66e6	1654	1003.6	3.71e6	2110	1758.4	bd	bb
33	13C-1234-TCDD	3.03e5	3.88e5	6.91e5	30.64	0.000	0.78	NO	100.000	1.000	1.000	0.00	0.138	3.96e6	3077	1286.6	5.17e6	1899	2723.7	bb	bb
34	13C-123789-HxCDD	3.02e5	2.57e5	5.58e5	36.96	0.000	1.18	NO	100.000	1.000	1.000	0.00	0.103	5.71e6	2119	2694.9	4.82e6	2231	2159.3	bb	bb
35	37Cl-2378-TCDD	1.51e4		1.51e4	31.19	1.018			1.876	1.089	1.161	5.41	0.0302	2.48e5	1265	196.2				bb	

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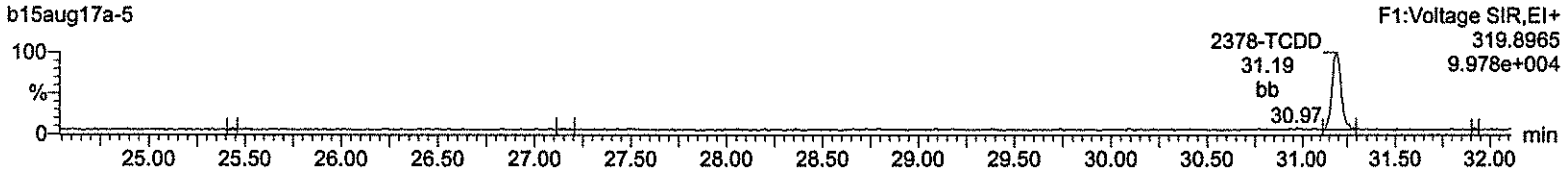
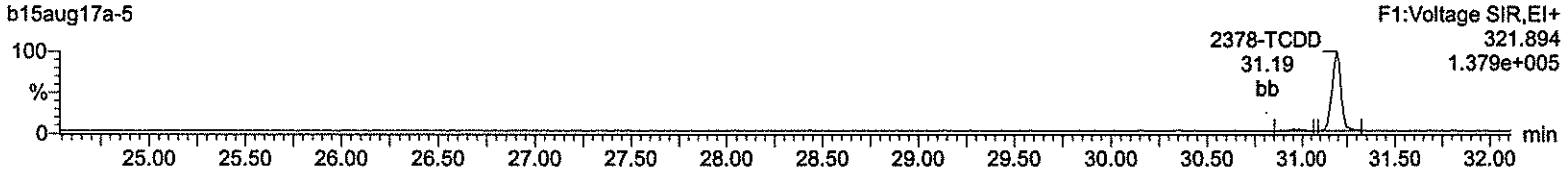
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

Total-tetradioxins



Total-tetradioxins



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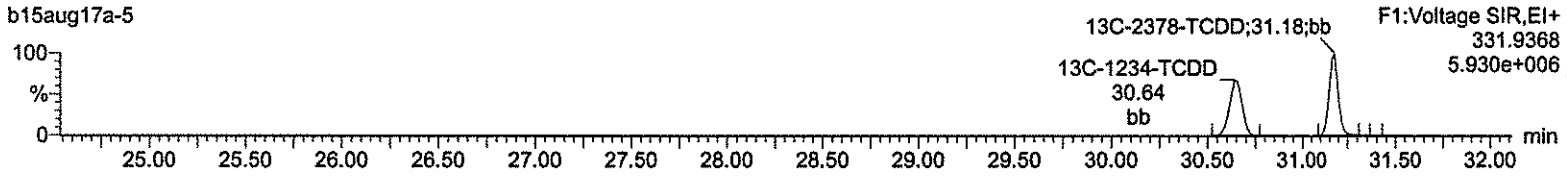

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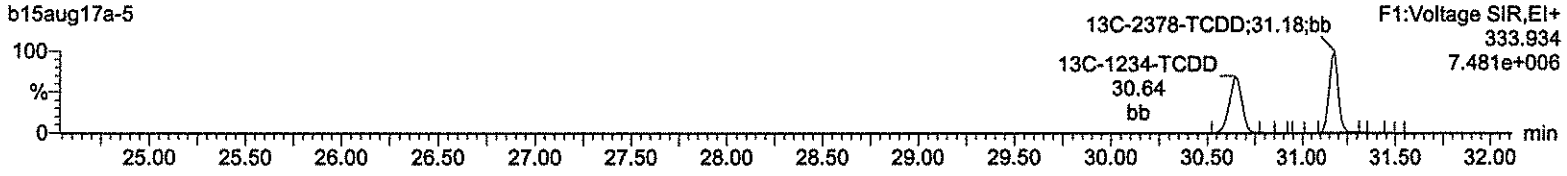

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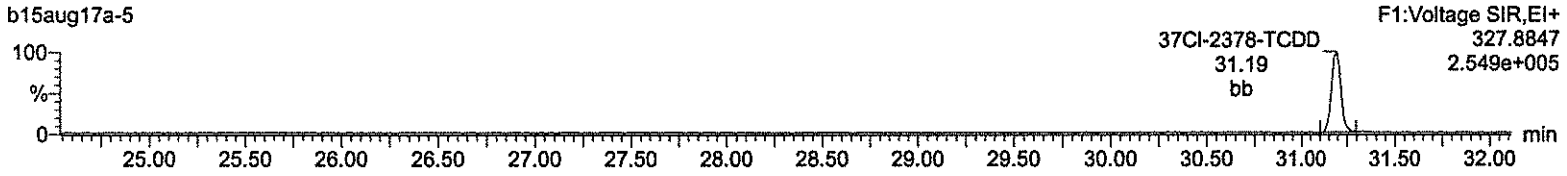
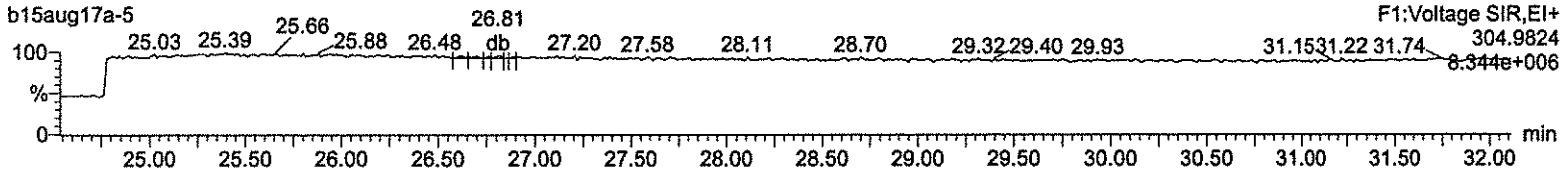


Lock Mass F1



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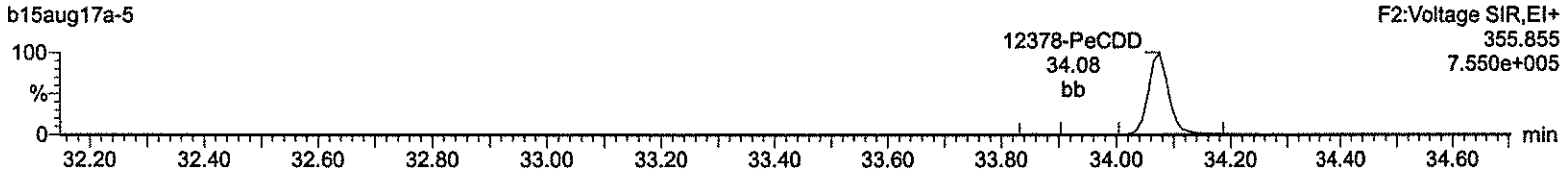
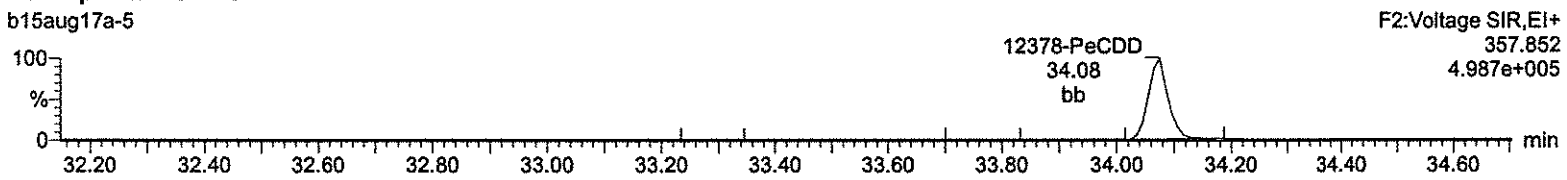
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

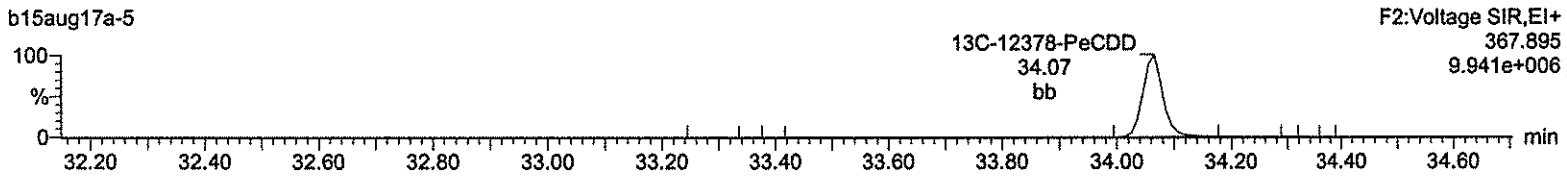
Total-pentadioxins



Total-pentadioxins



13C-12378-PeCDD



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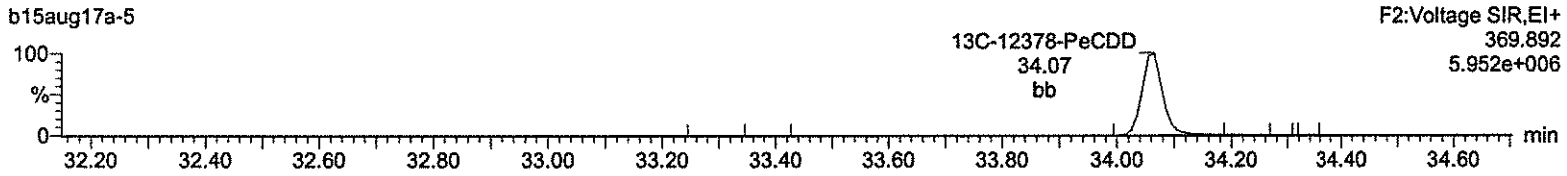
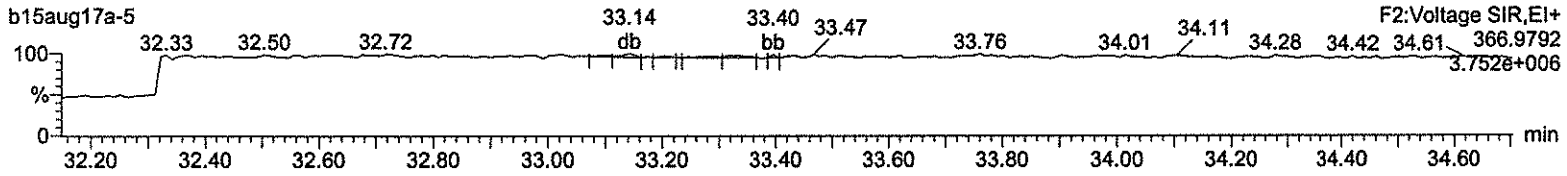


Lock Mass F2



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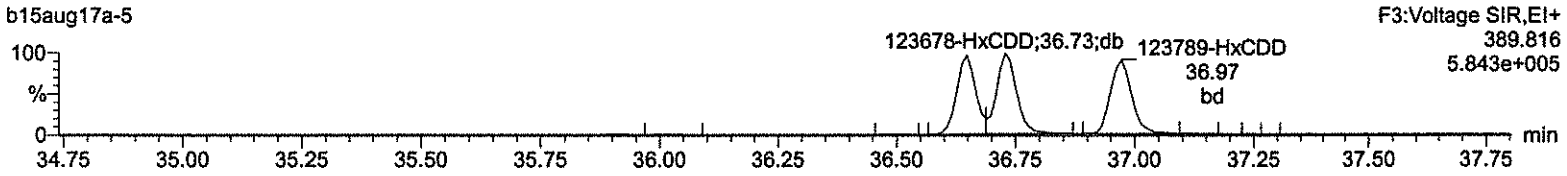
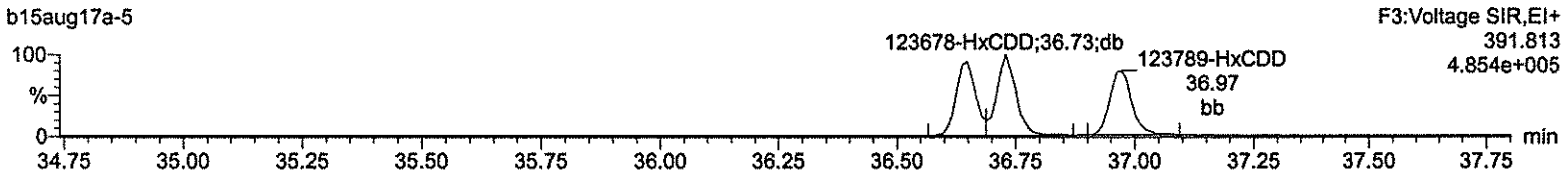
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

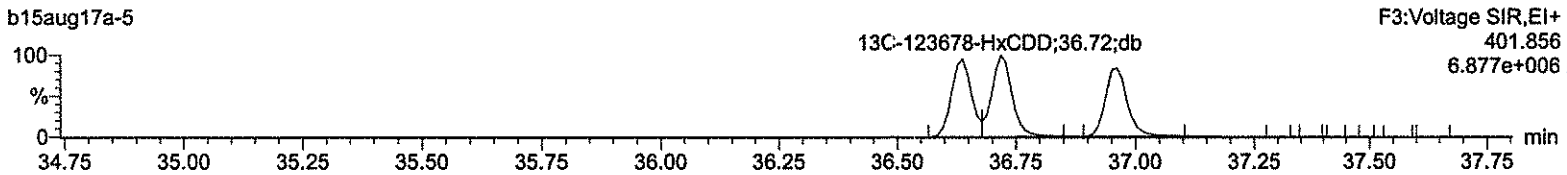
Total-hexadioxins



Total-hexadioxins



13C-123478-HxCDD



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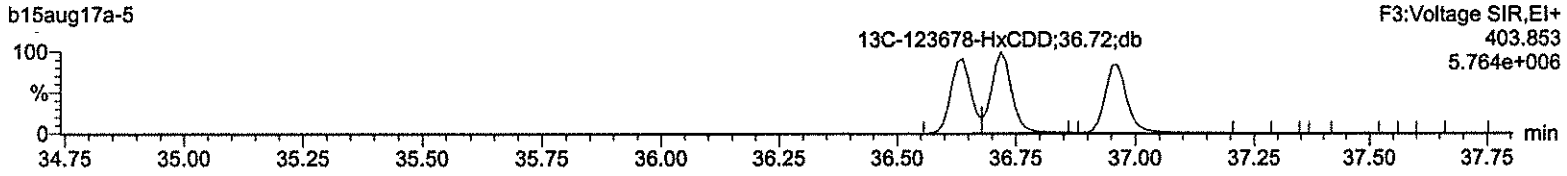
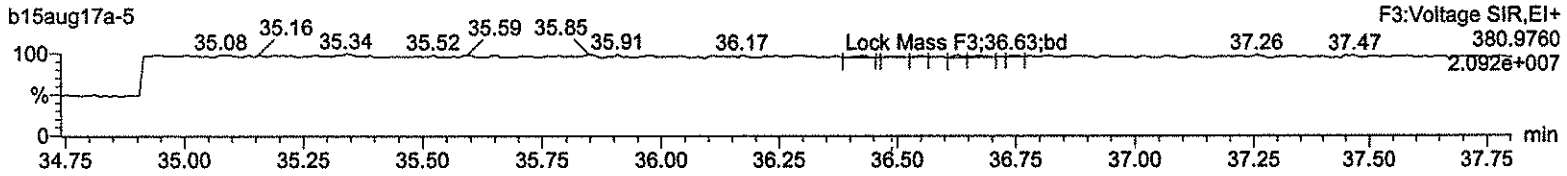


Lock Mass F3



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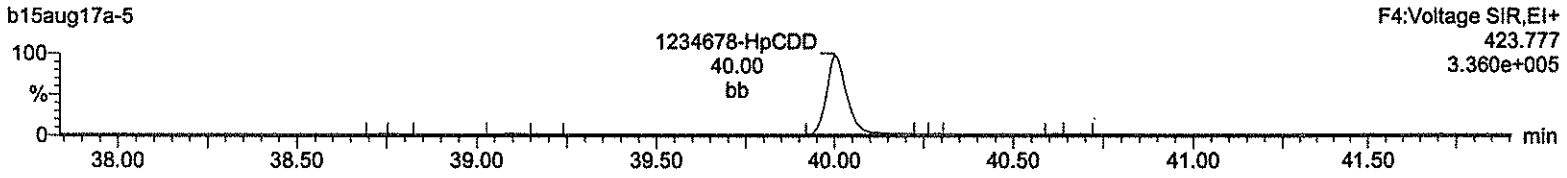
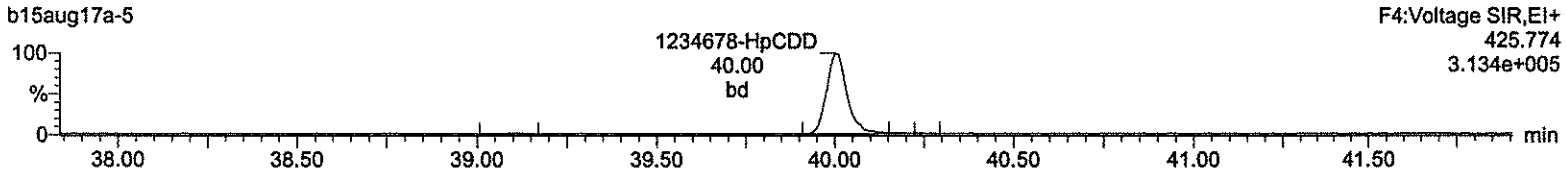
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

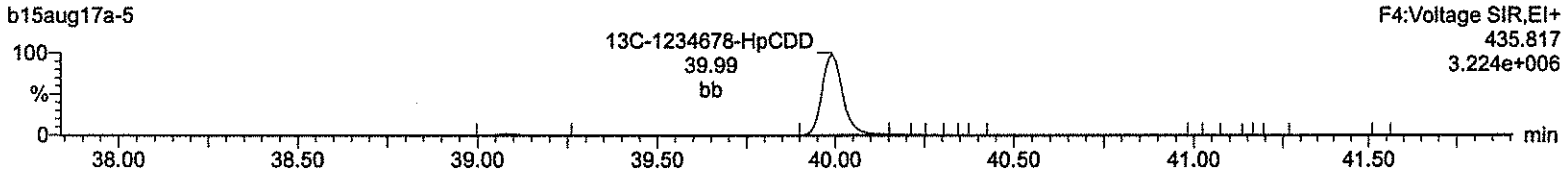
Total-heptadioxins



Total-heptadioxins



13C-1234678-HpCDD



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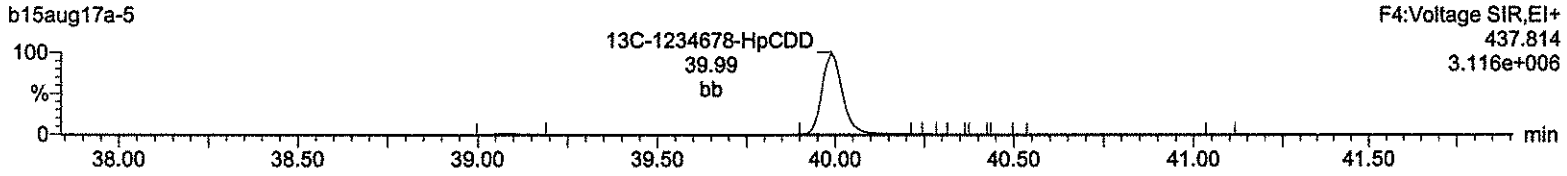
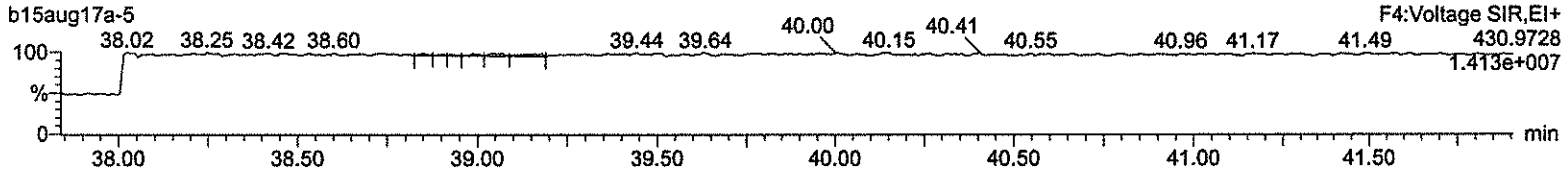


Lock Mass F4



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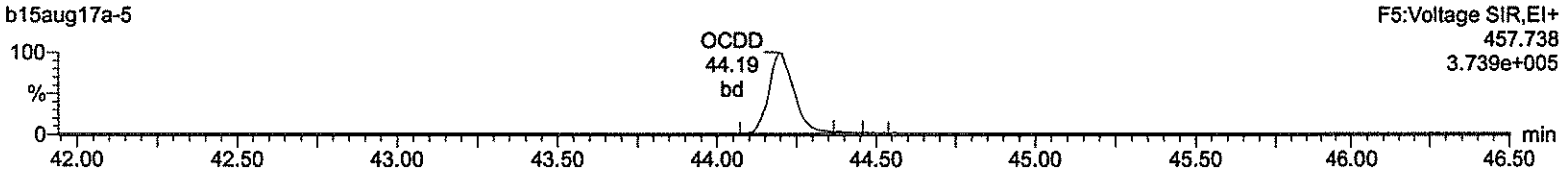
OCDD



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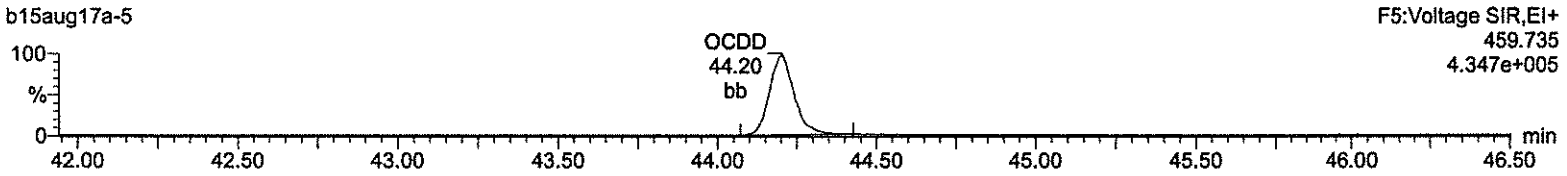

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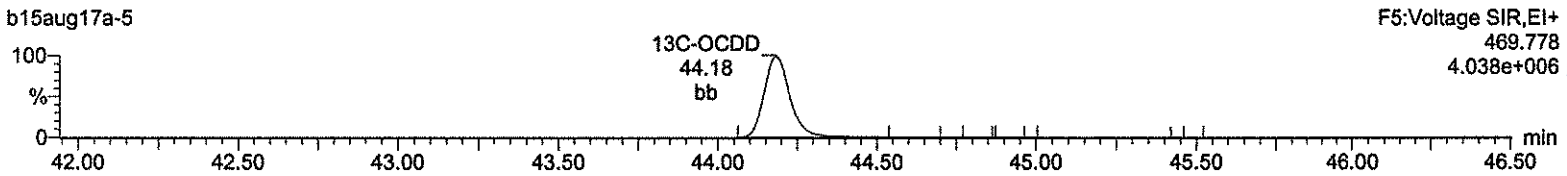

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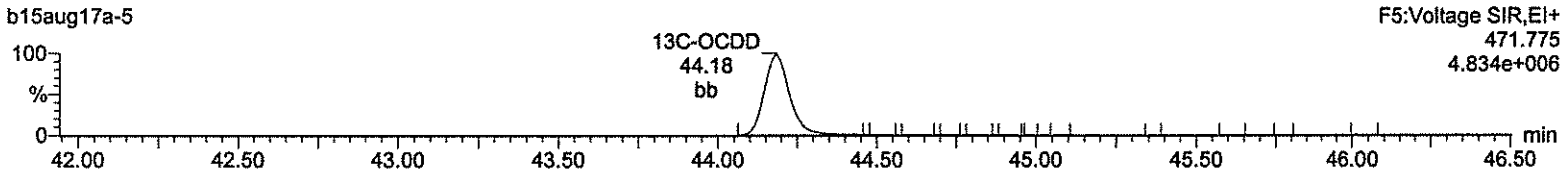
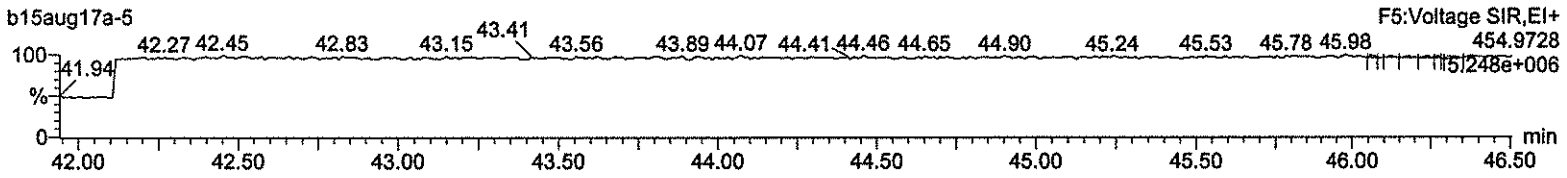


Lock Mass F5



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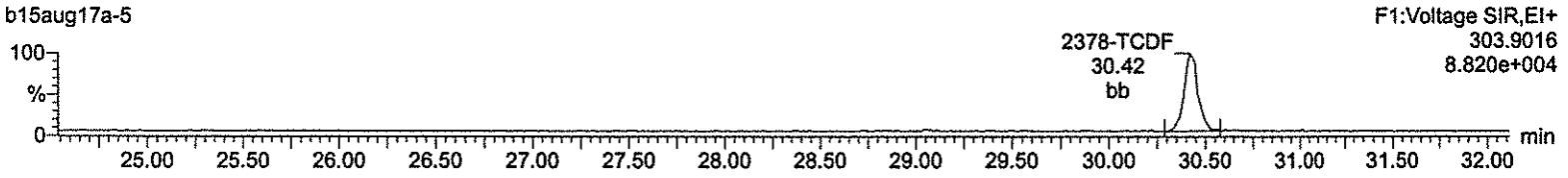
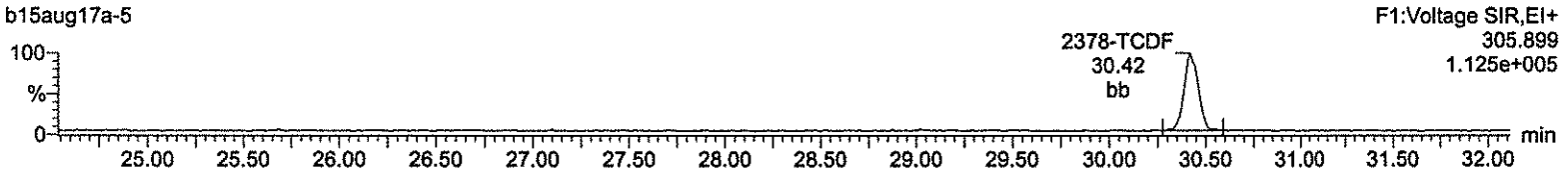
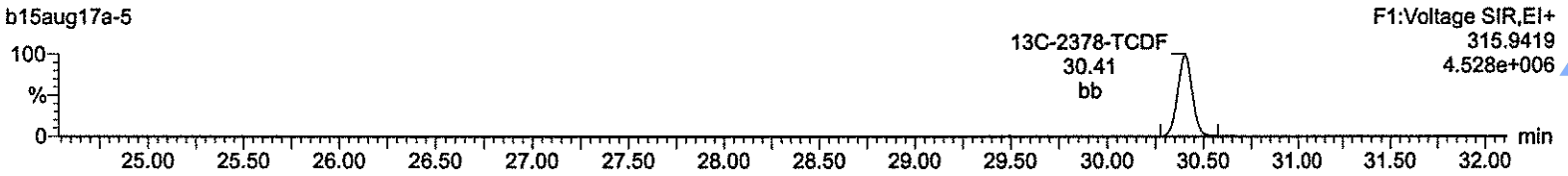
Total-tetrafurans



Total-tetrafurans



13C-2378-TCDF



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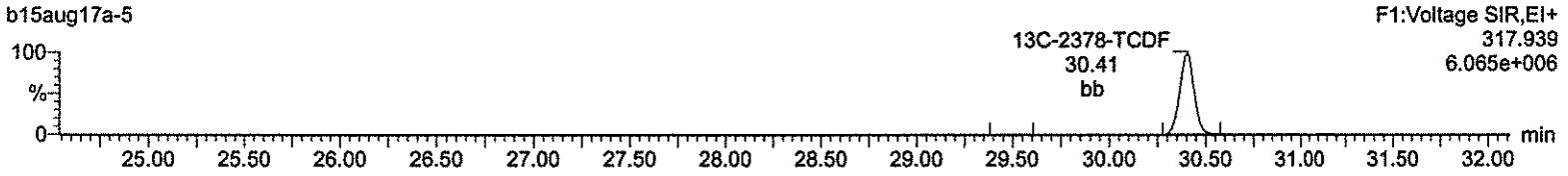
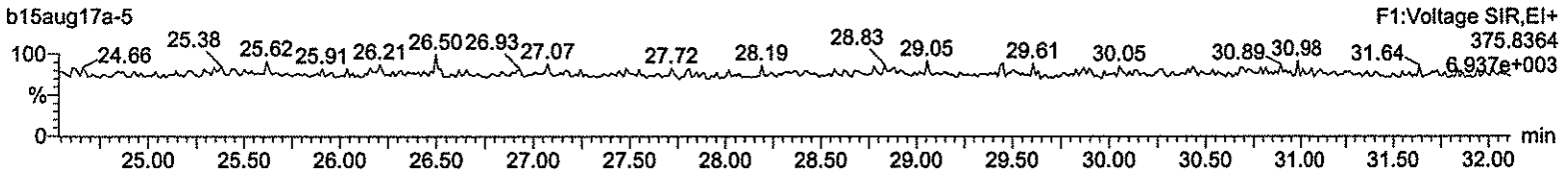
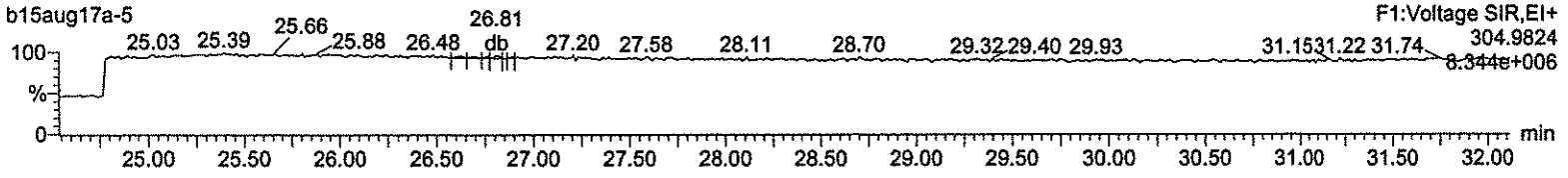


HxDPE



Lock Mass F1



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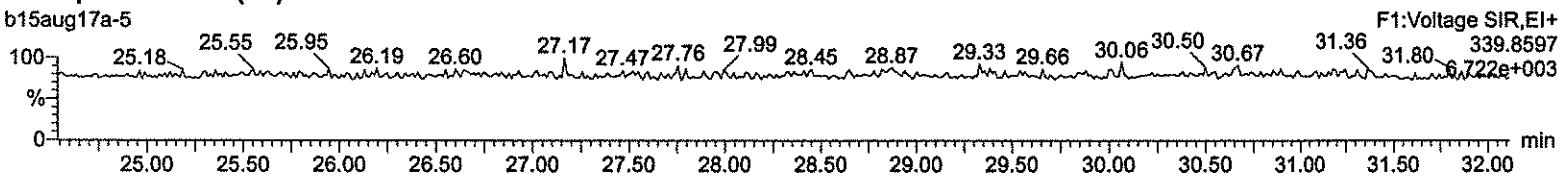
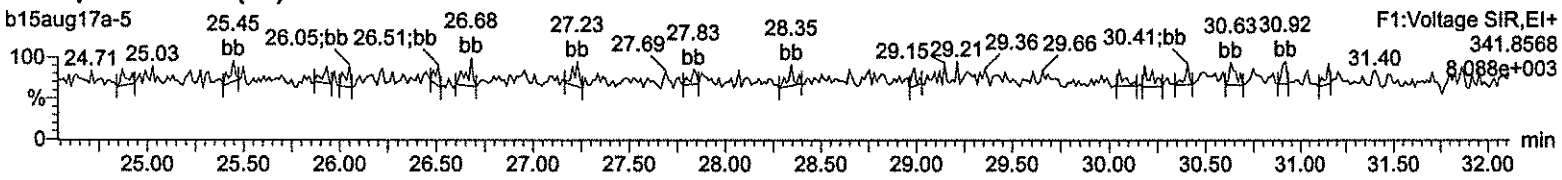
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

Total-pentafurans (F1)



Total-pentafurans (F1)



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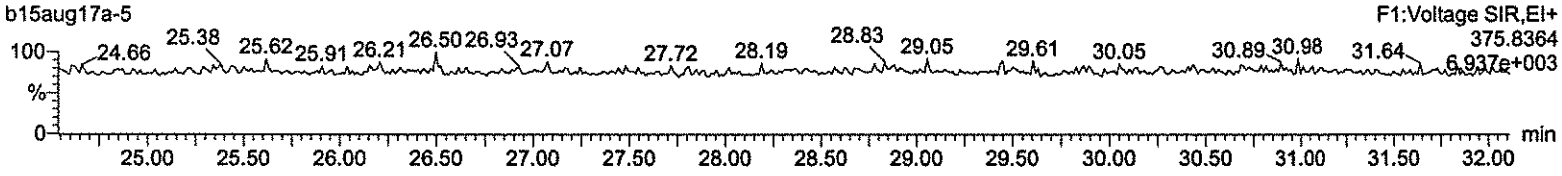
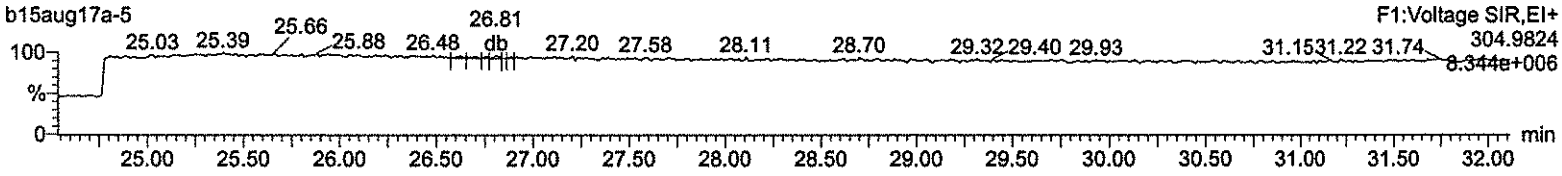


Lock Mass F1



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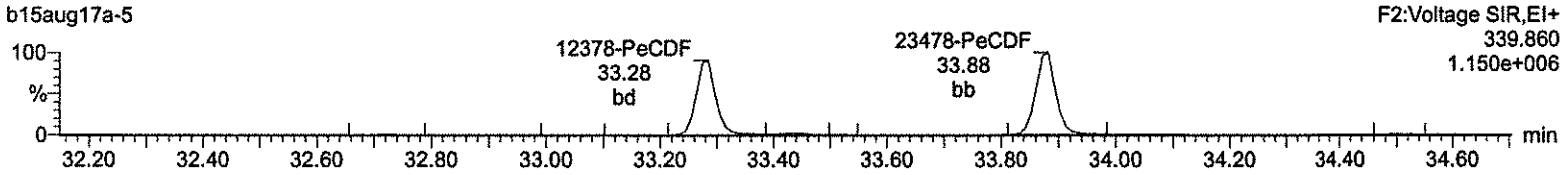
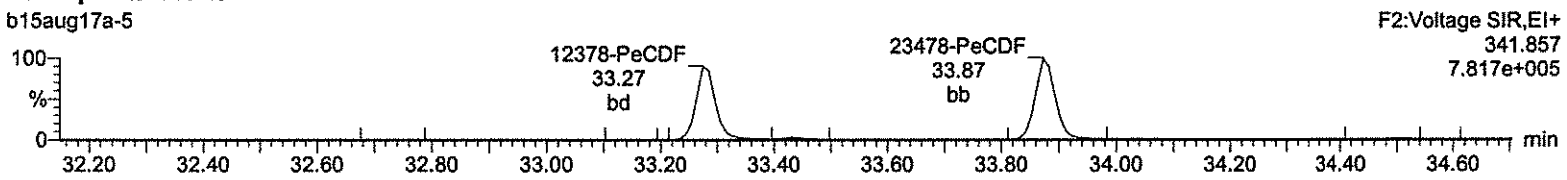
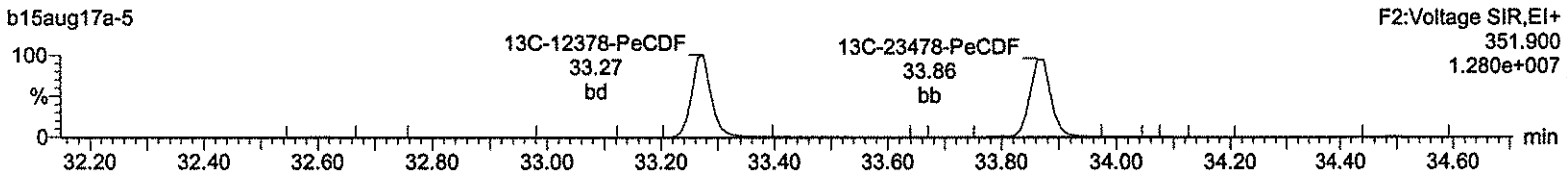
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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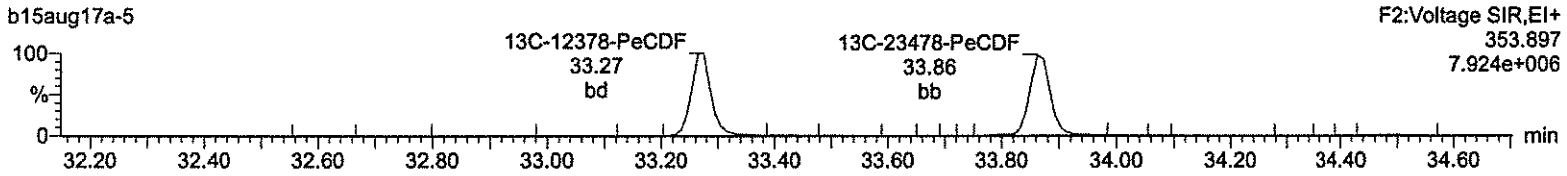
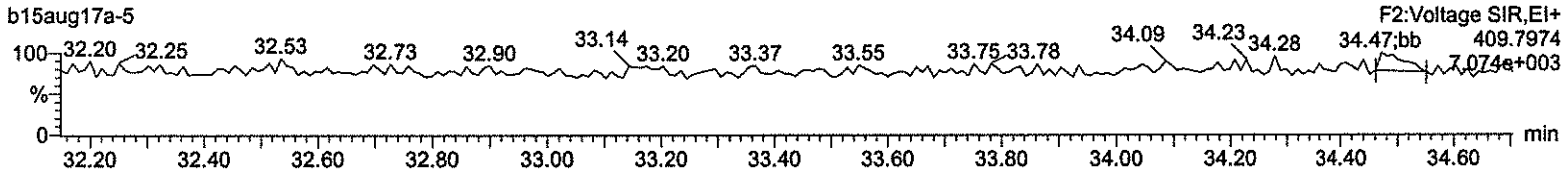
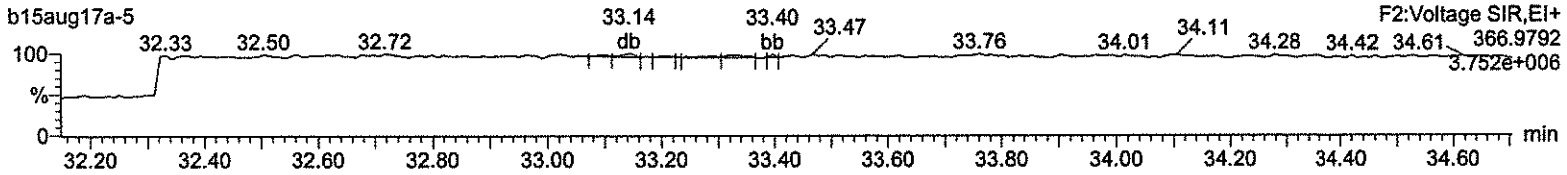


HpDPE



Lock Mass F2



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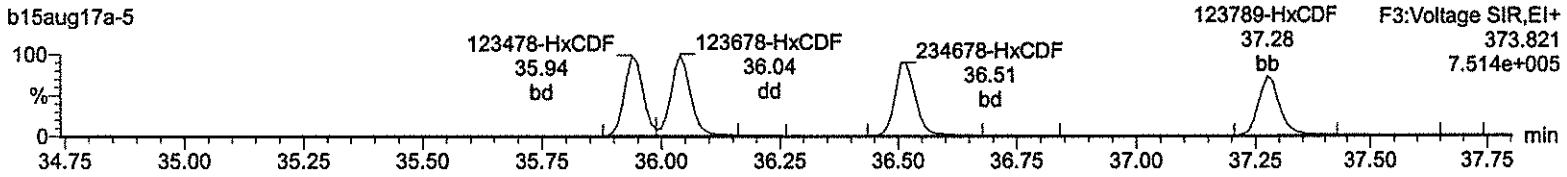
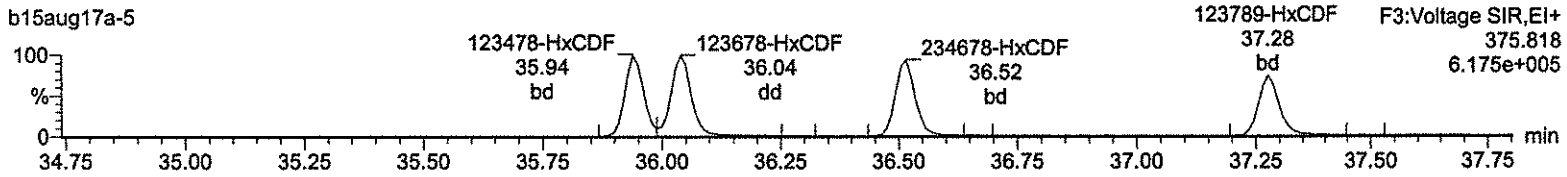
Total-hexafurans



Total-hexafurans



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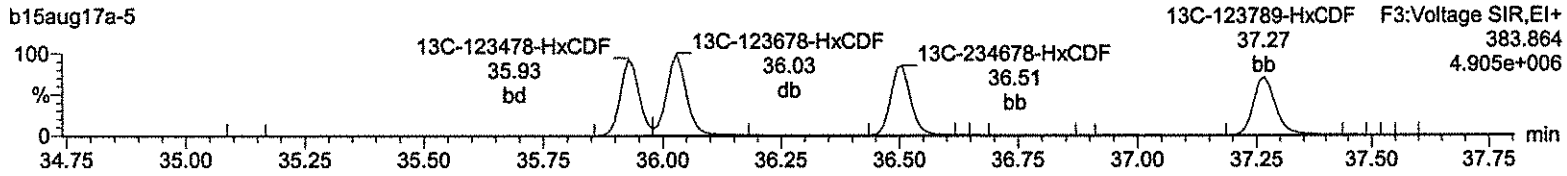

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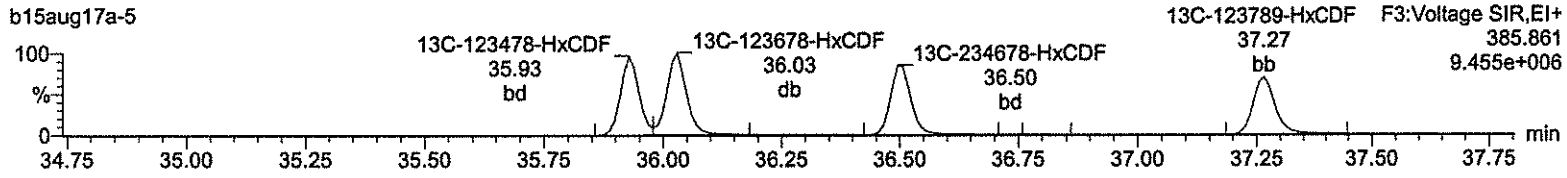
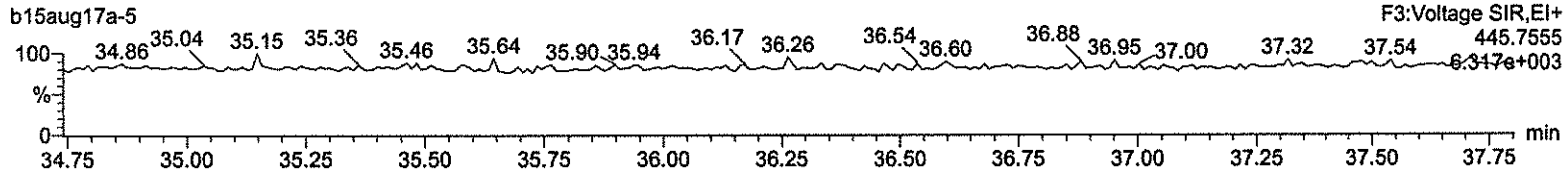
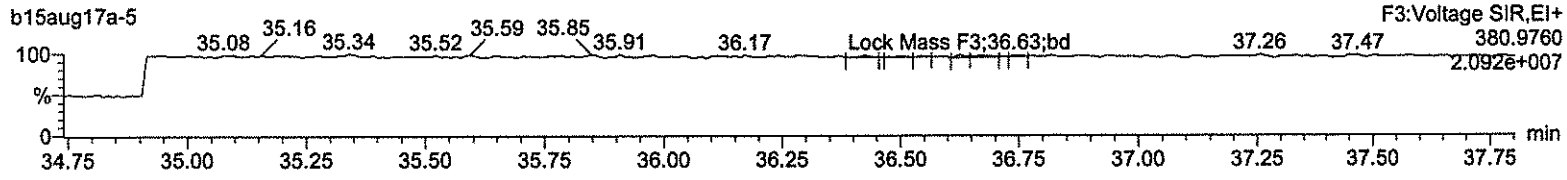


OcDPE



Lock Mass F3



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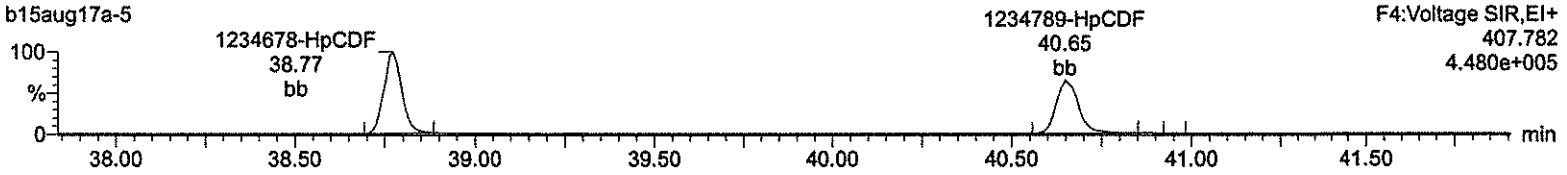
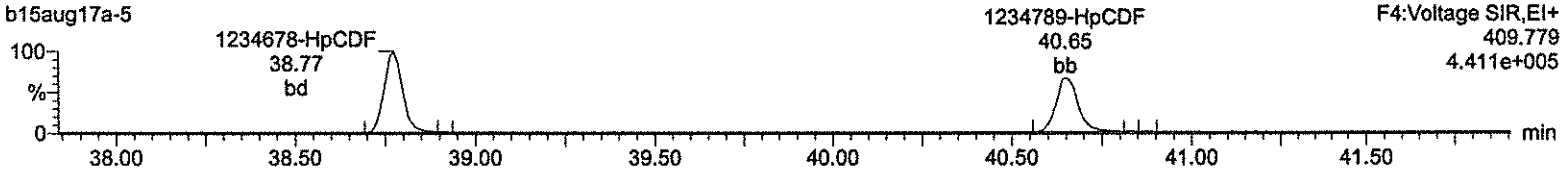
Total-heptafurans



Total-heptafurans



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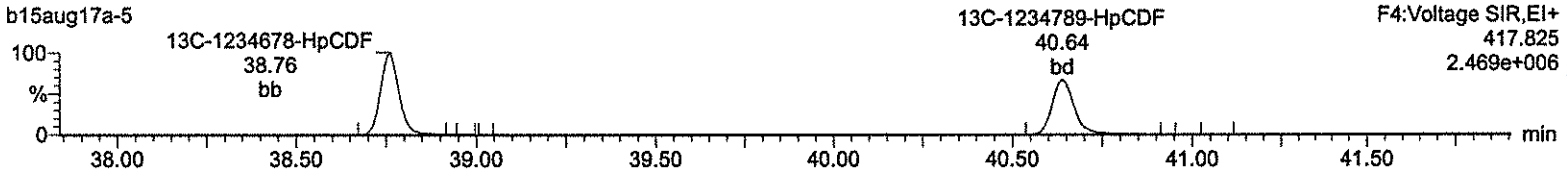

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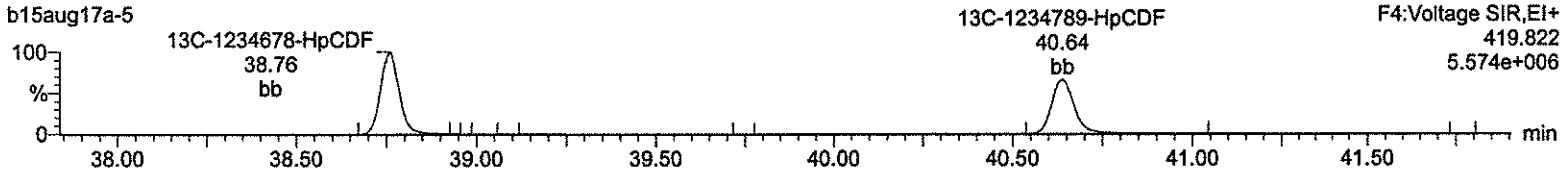

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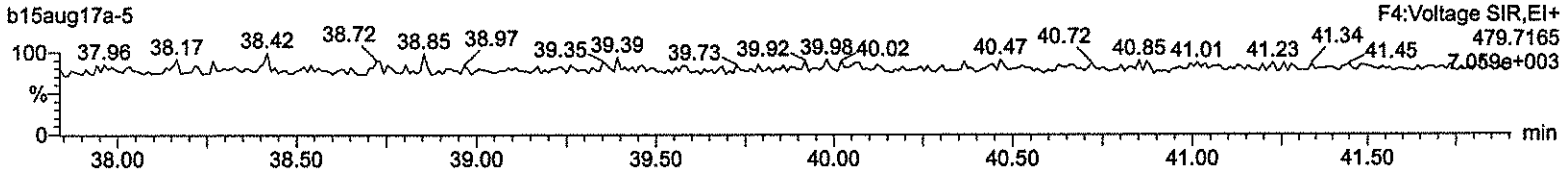
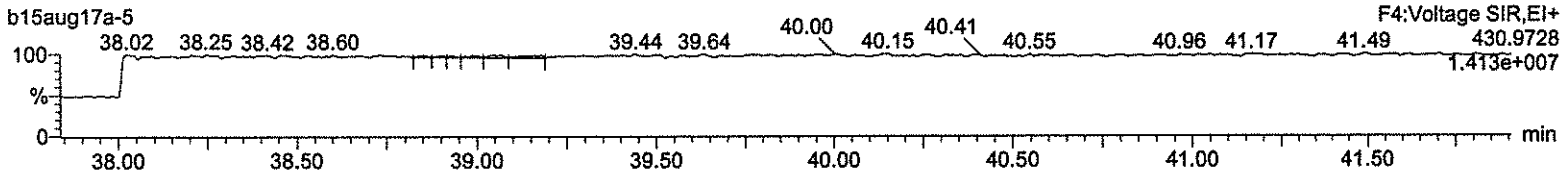


Lock Mass F4



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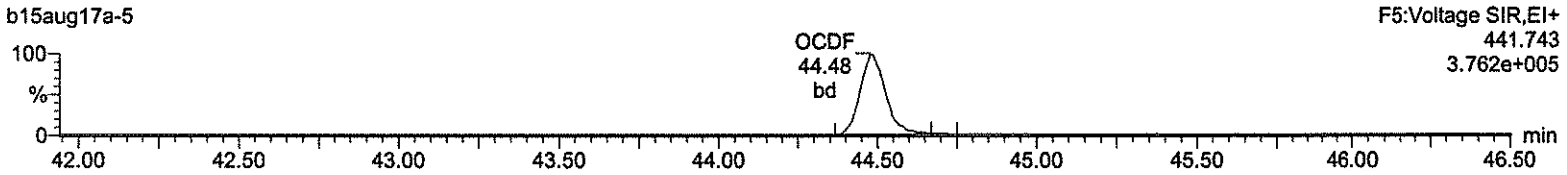
Name: b15aug17a-5, Date: 15-Aug-2017, Time: 13:47:24, ID: CS2 UD170815-03 CS23E

OCDF



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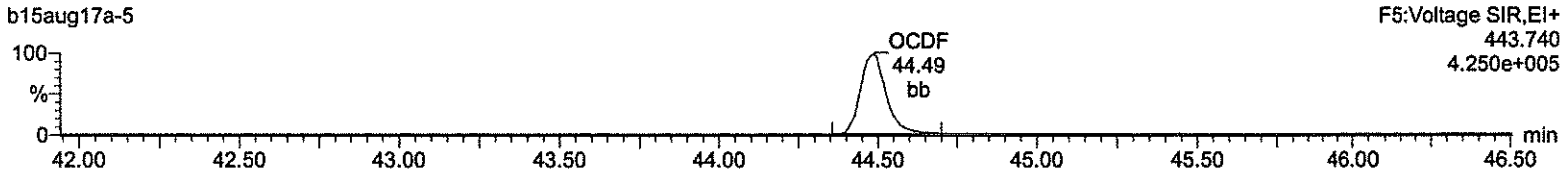
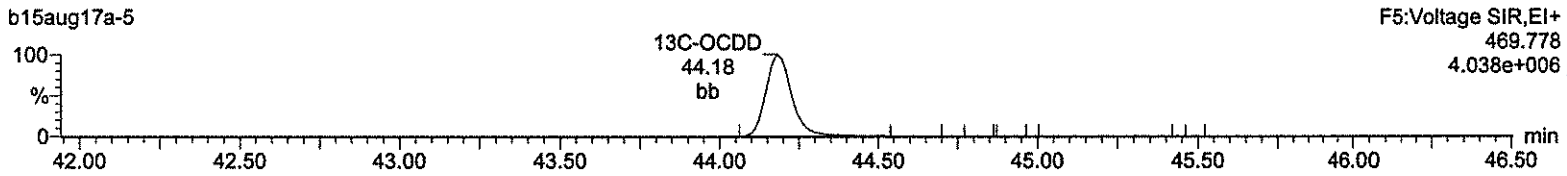


13C-OCDD



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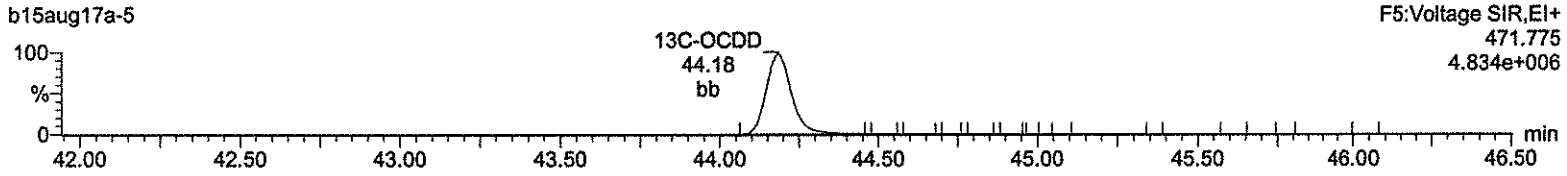

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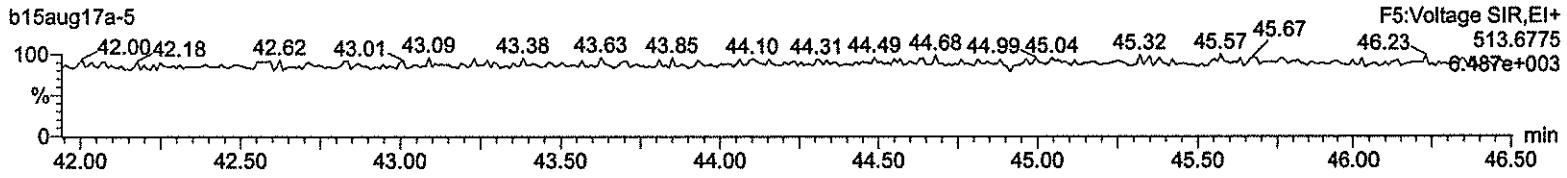
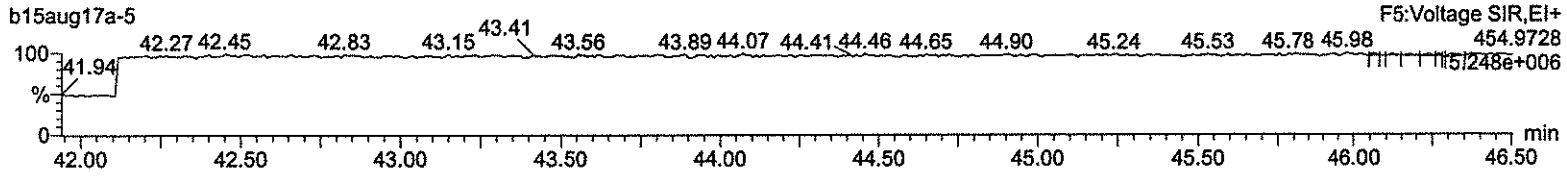


Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

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Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	2.87e4	4.08e4	6.95e4	31.19	1.000	0.70	NO	10.138	0.903	0.891	4.45	0.0444	4.99e5	1292	386.1	7.21e5	818	881.7	bb	bd
2	12378-PeCDD	1.54e5	1.00e5	2.55e5	34.07	1.000	1.53	NO	51.563	0.814	0.789	3.38	0.0437	3.80e6	1179	3223.1	2.46e6	938	2620.2	bb	bb
3	123478-HxCDD	1.31e5	1.03e5	2.34e5	36.65	1.000	1.27	NO	51.214	0.858	0.838	4.80	0.0794	2.85e6	1879	1515.7	2.25e6	1276	1764.7	bd	bd
4	123678-HxCDD	1.45e5	1.15e5	2.60e5	36.73	1.000	1.26	NO	51.264	0.861	0.840	4.71	0.0805	2.76e6	1879	1470.1	2.20e6	1276	1721.9	db	dd
5	123789-HxCDD	1.35e5	1.06e5	2.41e5	36.97	1.007	1.28	NO	51.486	0.838	0.814	3.19	0.0824	2.66e6	1879	1417.2	2.05e6	1276	1604.4	bb	db
6	1234678-HpCDD	1.04e5	9.97e4	2.03e5	40.01	1.001	1.04	NO	49.944	1.001	1.003	3.74	0.0999	1.57e6	1327	1184.3	1.49e6	1151	1296.0	bd	bb
7	OCDD	1.65e5	1.81e5	3.46e5	44.19	1.000	0.91	NO	99.637	0.907	0.910	3.79	0.154	1.79e6	1071	1673.9	1.95e6	1218	1602.8	bd	bd
8	2378-TCDF	3.47e4	4.71e4	8.18e4	30.43	1.001	0.74	NO	9.780	0.900	0.921	2.50	0.0510	4.11e5	761	539.5	5.56e5	1318	421.9	bb	bb
9	12378-PeCDF	2.09e5	1.39e5	3.47e5	33.28	1.000	1.50	NO	51.498	0.847	0.822	4.18	0.0548	5.23e6	1716	3050.9	3.54e6	2011	1758.6	bd	bd
10	23478-PeCDF	2.29e5	1.51e5	3.81e5	33.88	1.000	1.52	NO	50.637	0.938	0.926	2.87	0.0488	5.86e6	1716	3417.7	3.84e6	2011	1911.8	bb	bb
11	123478-HxCDF	1.68e5	1.35e5	3.04e5	35.95	1.001	1.24	NO	51.799	1.034	0.998	5.02	0.111	3.58e6	2709	1322.5	2.95e6	2823	1043.2	bd	bd
12	123678-HxCDF	1.78e5	1.49e5	3.27e5	36.04	1.000	1.19	NO	50.485	0.943	0.934	4.26	0.105	3.74e6	2709	1381.3	3.08e6	2823	1091.0	db	db
13	234678-HxCDF	1.69e5	1.37e5	3.06e5	36.51	1.000	1.24	NO	51.493	1.063	1.033	4.35	0.110	3.63e6	2709	1339.2	2.95e6	2823	1044.4	bb	bb
14	123789-HxCDF	1.41e5	1.17e5	2.58e5	37.28	1.000	1.20	NO	51.516	0.982	0.953	4.84	0.154	2.48e6	2709	916.6	2.08e6	2823	736.8	bd	bd
15	1234678-HpCDF	1.29e5	1.28e5	2.57e5	38.77	1.000	1.01	NO	51.393	1.127	1.097	3.98	0.0855	2.25e6	1610	1399.4	2.19e6	1378	1587.9	bd	bd
16	1234789-HpCDF	1.04e5	1.04e5	2.08e5	40.65	1.000	1.00	NO	52.140	1.156	1.109	6.52	0.129	1.45e6	1610	901.7	1.46e6	1378	1060.2	bd	bd
17	OCDF	1.69e5	1.88e5	3.57e5	44.49	1.007	0.90	NO	101.367	0.935	0.922	7.27	0.202	1.82e6	1313	1388.9	2.07e6	1721	1203.5	bb	bb
18	13C-2378-TCDD	3.36e5	4.33e5	7.69e5	31.18	1.017	0.78	NO	98.424	1.124	1.142	2.94	0.117	5.82e6	3131	1859.6	7.48e6	1702	4394.4	bb	bb
19	13C-12378-PeCDD	3.85e5	2.41e5	6.25e5	34.06	1.111	1.60	NO	95.021	0.914	0.962	4.38	0.0793	9.44e6	1323	7136.5	5.88e6	1447	4062.7	bb	bb
20	13C-123478-HxCDD	3.01e5	2.45e5	5.46e5	36.64	0.991	1.23	NO	99.253	1.019	1.027	0.74	0.109	6.53e6	1722	3792.3	5.30e6	2900	1827.8	bd	bd
21	13C-123678-HxCDD	3.31e5	2.73e5	6.05e5	36.72	0.993	1.21	NO	100.499	1.129	1.123	1.81	0.0997	6.39e6	1722	3708.2	5.38e6	2900	1854.1	db	db
22	13C-1234678-HpCDD	2.04e5	2.02e5	4.06e5	39.99	1.082	1.01	NO	100.737	0.759	0.753	2.07	0.109	3.11e6	1520	2046.8	2.98e6	1856	1604.8	bb	bd
23	13C-OCDD	3.50e5	4.14e5	7.64e5	44.18	1.195	0.84	NO	196.567	0.713	0.726	4.08	0.101	3.73e6	1503	2482.9	4.41e6	1524	2896.2	bb	bd
24	13C-2378-TCDF	3.90e5	5.19e5	9.08e5	30.41	0.992	0.75	NO	99.283	1.327	1.337	1.60	0.163	4.75e6	5232	908.0	6.24e6	2677	2331.3	bb	bb
25	13C-12378-PeCDF	5.11e5	3.09e5	8.20e5	33.27	1.085	1.65	NO	96.445	1.198	1.242	3.08	0.140	1.29e7	3248	3969.3	8.08e6	3076	2628.3	bd	bb
26	13C-23478-PeCDF	4.99e5	3.13e5	8.11e5	33.87	1.105	1.59	NO	96.080	1.185	1.234	4.20	0.141	1.27e7	3248	3895.5	7.88e6	3076	2563.2	bb	bb
27	13C-123478-HxCDF	1.99e5	3.88e5	5.87e5	35.93	0.972	0.51	NO	99.816	1.097	1.099	0.83	0.160	4.25e6	3142	1352.4	8.42e6	4139	2035.5	bd	bd
28	13C-123678-HxCDF	2.37e5	4.57e5	6.94e5	36.03	0.975	0.52	NO	101.931	1.296	1.272	2.46	0.139	4.82e6	3142	1535.6	9.39e6	4139	2269.6	dd	dd
29	13C-234678-HxCDF	1.96e5	3.79e5	5.75e5	36.50	0.988	0.52	NO	99.528	1.074	1.079	1.03	0.163	4.17e6	3142	1328.1	8.02e6	4139	1938.8	bb	bb
30	13C-123789-HxCDF	1.81e5	3.45e5	5.26e5	37.26	1.008	0.53	NO	99.562	0.983	0.987	1.26	0.179	3.25e6	3142	1033.2	6.32e6	4139	1527.8	bd	bb
31	13C-1234678-HpCDF	1.38e5	3.17e5	4.55e5	38.76	1.049	0.44	NO	100.073	0.850	0.849	1.50	0.0989	2.42e6	1464	1649.8	5.49e6	2004	2737.3	bb	bb
32	13C-1234789-HpCDF	1.08e5	2.52e5	3.60e5	40.64	1.099	0.43	NO	99.503	0.672	0.675	2.06	0.124	1.57e6	1464	1069.6	3.56e6	2004	1776.8	bb	bd
33	13C-1234-TCDD	3.01e5	3.84e5	6.84e5	30.65	0.000	0.78	NO	100.000	1.000	1.000	0.00	0.133	3.99e6	3131	1273.4	5.12e6	1702	3008.1	bb	bb
34	13C-123789-HxCDD	2.92e5	2.44e5	5.36e5	36.96	0.000	1.20	NO	100.000	1.000	1.000	0.00	0.112	5.63e6	1722	3266.8	4.66e6	2900	1605.8	bb	bb
35	37Cl-2378-TCDD	7.80e4		7.80e4	31.19	1.018			9.817	1.140	1.161	5.41	0.0316	1.37e6	1330	1033.5				bb	

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Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
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Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

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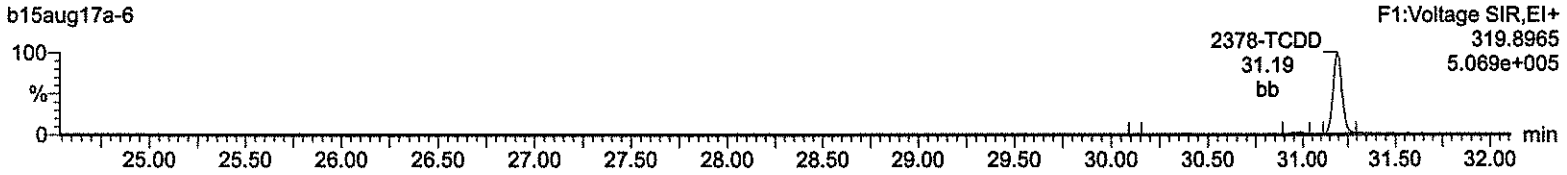

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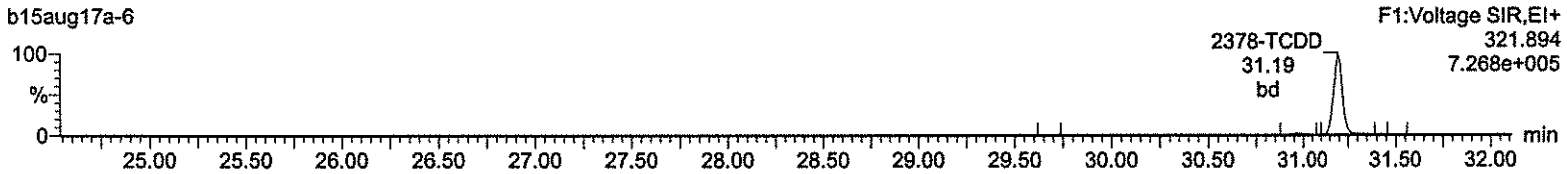

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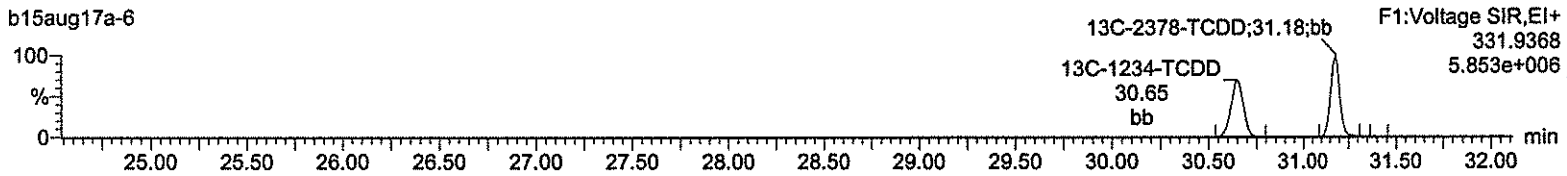

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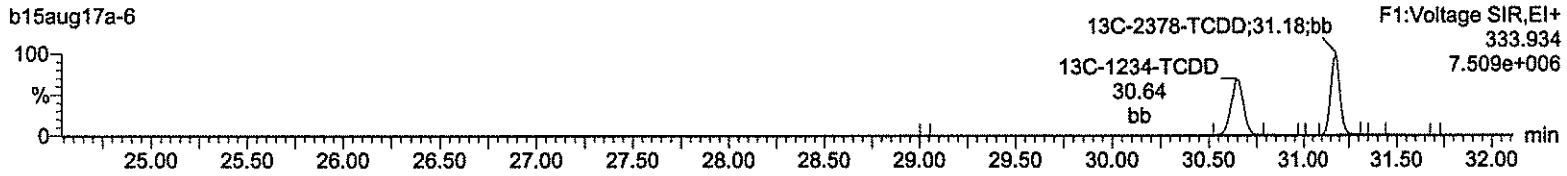

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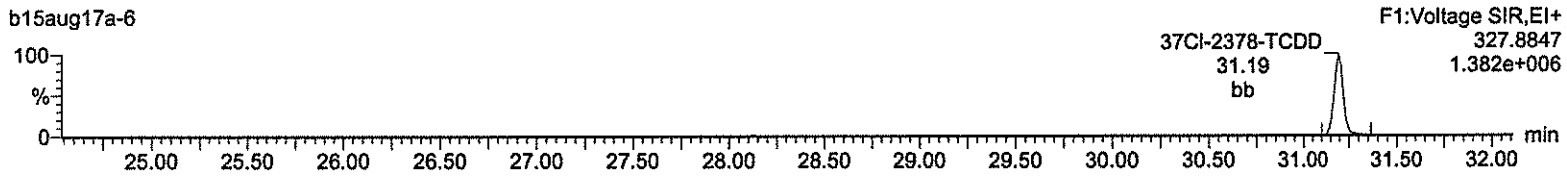

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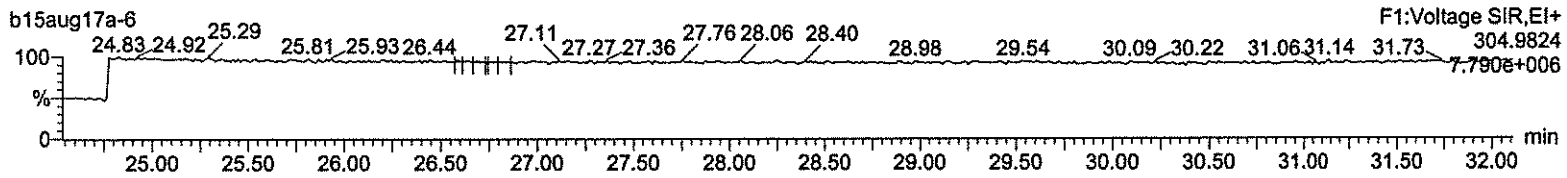

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Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

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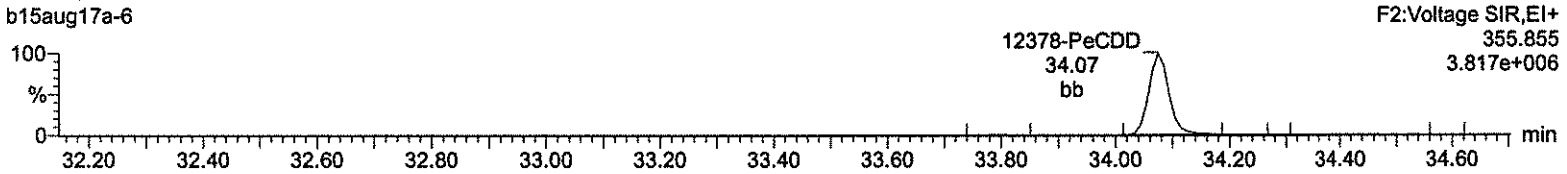

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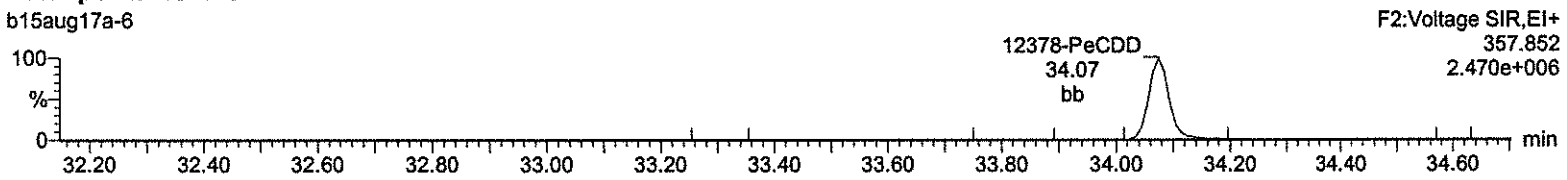

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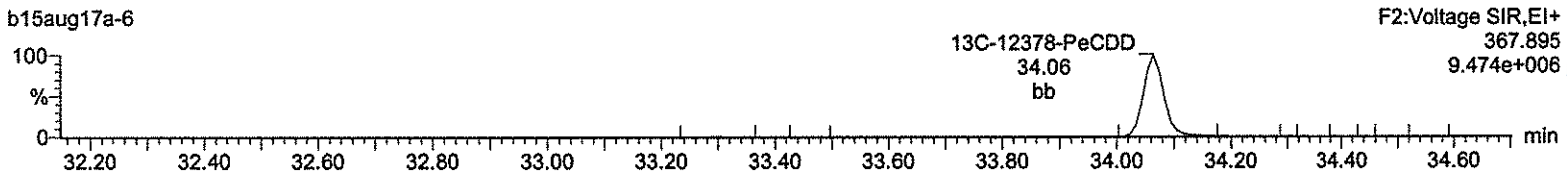

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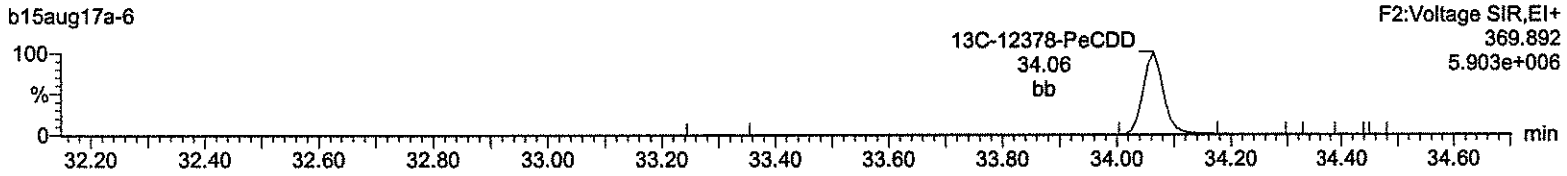

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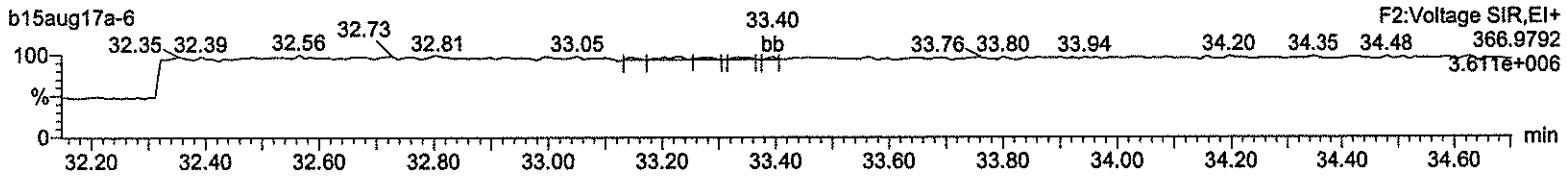

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Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

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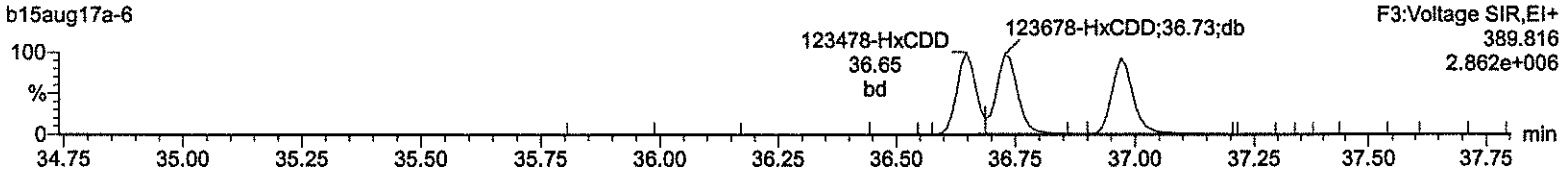

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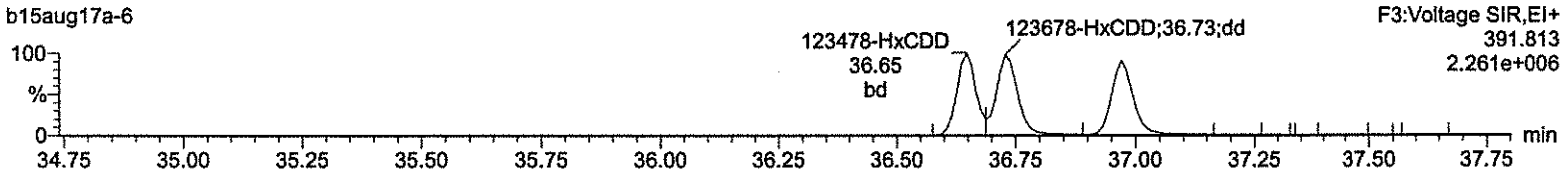

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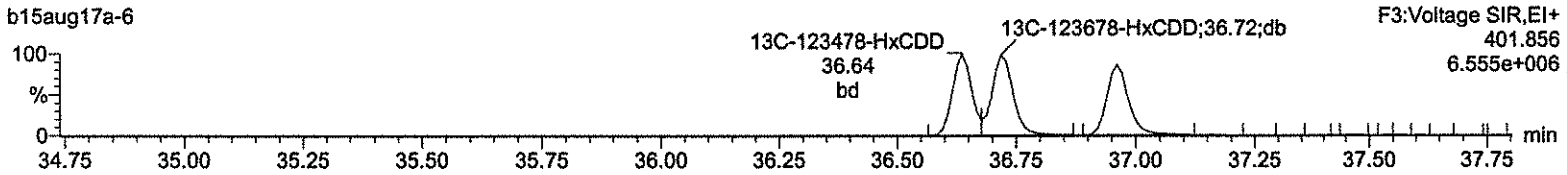

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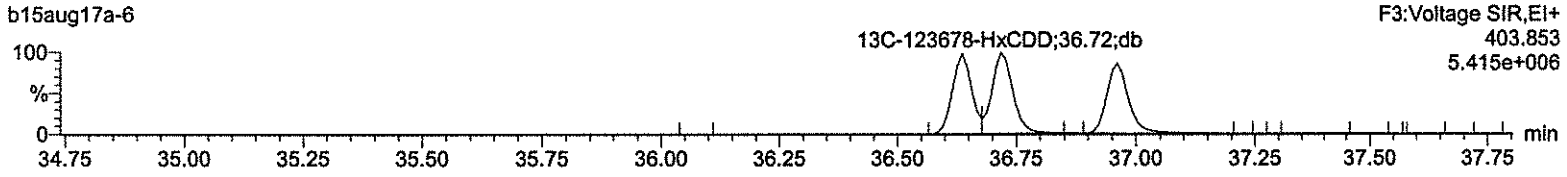

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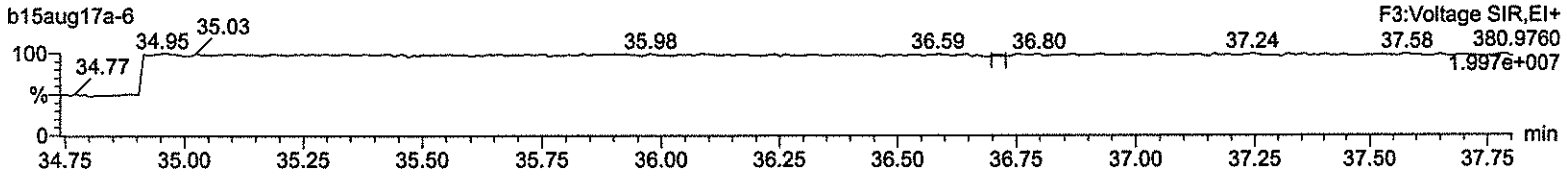

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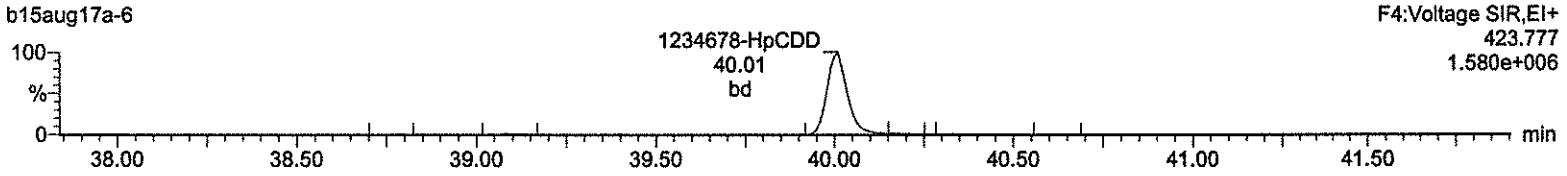
Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

Total-heptadioxins



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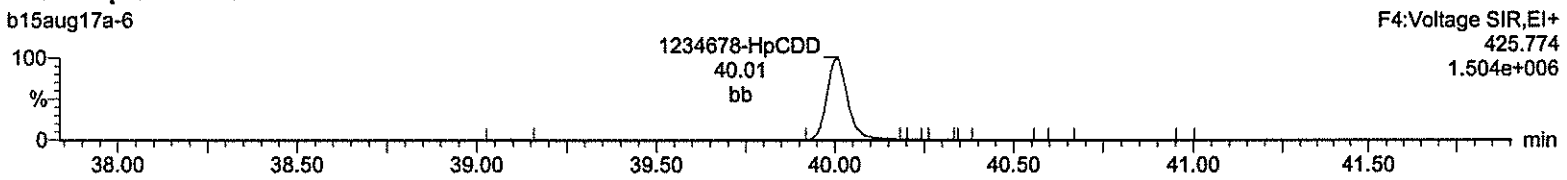

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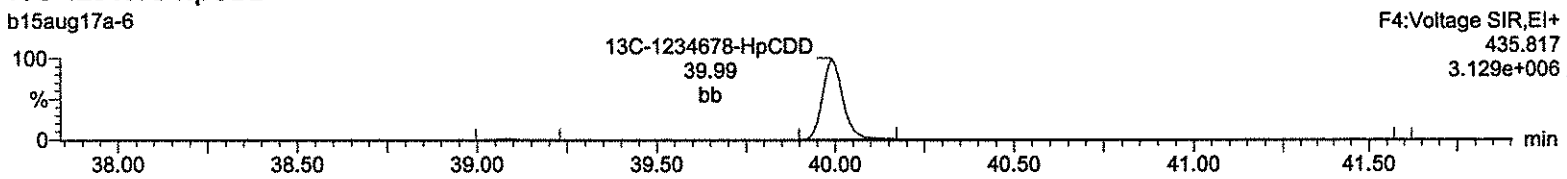

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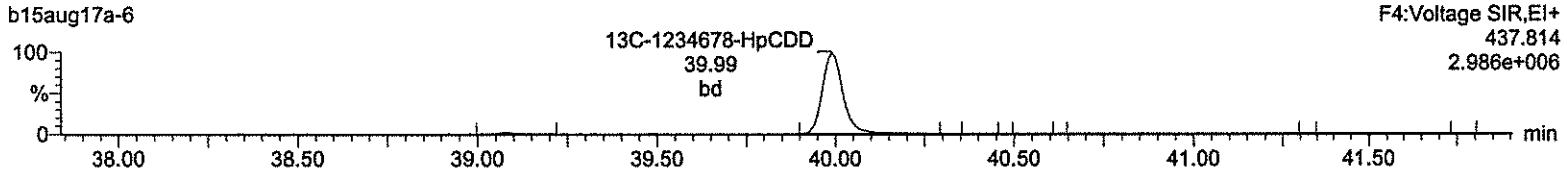

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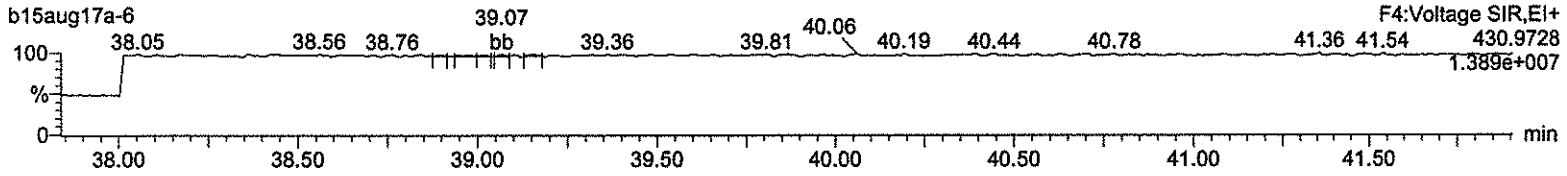

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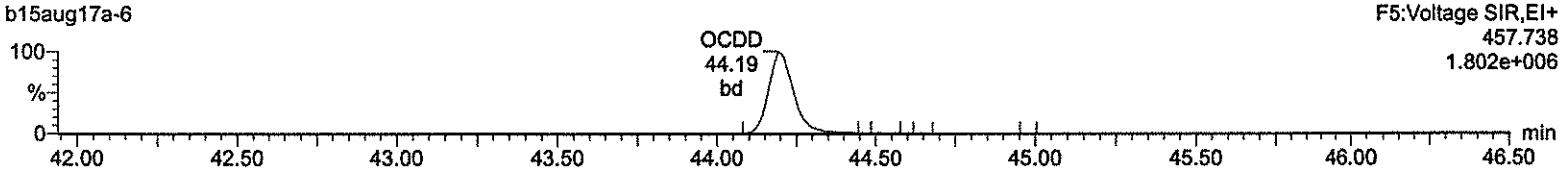
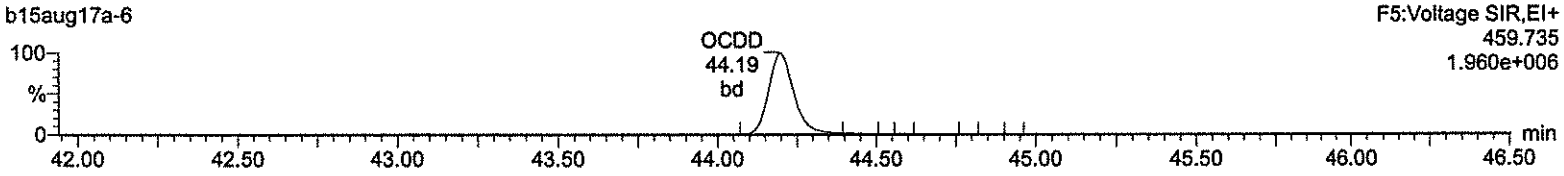
Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

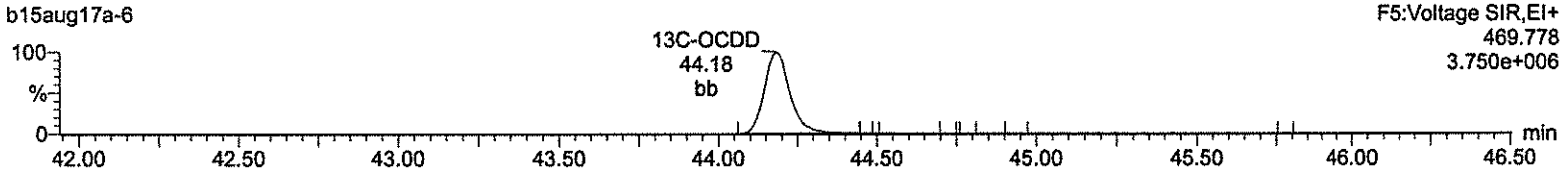
OCDD



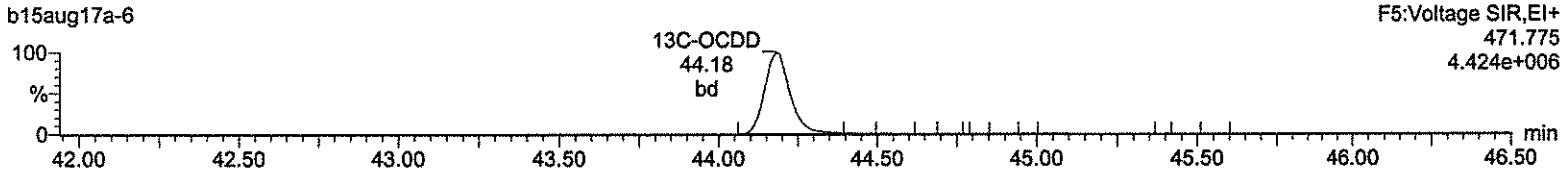
OCDD



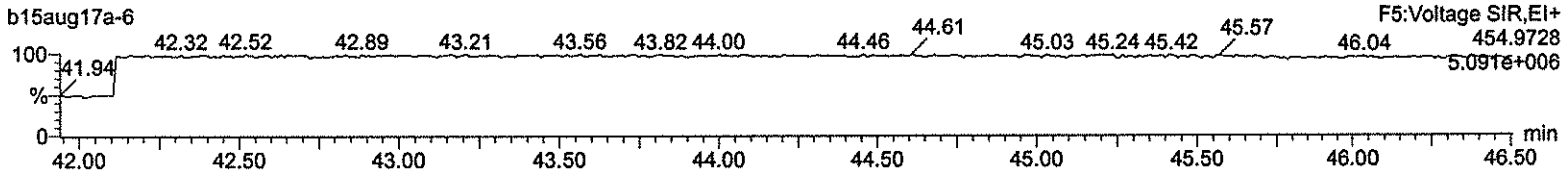
13C-OCDD



13C-OCDD



Lock Mass F5



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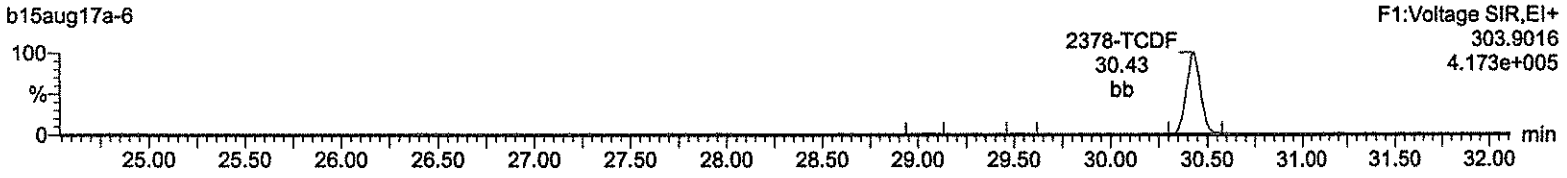
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

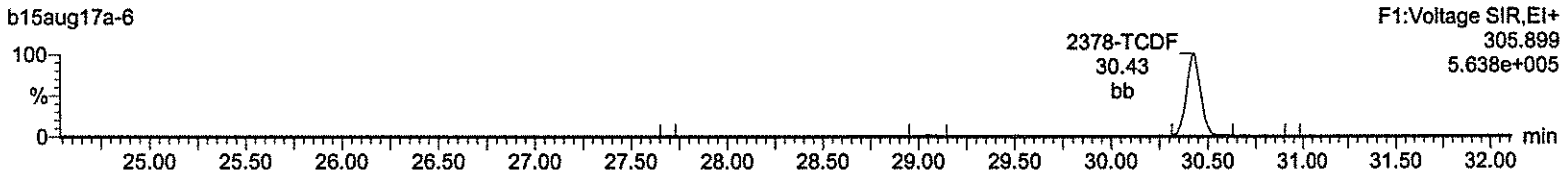
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

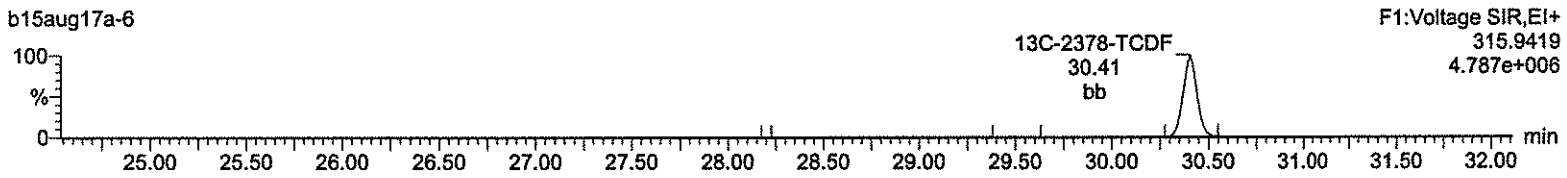
Total-tetrafurans



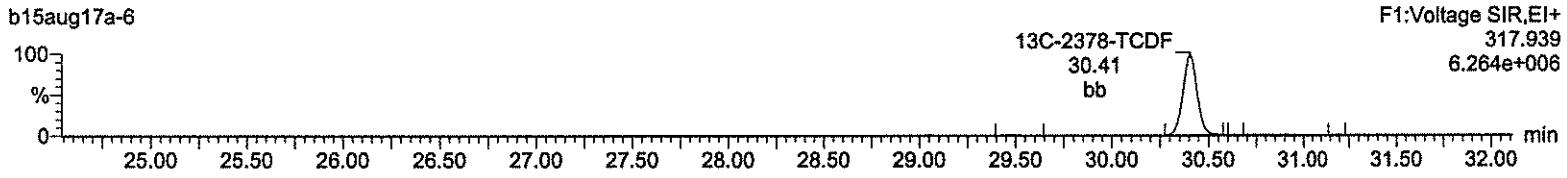
Total-tetrafurans



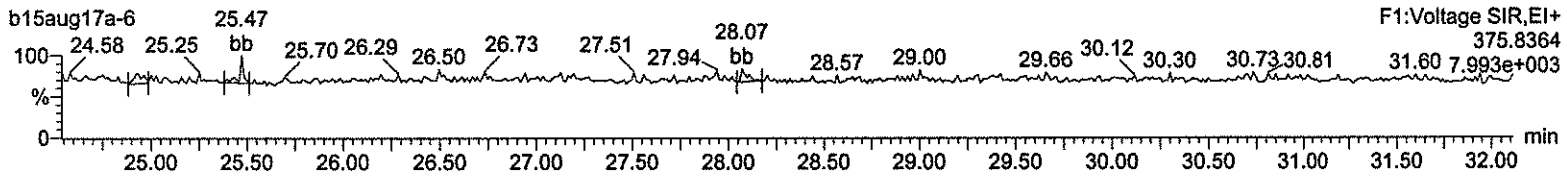
13C-2378-TCDF



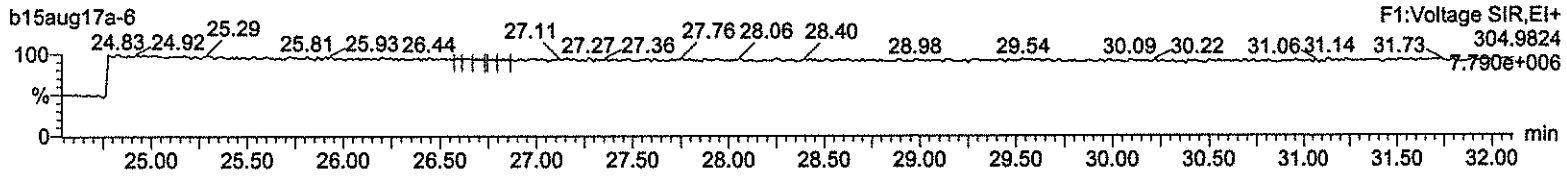
13C-2378-TCDF



HxDPE



Lock Mass F1



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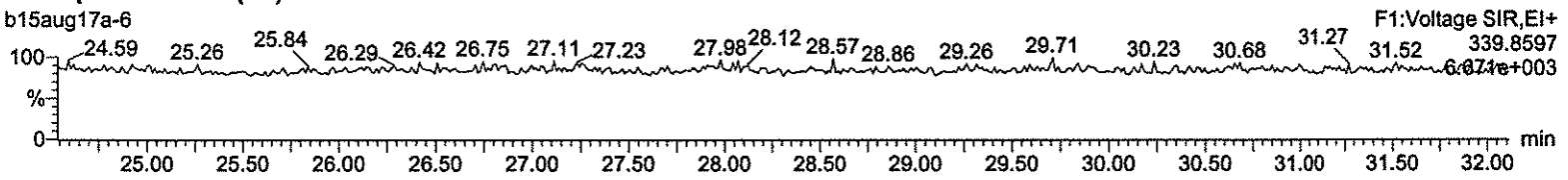
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

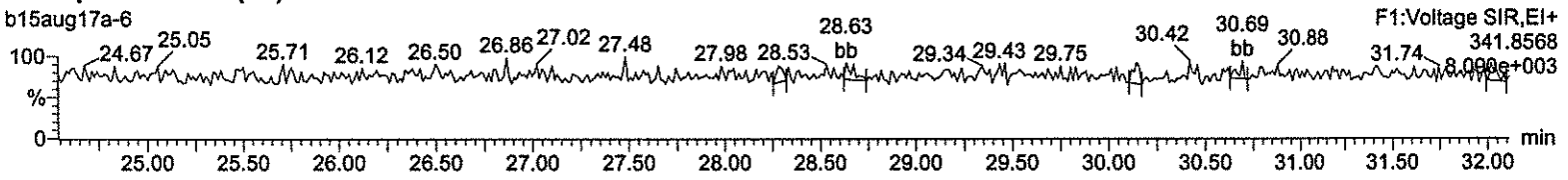
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

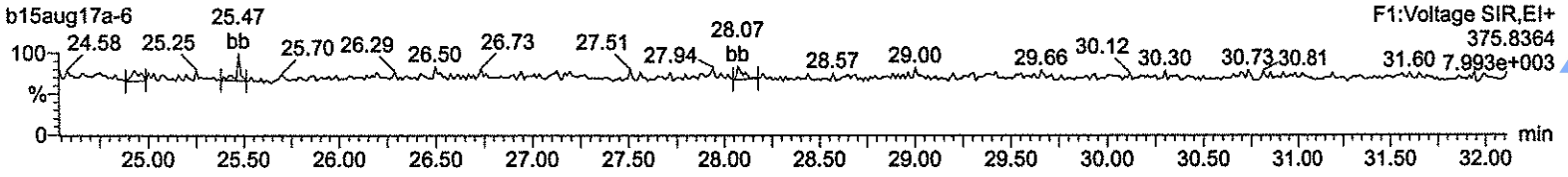
Total-pentafurans (F1)



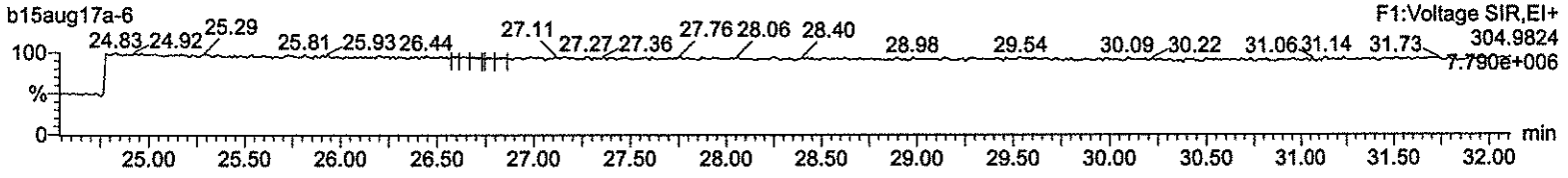
Total-pentafurans (F1)



HxDPE



Lock Mass F1



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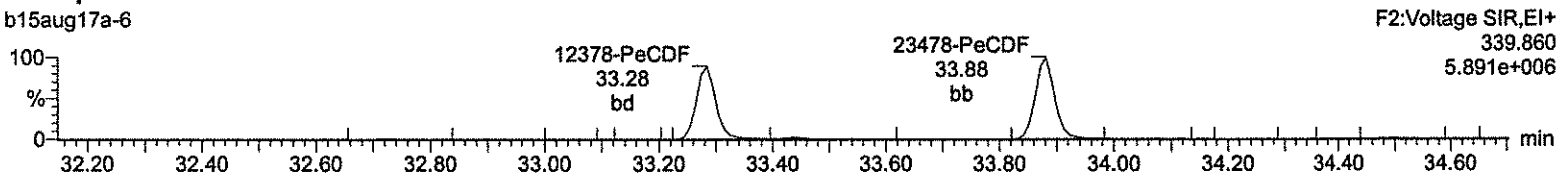
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

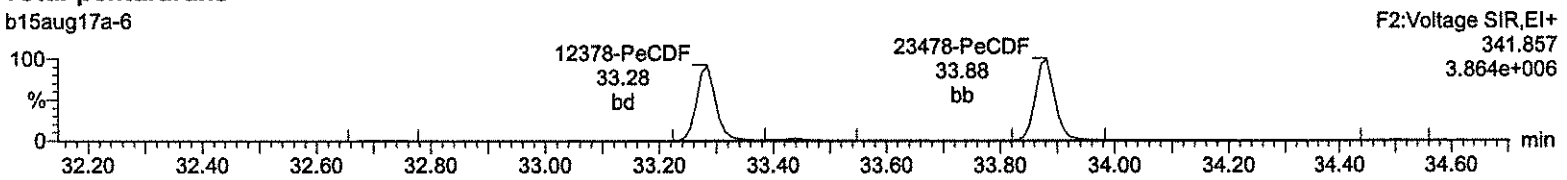
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

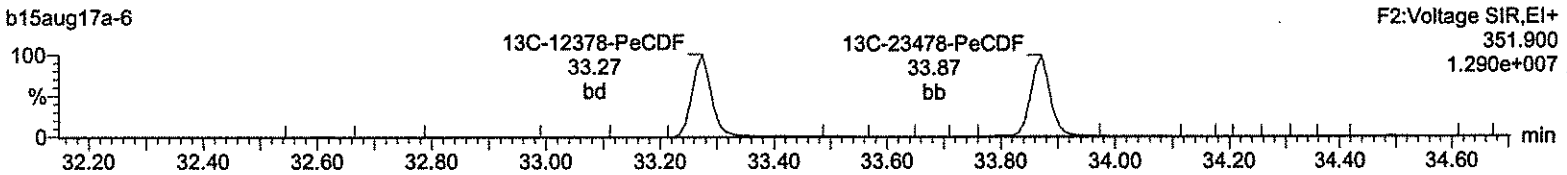
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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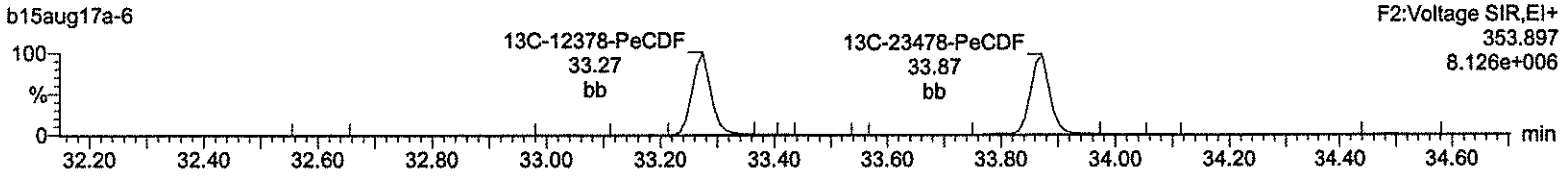
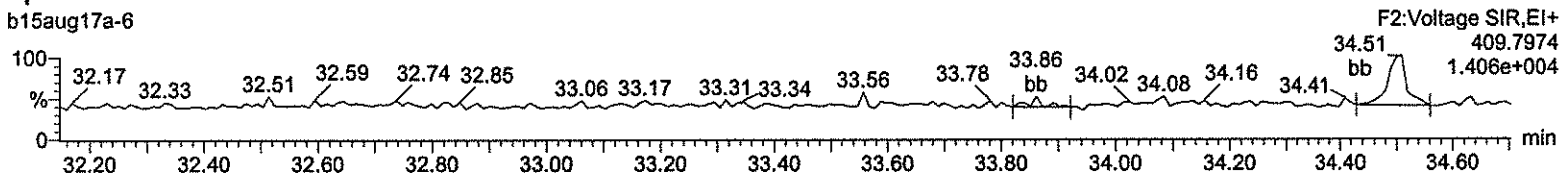
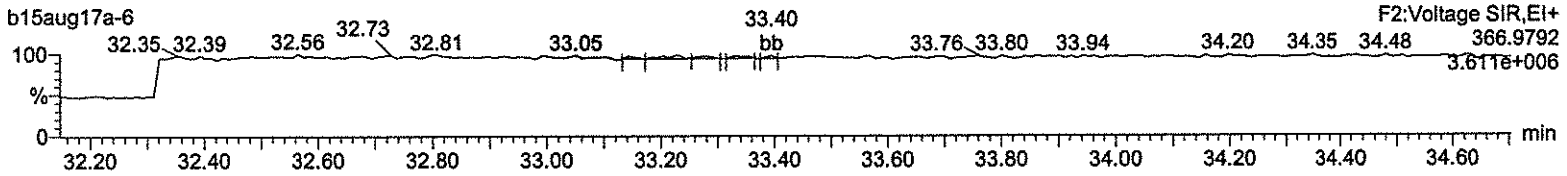


HpDPE



Lock Mass F2



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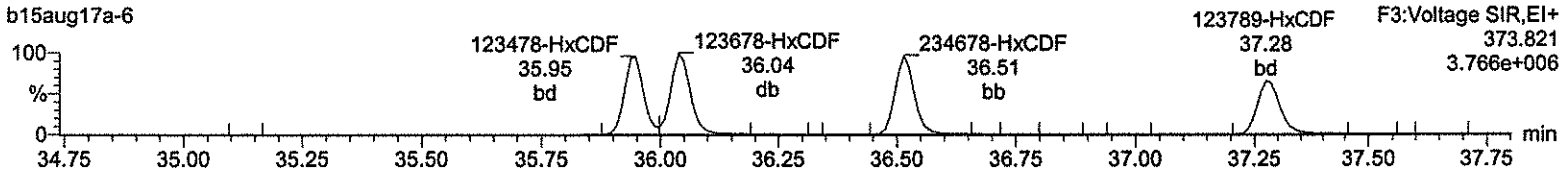
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

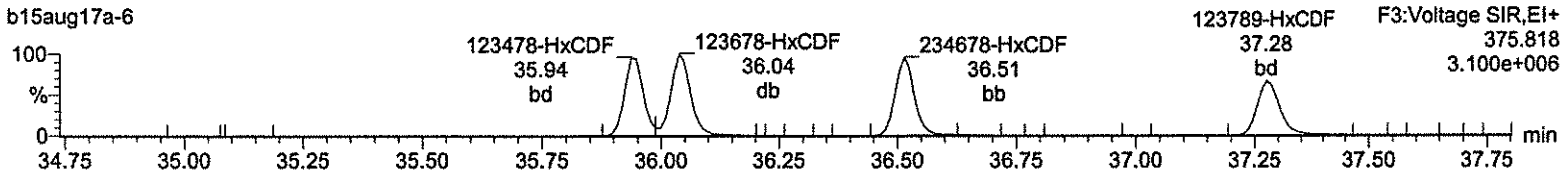
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

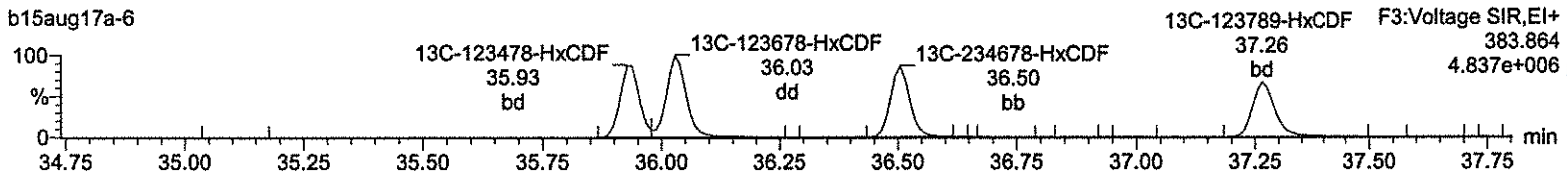
Total-hexafurans



Total-hexafurans



13C-123478-HxCDF



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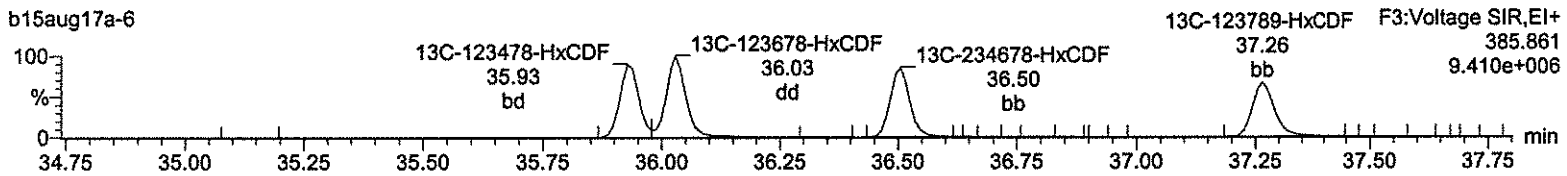
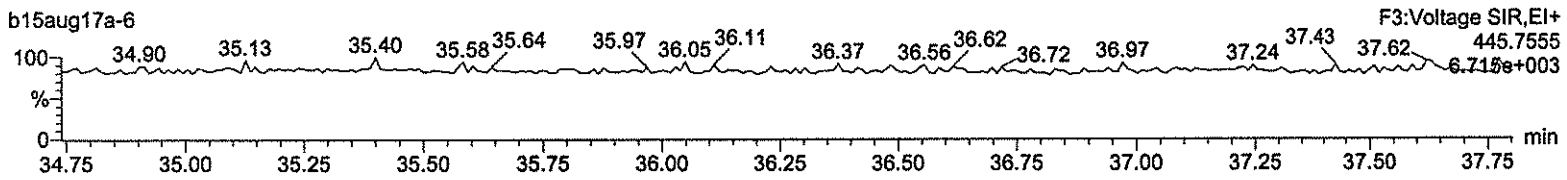
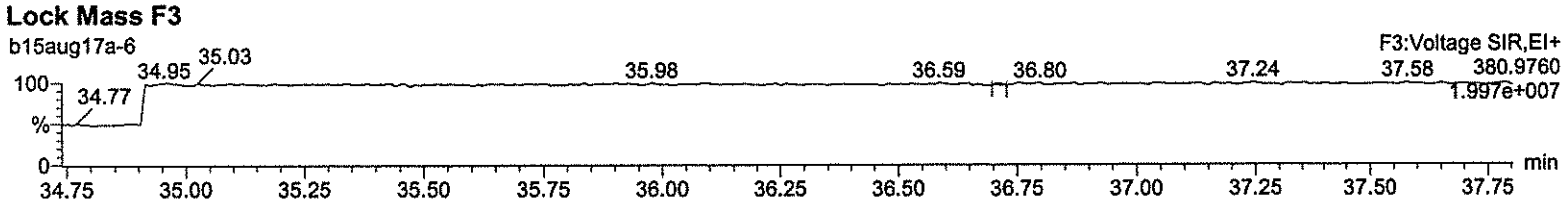


OcDPE



Lock Mass F3



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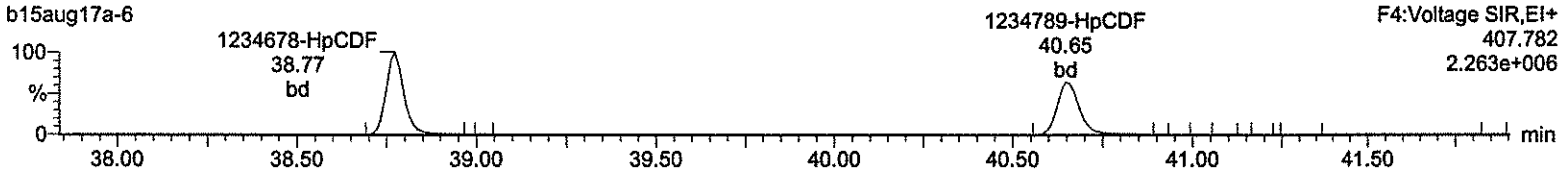
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

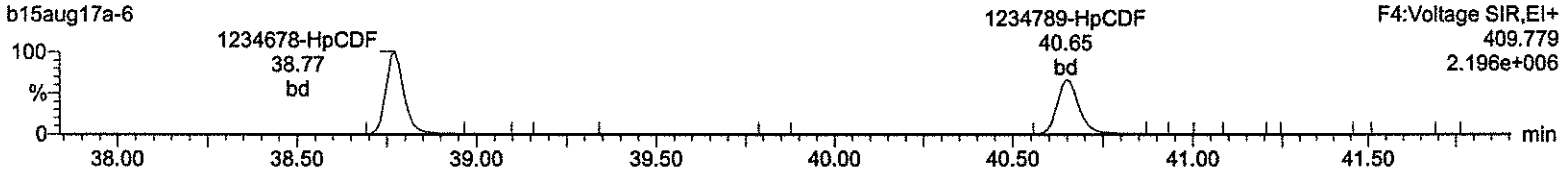
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

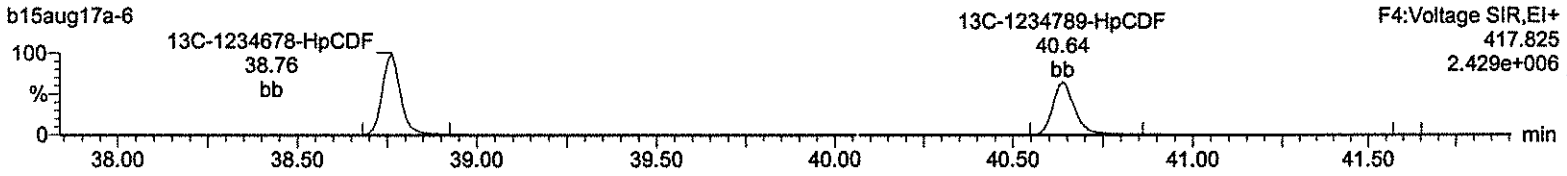
Total-heptafurans



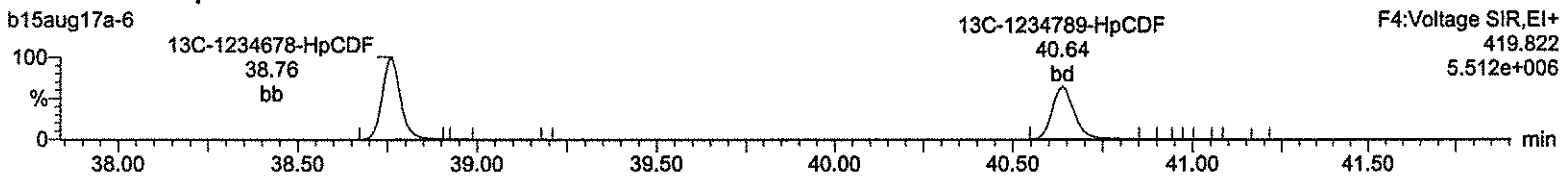
Total-heptafurans



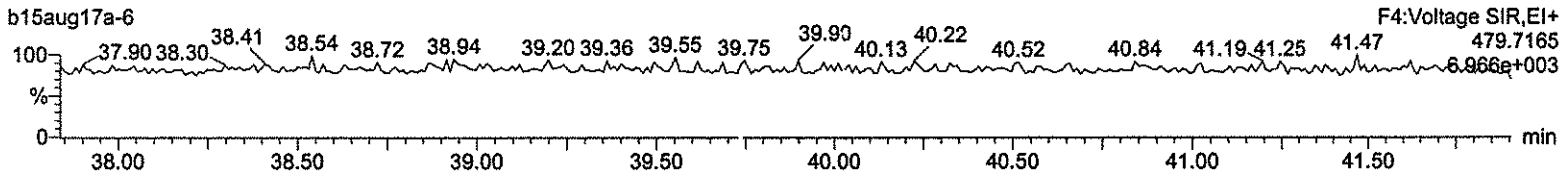
13C-1234678-HpCDF



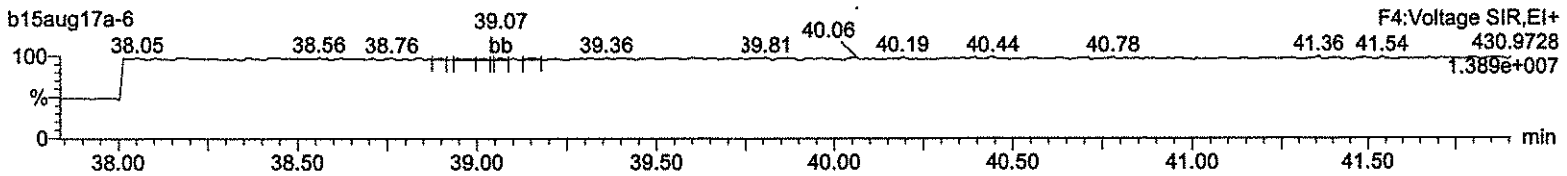
13C-1234678-HpCDF



NoDPE



Lock Mass F4



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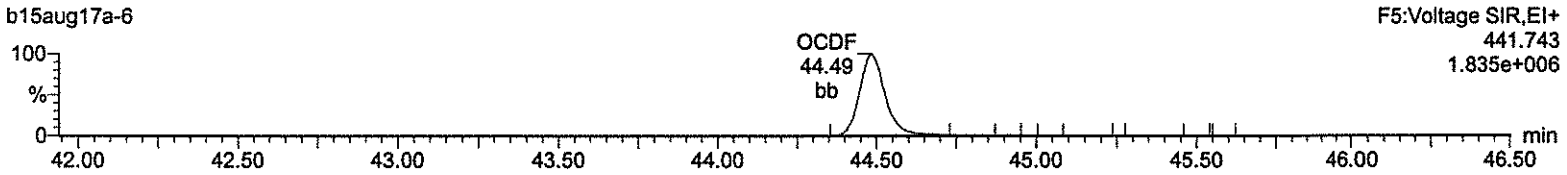
Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

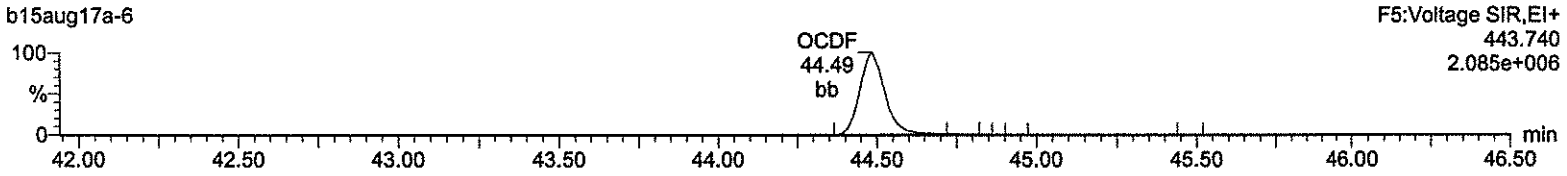
Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-6, Date: 15-Aug-2017, Time: 14:35:51, ID: CS3 UD170815-04 CS3A1

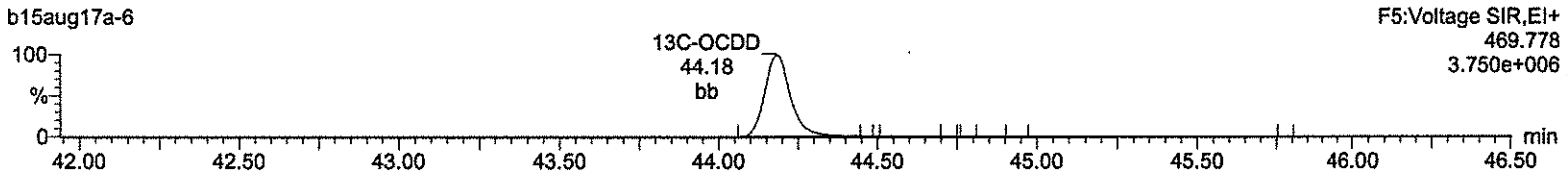
OCDF



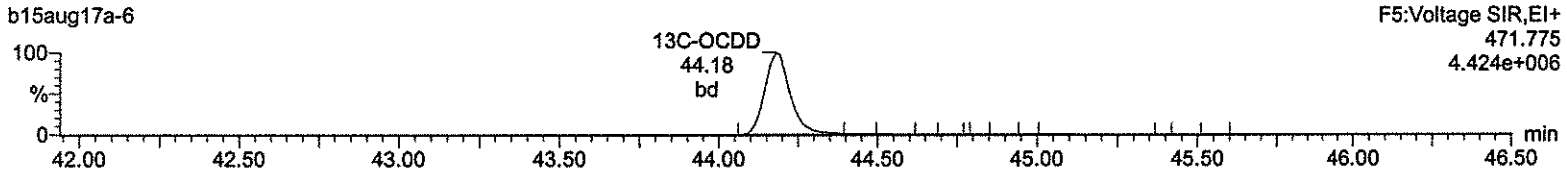
OCDF



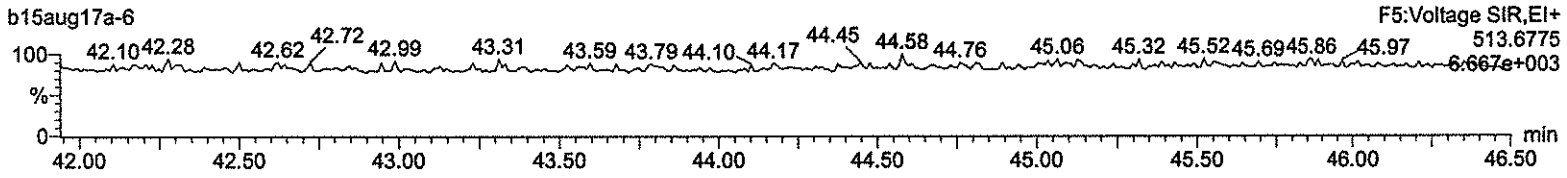
13C-OCDD



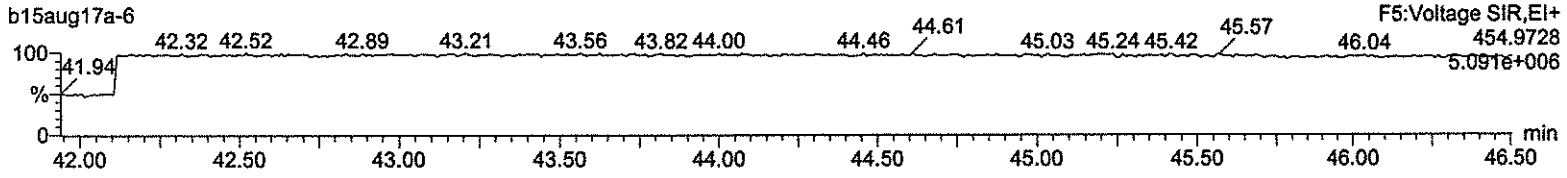
13C-OCDD



DeDPE



Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**

Method 1613 ICAL Report

Dataset: C:\MassLynx\Default.pro\ICAL Results\1613-b15aug17a.qld

Last Altered: Wednesday, August 16, 2017 10:15:01 Eastern Standard Time

Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	1.17e5	1.54e5	2.71e5	31.21	1.001	0.76	NO	40.708	0.907	0.891	4.45	0.0433	2.01e6	1275	1578.1	2.63e6	775	3389.0	bb	bb
2	12378-PeCDD	6.00e5	3.91e5	9.92e5	34.09	1.000	1.53	NO	204.989	0.809	0.789	3.38	0.118	1.49e7	2062	7207.0	9.68e6	3364	2876.6	bb	bb
3	123478-HxCDD	5.12e5	4.05e5	9.17e5	36.66	1.000	1.26	NO	209.057	0.876	0.838	4.80	0.134	1.07e7	3072	3480.6	8.43e6	1738	4850.5	bd	bd
4	123678-HxCDD	5.61e5	4.40e5	1.00e6	36.74	1.000	1.27	NO	207.824	0.873	0.840	4.71	0.124	1.13e7	3072	3673.2	8.79e6	1738	5056.0	db	db
5	123789-HxCDD	5.05e5	4.00e5	9.05e5	36.98	1.007	1.26	NO	202.674	0.825	0.814	3.19	0.133	9.74e6	3072	3169.2	7.76e6	1738	4468.7	bb	bb
6	1234678-HpCDD	3.91e5	3.78e5	7.69e5	40.01	1.000	1.03	NO	204.635	1.026	1.003	3.74	0.171	5.93e6	2030	2921.7	5.73e6	1886	3037.7	bb	bb
7	OCDD	6.11e5	6.77e5	1.29e6	44.20	1.000	0.90	NO	402.903	0.917	0.910	3.79	0.262	6.75e6	1568	4304.0	7.57e6	2094	3613.0	bb	bb
8	2378-TCDF	1.41e5	1.87e5	3.28e5	30.43	1.001	0.76	NO	40.605	0.935	0.921	2.50	0.0635	1.66e6	902	1842.0	2.20e6	1484	1480.6	bd	bb
9	12378-PeCDF	8.14e5	5.37e5	1.35e6	33.28	1.000	1.52	NO	203.423	0.836	0.822	4.18	0.0707	1.98e7	1896	10415.5	1.32e7	2566	5160.5	bd	bd
10	23478-PeCDF	8.96e5	5.94e5	1.49e6	33.88	1.000	1.51	NO	205.382	0.951	0.926	2.87	0.0643	2.26e7	1896	11892.1	1.53e7	2566	5951.7	bb	bb
11	123478-HxCDF	6.39e5	5.24e5	1.16e6	35.95	1.000	1.22	NO	207.283	1.035	0.998	5.02	0.201	1.41e7	4230	3322.3	1.15e7	5591	2064.1	bd	bd
12	123678-HxCDF	6.91e5	5.65e5	1.26e6	36.05	1.000	1.22	NO	204.437	0.955	0.934	4.26	0.195	1.45e7	4230	3431.0	1.18e7	5591	2118.8	db	db
13	234678-HxCDF	6.60e5	5.26e5	1.19e6	36.53	1.001	1.25	NO	206.772	1.068	1.033	4.35	0.209	1.33e7	4230	3136.5	1.06e7	5591	1900.6	bd	bb
14	123789-HxCDF	5.38e5	4.49e5	9.87e5	37.29	1.000	1.20	NO	209.459	0.998	0.953	4.84	0.297	9.73e6	4230	2301.2	7.97e6	5591	1425.2	bb	bd
15	1234678-HpCDF	4.85e5	4.78e5	9.63e5	38.78	1.001	1.01	NO	206.922	1.134	1.097	3.98	0.167	7.95e6	2775	2865.8	7.91e6	2394	3303.7	bb	bb
16	1234789-HpCDF	3.99e5	3.94e5	7.93e5	40.66	1.000	1.01	NO	213.285	1.183	1.109	6.52	0.249	5.60e6	2775	2018.8	5.50e6	2394	2296.8	bb	bd
17	OCDF	6.58e5	7.29e5	1.39e6	44.49	1.007	0.90	NO	428.390	0.988	0.922	7.27	0.254	7.04e6	2317	3038.6	7.85e6	1276	6157.5	bd	bb
18	13C-2378-TCDD	3.30e5	4.18e5	7.47e5	31.18	1.017	0.79	NO	99.268	1.134	1.142	2.94	0.116	5.87e6	2939	1997.3	7.43e6	1645	4514.3	bb	bb
19	13C-12378-PeCDD	3.73e5	2.40e5	6.13e5	34.08	1.112	1.56	NO	96.659	0.929	0.962	4.38	0.0916	8.89e6	1527	5820.4	5.57e6	1518	3670.4	bb	bd
20	13C-123478-HxCDD	2.88e5	2.36e5	5.24e5	36.65	0.991	1.22	NO	100.835	1.036	1.027	0.74	0.103	5.87e6	1822	3223.2	4.74e6	2345	2021.6	bd	bd
21	13C-123678-HxCDD	3.15e5	2.59e5	5.73e5	36.73	0.993	1.22	NO	100.925	1.134	1.123	1.81	0.0942	6.34e6	1822	3480.5	5.33e6	2345	2274.7	db	db
22	13C-1234678-HpCDD	1.89e5	1.86e5	3.75e5	40.00	1.082	1.02	NO	98.455	0.742	0.753	2.07	0.113	2.87e6	1885	1522.9	2.80e6	1465	1909.5	bb	bd
23	13C-OCDD	3.24e5	3.79e5	7.02e5	44.19	1.195	0.86	NO	191.414	0.694	0.726	4.08	0.114	3.54e6	1399	2530.6	4.15e6	1872	2218.2	bb	bb
24	13C-2378-TCDF	3.77e5	5.01e5	8.78e5	30.41	0.992	0.75	NO	99.615	1.331	1.337	1.60	0.159	4.38e6	4625	946.5	5.87e6	2725	2155.1	bb	bb
25	13C-12378-PeCDF	4.98e5	3.10e5	8.08e5	33.28	1.086	1.60	NO	98.604	1.225	1.242	3.08	0.128	1.18e7	3103	3810.1	7.23e6	2402	3008.3	bd	bd
26	13C-23478-PeCDF	4.82e5	3.01e5	7.83e5	33.87	1.105	1.60	NO	96.249	1.187	1.234	4.20	0.129	1.15e7	3103	3711.6	7.45e6	2402	3099.3	bb	bb
27	13C-123478-HxCDF	1.90e5	3.72e5	5.62e5	35.94	0.972	0.51	NO	101.187	1.112	1.099	0.83	0.118	4.14e6	2992	1382.9	8.08e6	2131	3793.1	bd	bd
28	13C-123678-HxCDF	2.25e5	4.33e5	6.58e5	36.04	0.975	0.52	NO	102.282	1.301	1.272	2.46	0.102	4.60e6	2992	1538.7	8.74e6	2131	4100.8	dd	dd
29	13C-234678-HxCDF	1.85e5	3.70e5	5.55e5	36.51	0.987	0.50	NO	101.740	1.098	1.079	1.03	0.121	3.81e6	2992	1272.5	7.50e6	2131	3519.4	bb	bd
30	13C-123789-HxCDF	1.71e5	3.23e5	4.94e5	37.28	1.008	0.53	NO	99.016	0.977	0.987	1.26	0.132	3.00e6	2992	1001.8	5.76e6	2131	2705.1	bd	bb
31	13C-1234678-HpCDF	1.30e5	2.94e5	4.24e5	38.76	1.048	0.44	NO	98.803	0.839	0.849	1.50	0.118	2.16e6	1230	1755.9	4.89e6	2708	1804.8	bb	bb
32	13C-1234789-HpCDF	1.00e5	2.35e5	3.35e5	40.65	1.099	0.43	NO	98.248	0.663	0.675	2.06	0.148	1.40e6	1230	1138.5	3.22e6	2708	1189.5	bb	bd
33	13C-1234-TCDD	2.92e5	3.67e5	6.59e5	30.66	0.000	0.79	NO	100.000	1.000	1.000	0.00	0.133	3.83e6	2939	1301.9	4.91e6	1645	2982.4	bb	bb
34	13C-123789-HxCDD	2.74e5	2.32e5	5.06e5	36.97	0.000	1.18	NO	100.000	1.000	1.000	0.00	0.106	5.33e6	1822	2926.5	4.36e6	2345	1858.3	bb	bd
35	37Cl-2378-TCDD	3.07e5		3.07e5	31.21	1.018			40.095	1.164	1.161	5.41	0.0306	5.21e6	1226	4253.7				bb	

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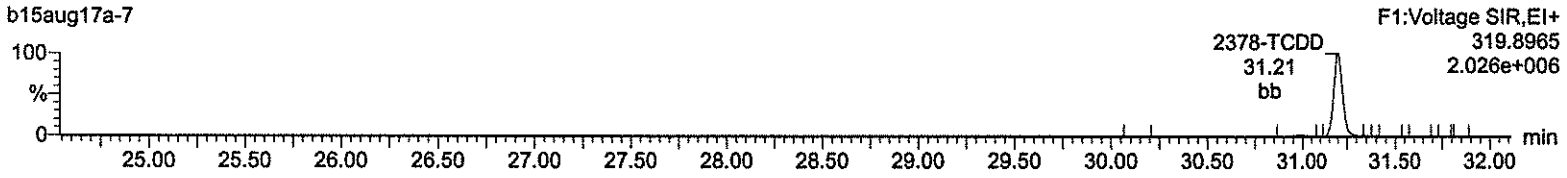
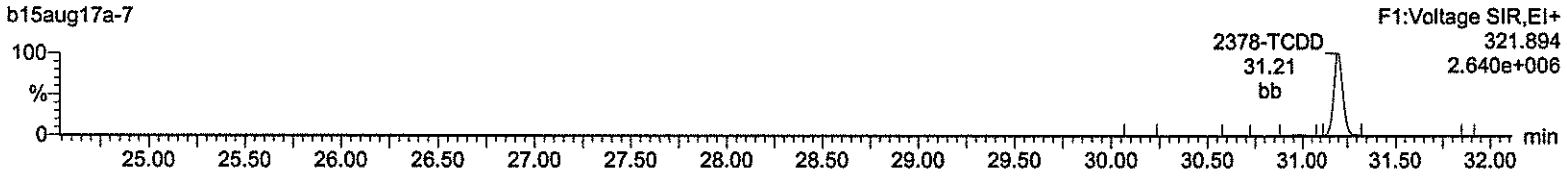
Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

Total-tetradioxins



Total-tetradioxins



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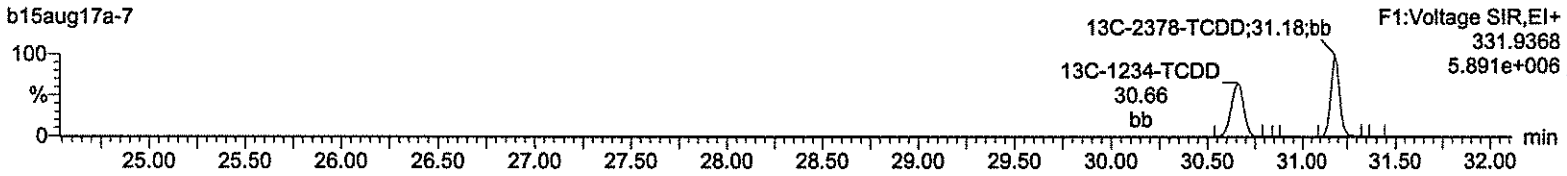

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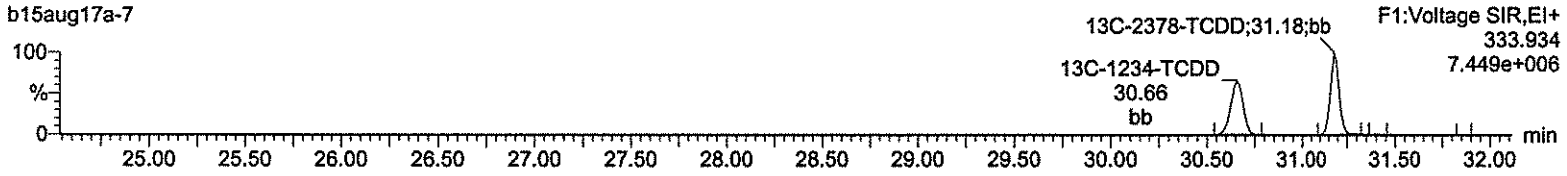

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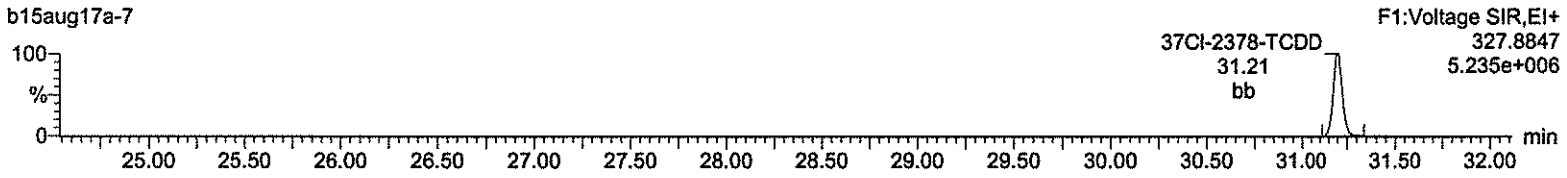

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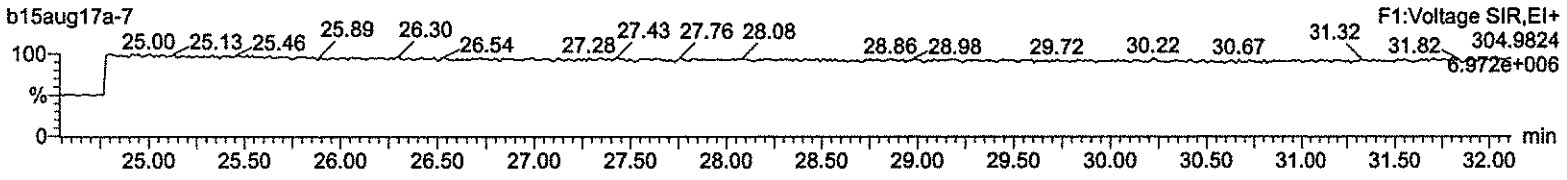

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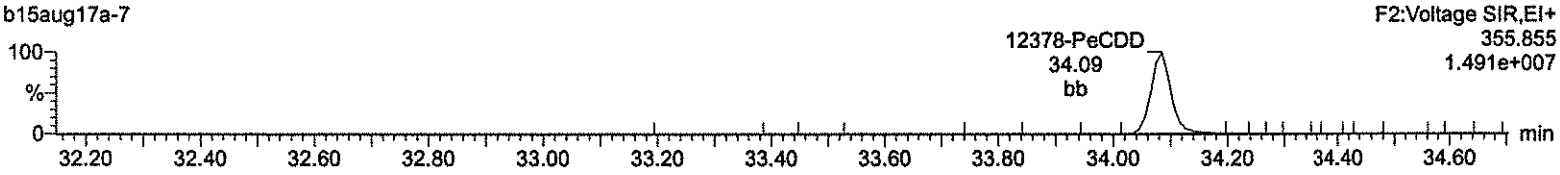
Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

Total-pentadioxins



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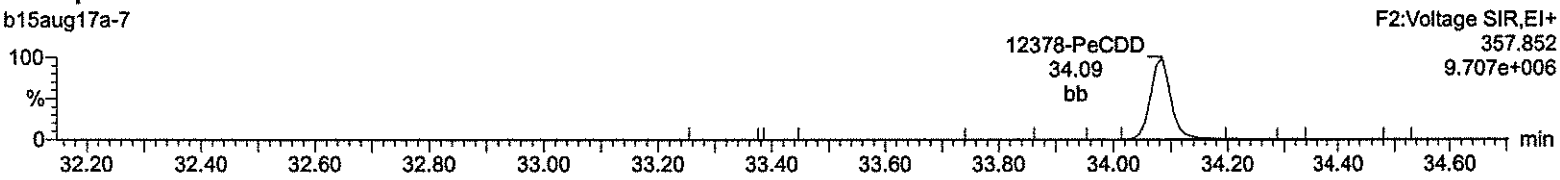

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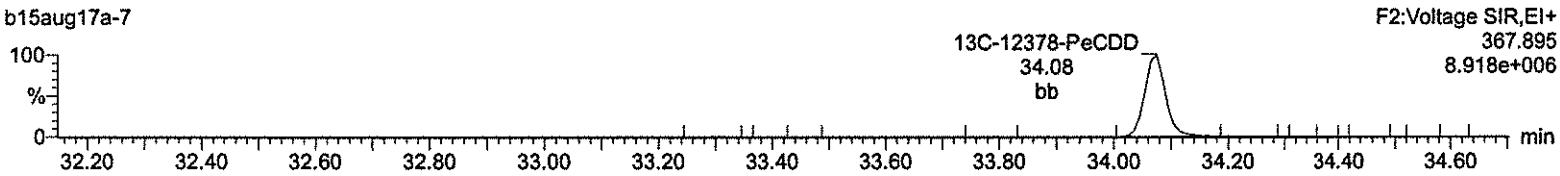

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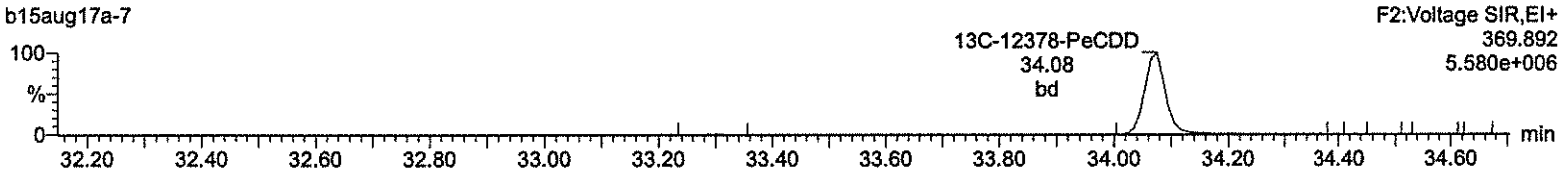

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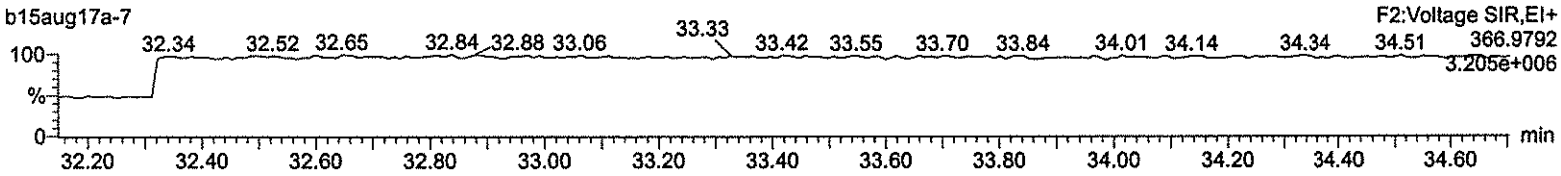

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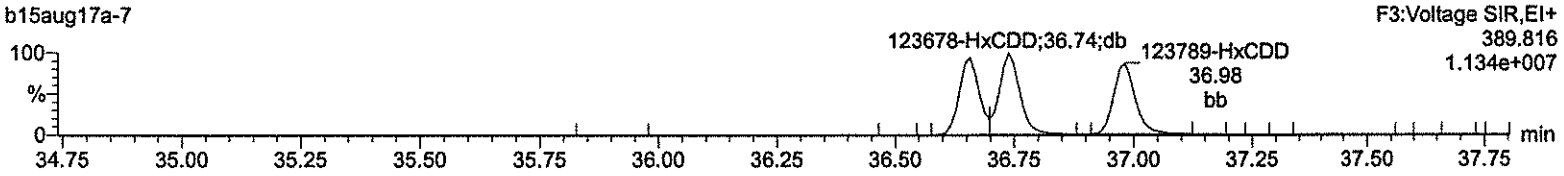
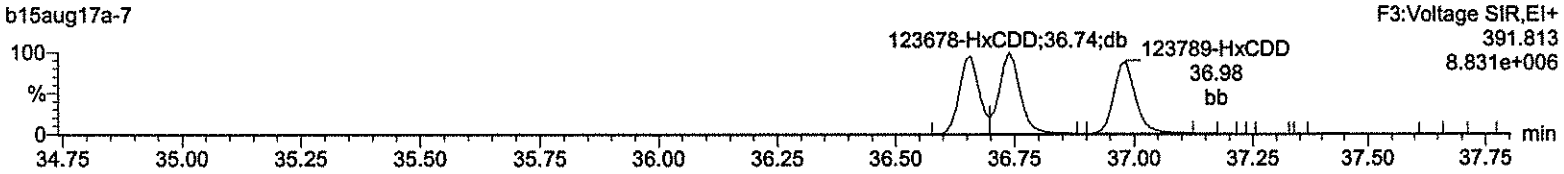
Total-hexadioxins



Total-hexadioxins



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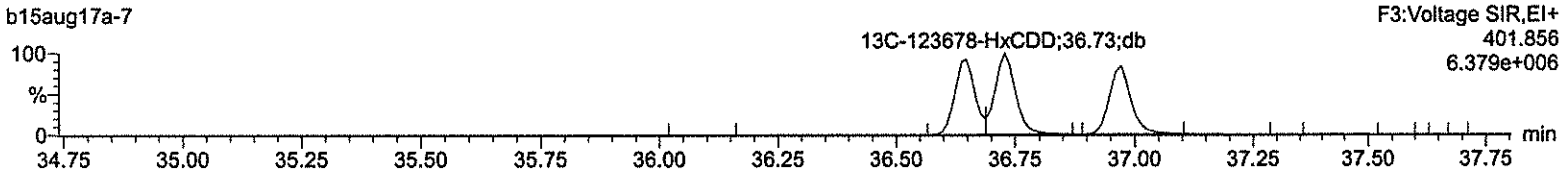

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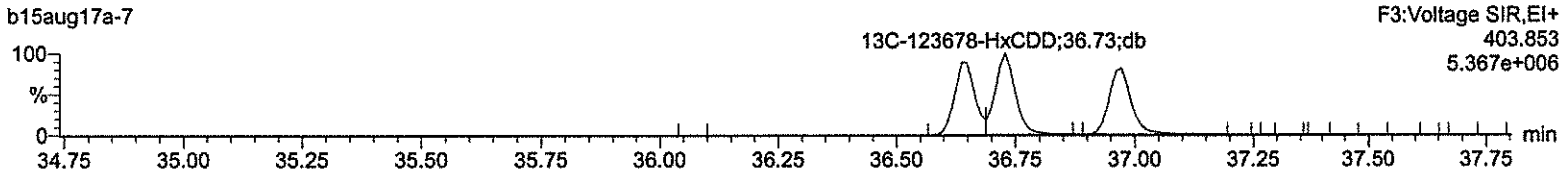
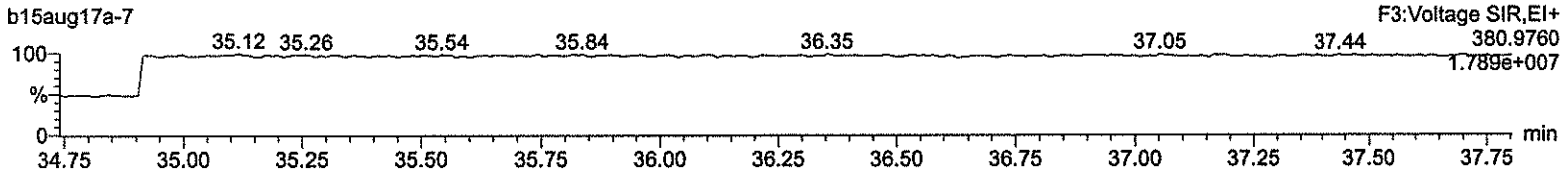


Lock Mass F3



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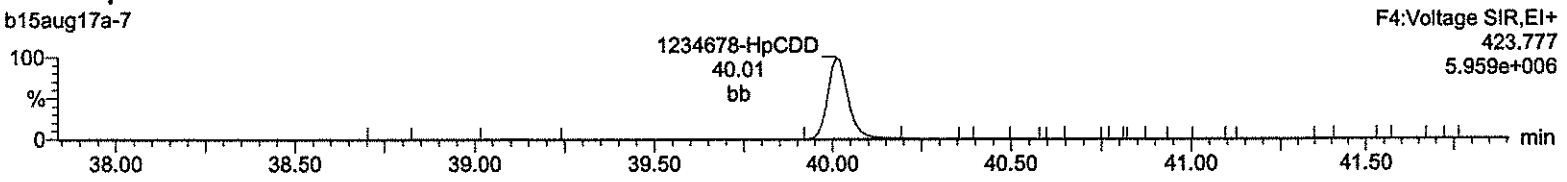
Total-heptadioxins



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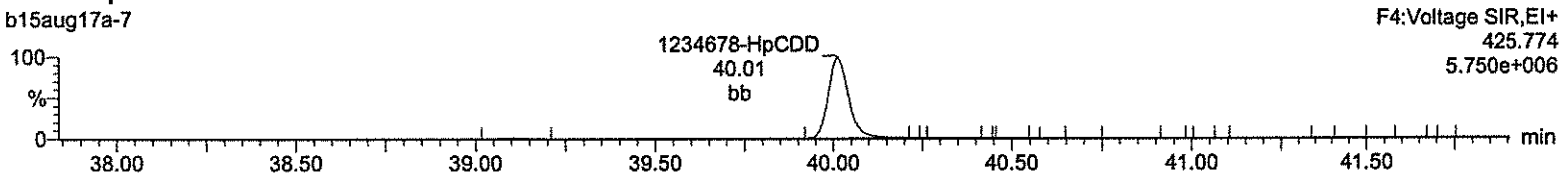

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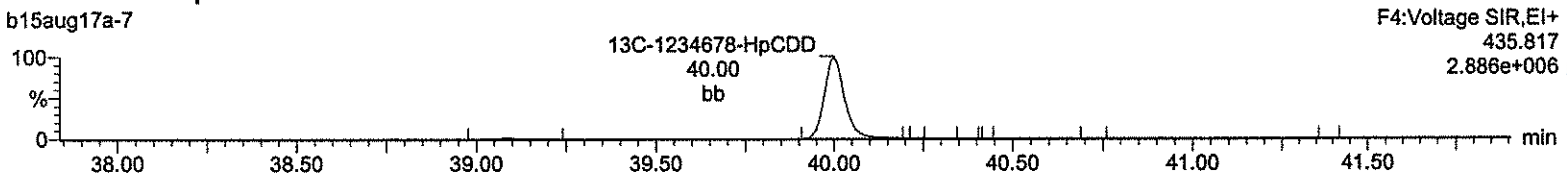

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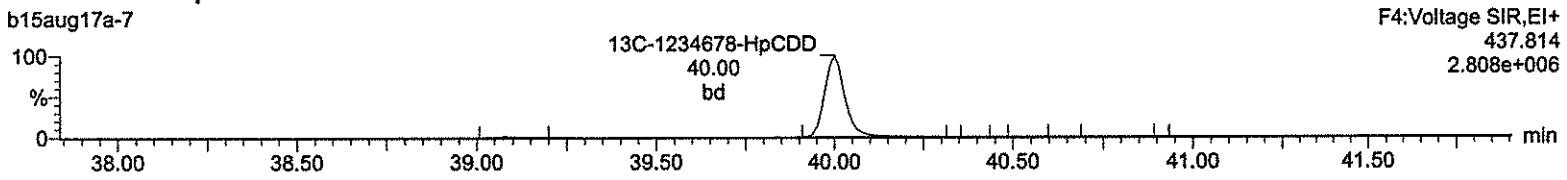
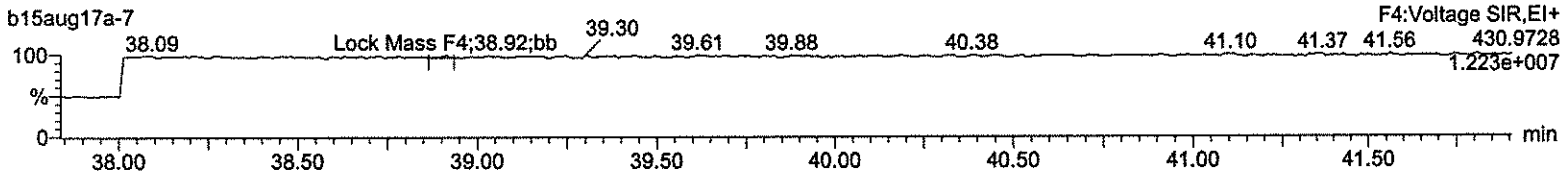


Lock Mass F4



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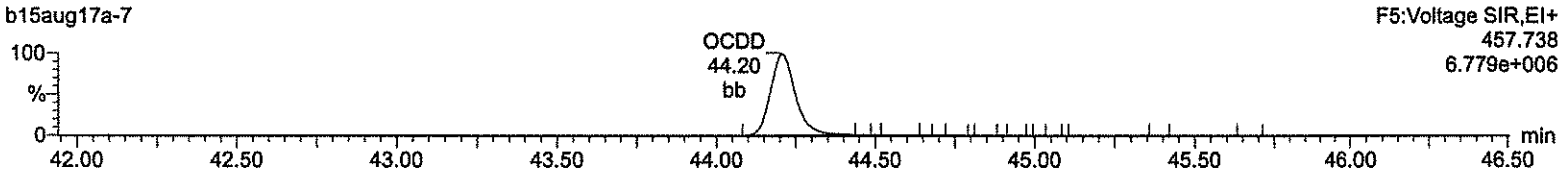

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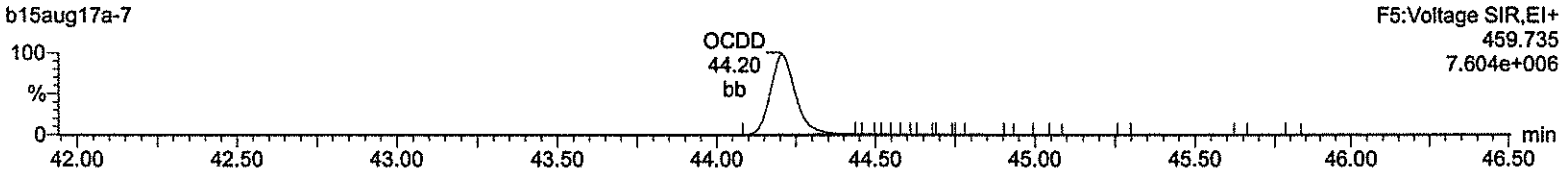

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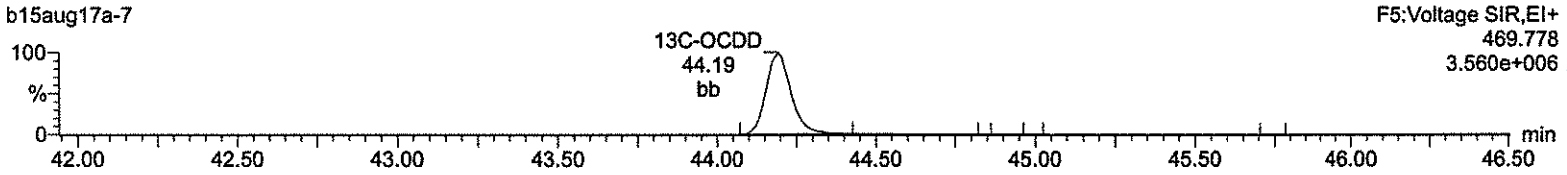

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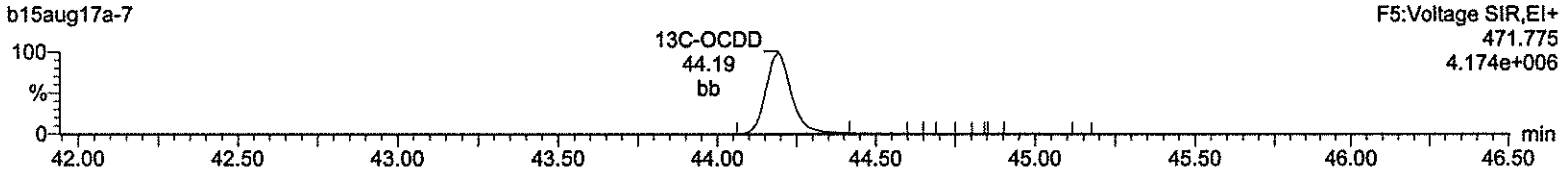

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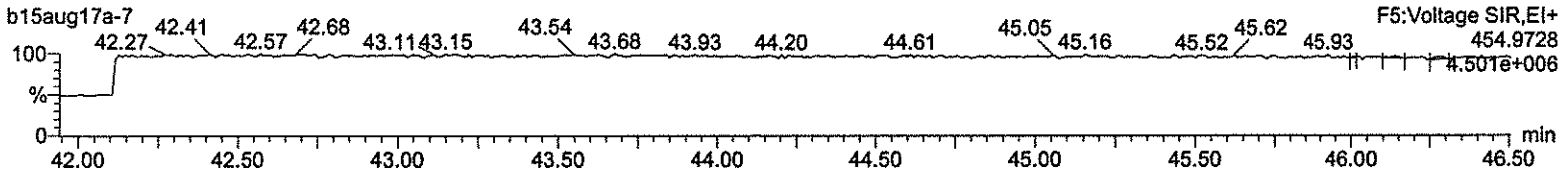

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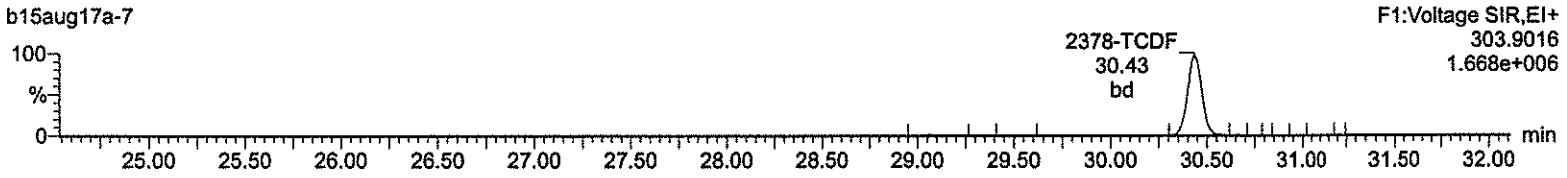
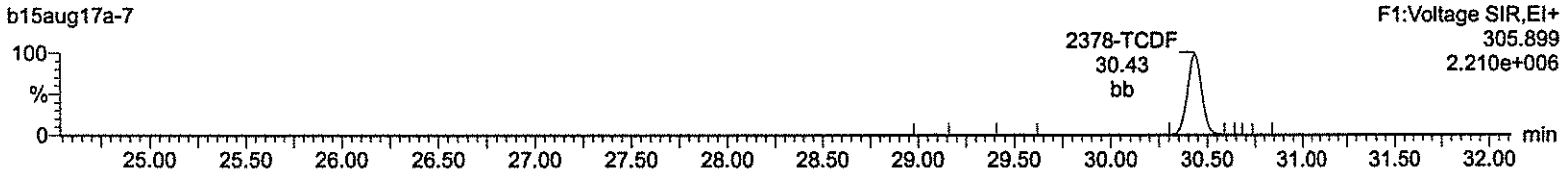
Total-tetrafurans



Total-tetrafurans



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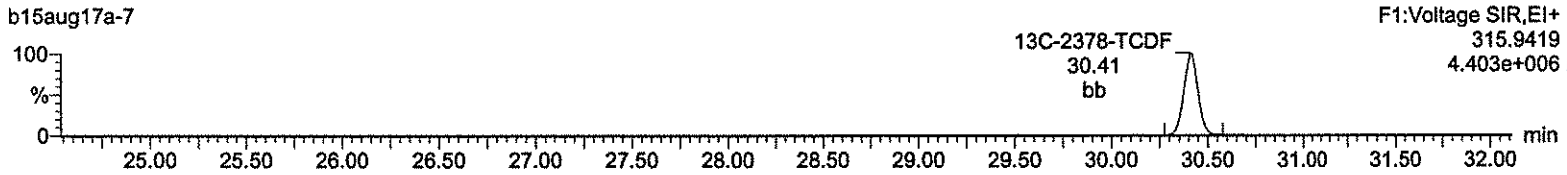

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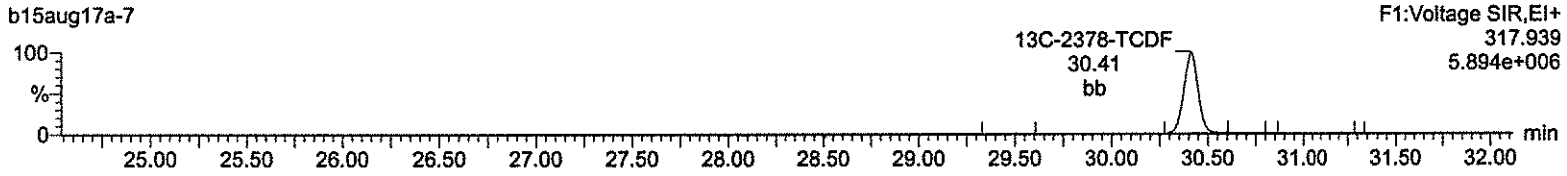

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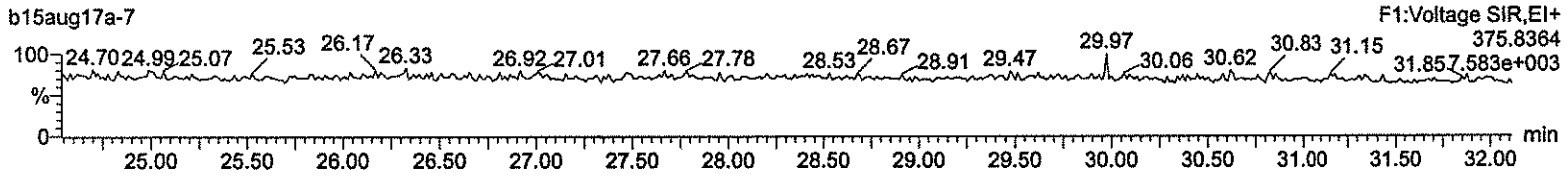
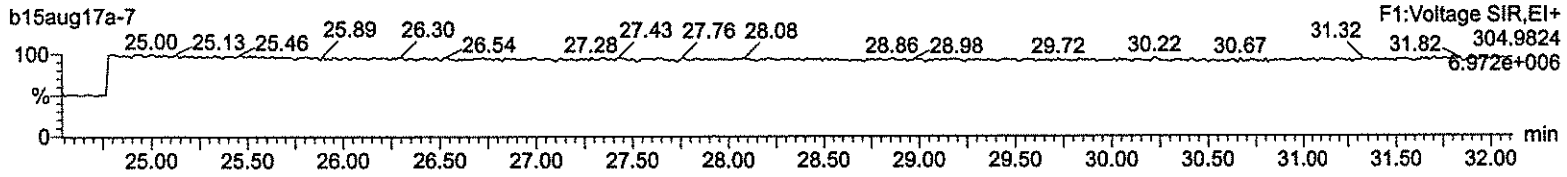


Lock Mass F1



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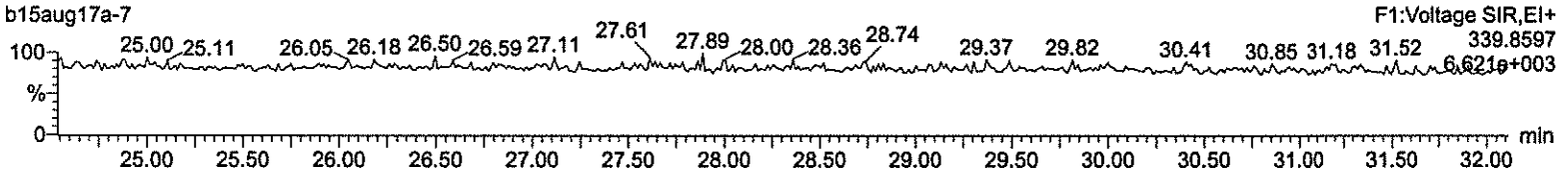
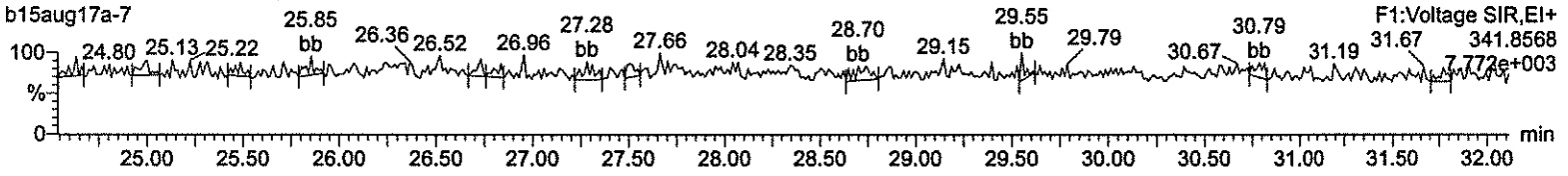
Total-pentafurans (F1)



Total-pentafurans (F1)



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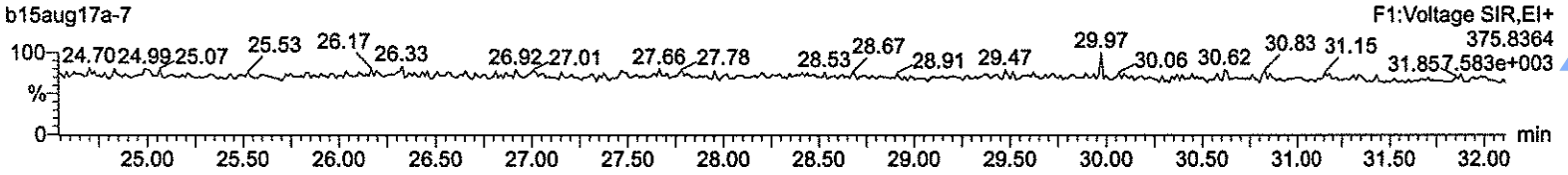

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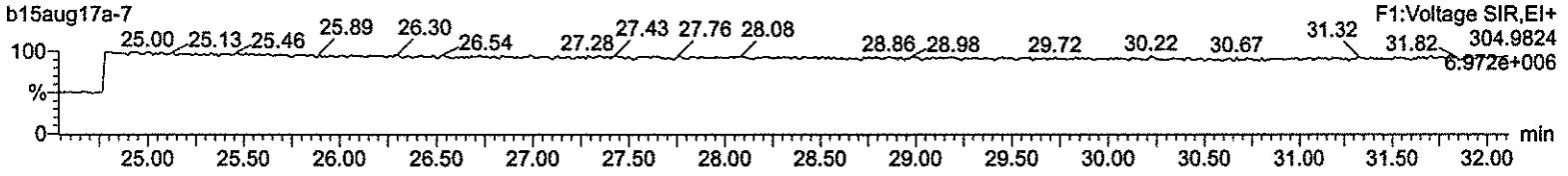

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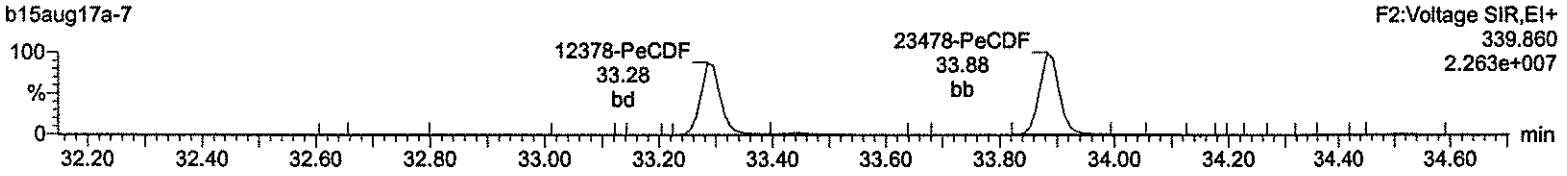
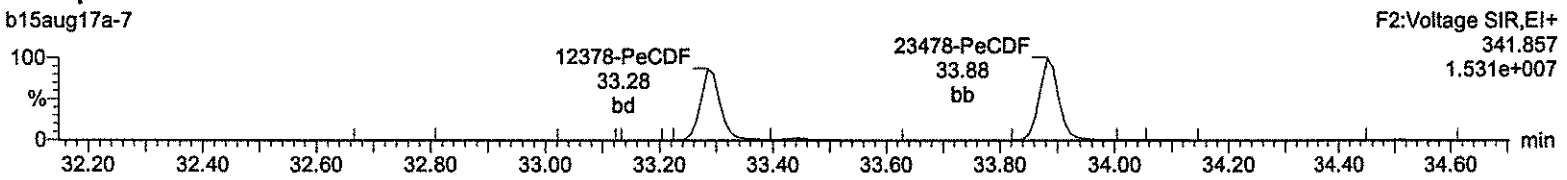
Total-pentafurans



Total-pentafurans



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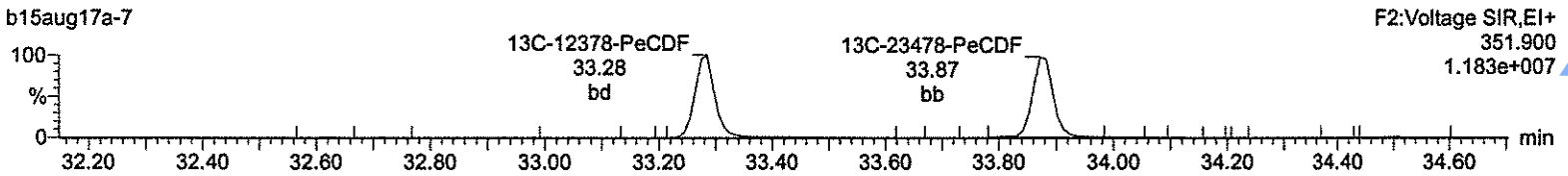
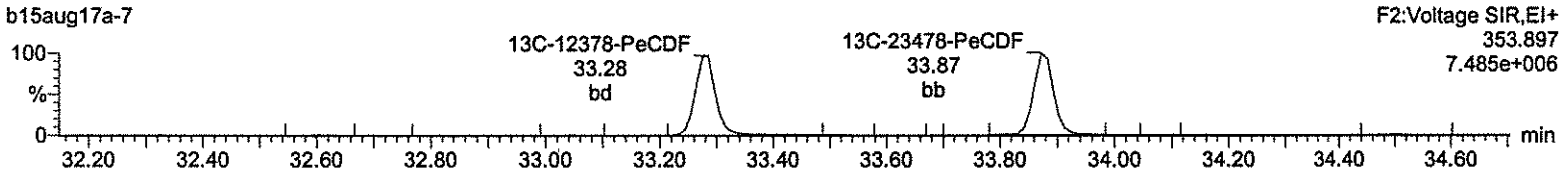
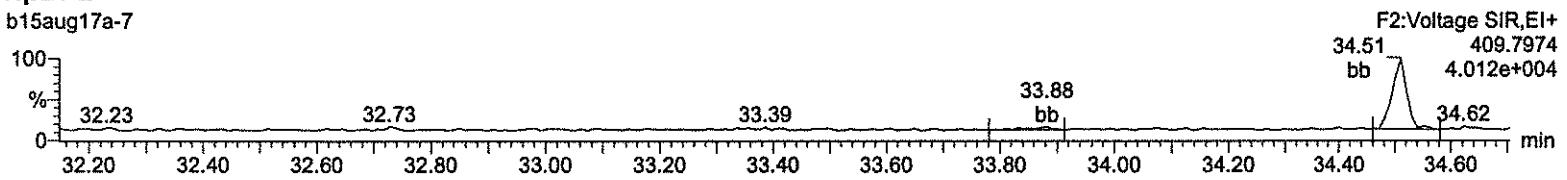


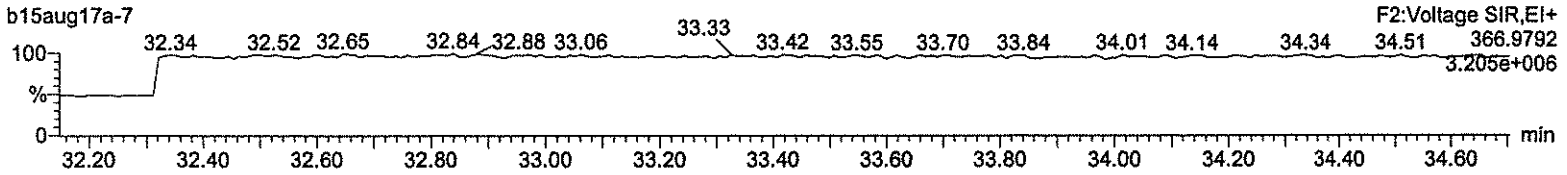
13C-12378-PeCDF



HpDPE



Lock Mass F2



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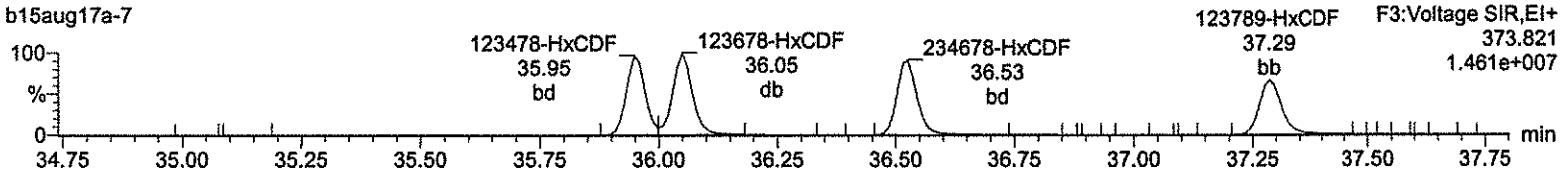
Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

Total-hexafurans



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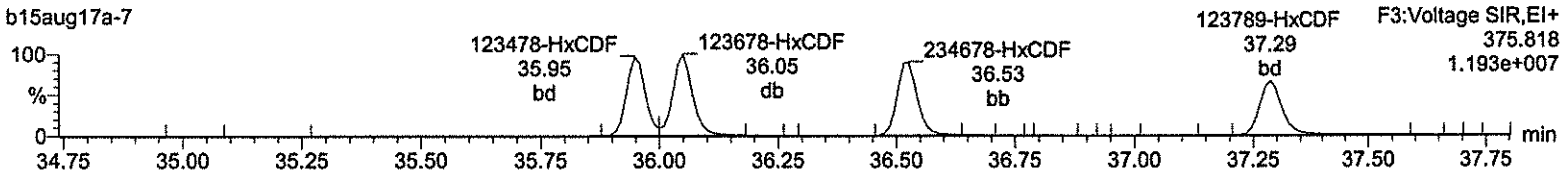

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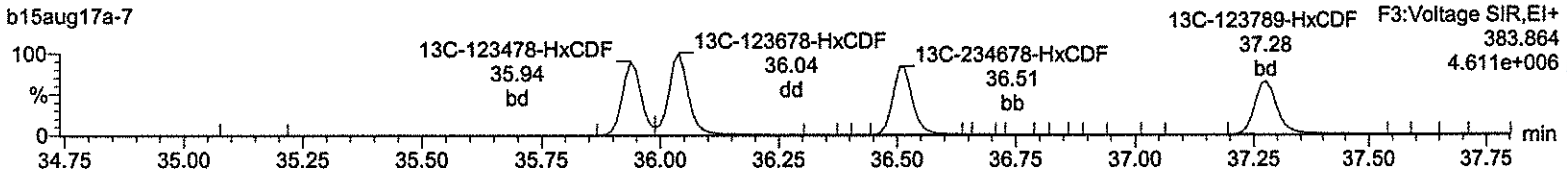

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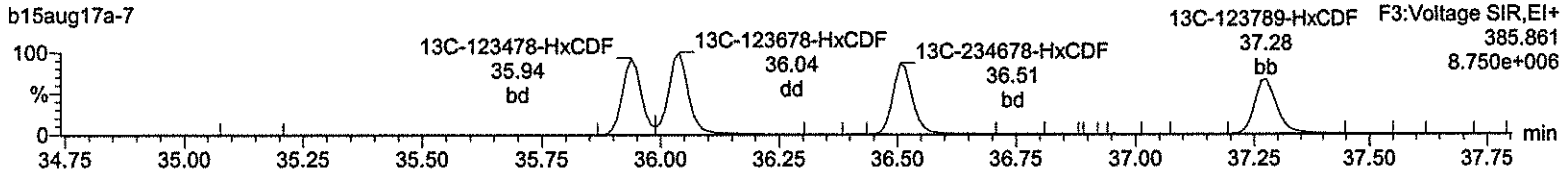
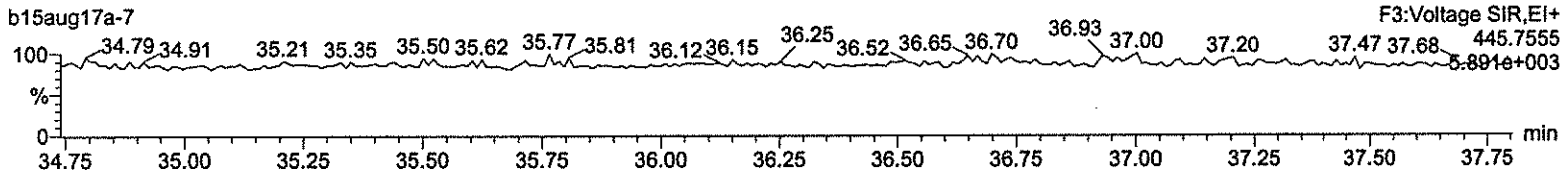


OcDPE



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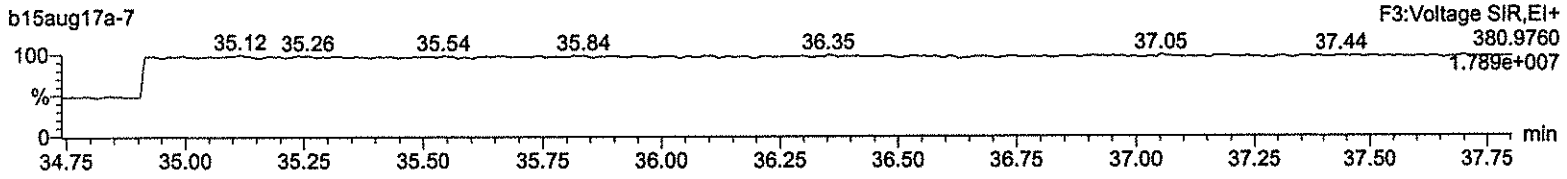

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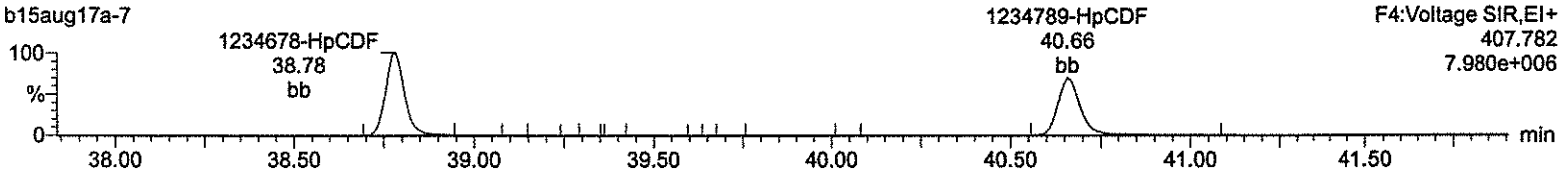
Printed: Wednesday, August 16, 2017 10:19:10 Eastern Standard Time

Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

Total-heptafurans



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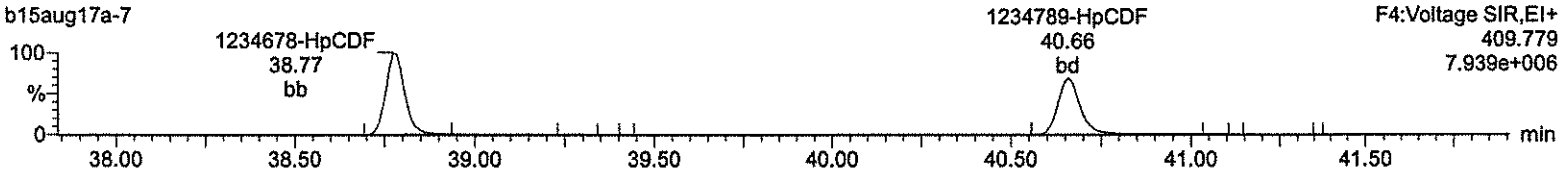

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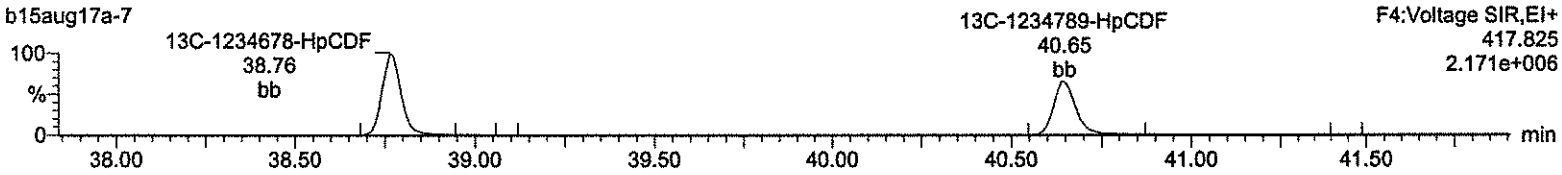

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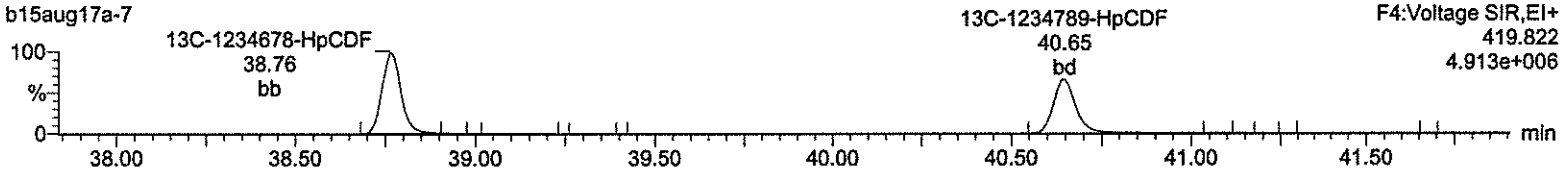

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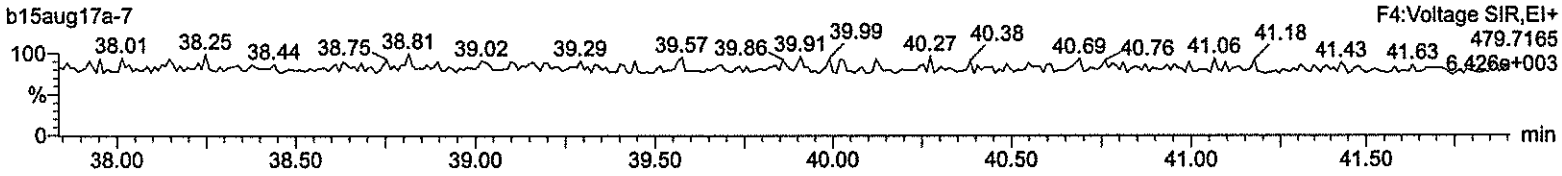

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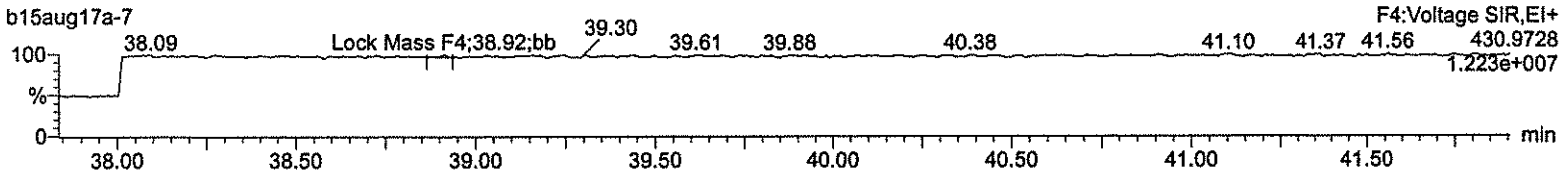

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Name: b15aug17a-7, Date: 15-Aug-2017, Time: 15:24:18, ID: CS4 UD170815-05 CS43D

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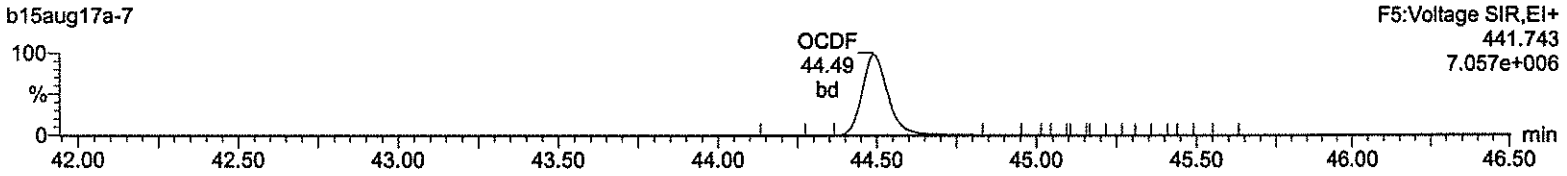

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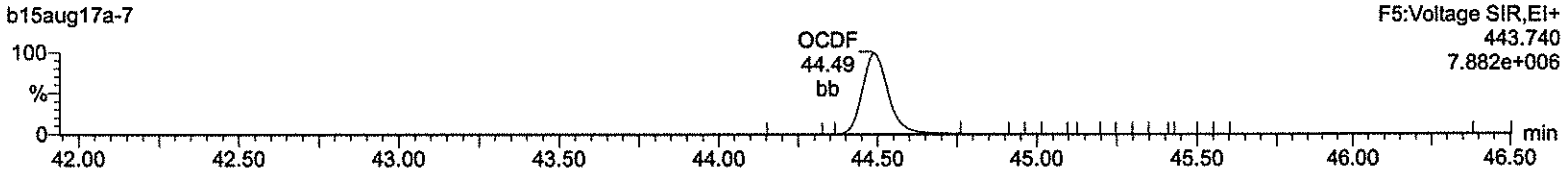

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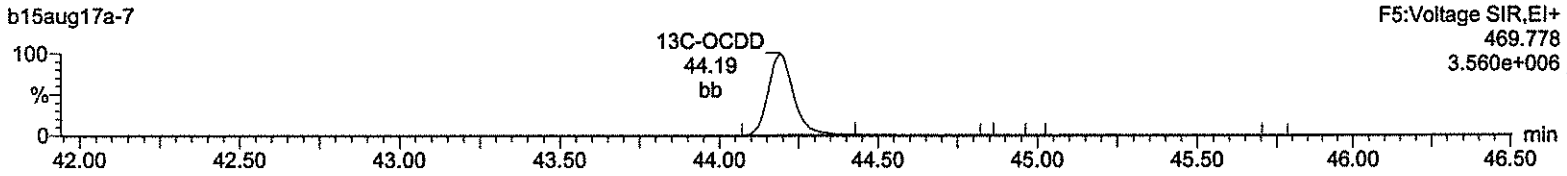

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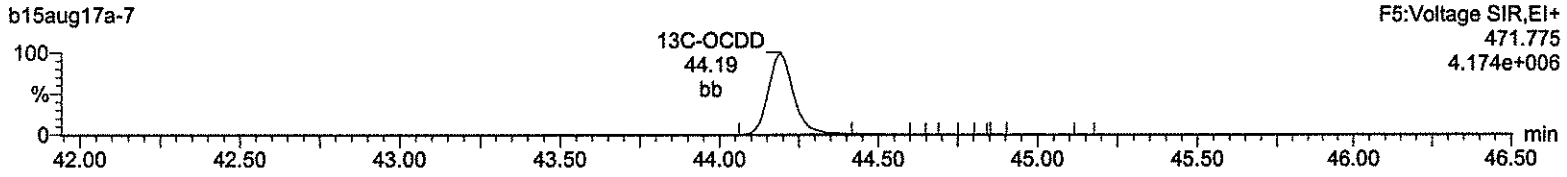
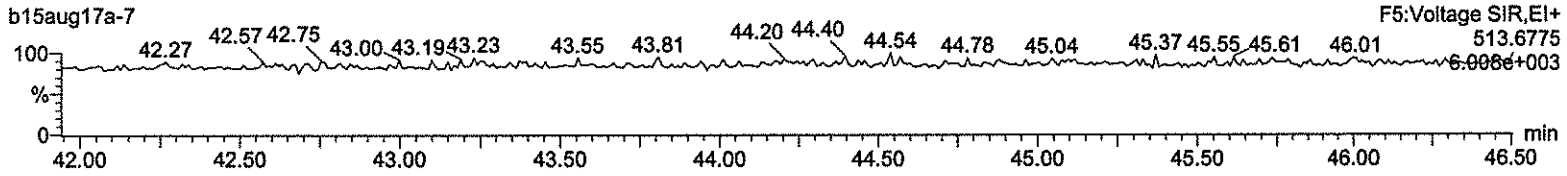
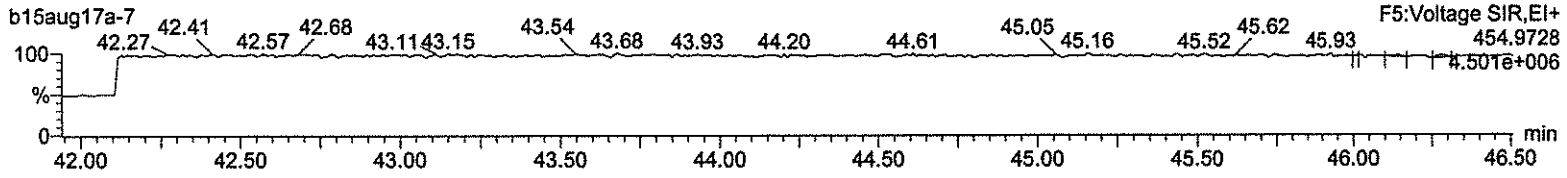


DeDPE



Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 ICAL Report

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Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F, Job: b15aug17a, User: CLP, Task: HRP763_1, Description:

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	RRF	Mean	RSD	EDL	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	6.50e5	8.74e5	1.52e6	31.19	1.000	0.74	NO	210.527	0.938	0.891	4.45	0.0558	1.14e7	1452	7848.5	1.54e7	1287	11954.3	bb	bb
2	12378-PeCDD	3.42e6	2.24e6	5.66e6	34.07	1.000	1.53	NO	1035.886	0.818	0.789	3.38	0.0875	8.65e7	3501	24716.0	5.63e7	1308	43020.3	bb	bb
3	123478-HxCDD	2.95e6	2.33e6	5.28e6	36.65	1.000	1.27	NO	1054.483	0.883	0.838	4.80	0.128	6.36e7	2471	25734.0	4.98e7	3022	16484.7	bd	bd
4	123678-HxCDD	3.30e6	2.62e6	5.92e6	36.73	1.000	1.26	NO	1050.151	0.882	0.840	4.71	0.125	6.52e7	2471	26403.7	5.24e7	3022	17348.6	db	db
5	123789-HxCDD	3.00e6	2.37e6	5.38e6	36.97	1.007	1.27	NO	1040.620	0.847	0.814	3.19	0.130	5.98e7	2471	24213.8	4.70e7	3022	15556.3	bb	bb
6	1234678-HpCDD	2.35e6	2.27e6	4.63e6	40.00	1.000	1.04	NO	1047.702	1.050	1.003	3.74	0.281	3.54e7	3390	10445.3	3.48e7	4270	8144.0	bb	bb
7	OCDD	3.97e6	4.54e6	8.51e6	44.20	1.000	0.87	NO	2064.408	0.940	0.910	3.79	0.386	4.49e7	3539	12688.4	5.01e7	3445	14535.0	bb	bd
8	2378-TCDF	7.56e5	1.01e6	1.76e6	30.42	1.001	0.75	NO	207.429	0.955	0.921	2.50	0.0913	8.84e6	2083	4242.9	1.20e7	1591	7534.1	bb	bb
9	12378-PeCDF	4.53e6	3.06e6	7.60e6	33.28	1.000	1.48	NO	1049.725	0.863	0.822	4.18	0.104	1.15e8	4175	27485.2	7.56e7	3459	21852.7	bb	bd
10	23478-PeCDF	5.12e6	3.42e6	8.54e6	33.88	1.000	1.50	NO	1034.538	0.958	0.926	2.87	0.0947	1.28e8	4175	30569.5	8.41e7	3459	24315.1	bb	bb
11	123478-HxCDF	3.65e6	3.00e6	6.65e6	35.94	1.000	1.21	NO	1046.830	1.045	0.998	5.02	0.197	7.83e7	6641	11788.0	6.54e7	4257	15370.4	bd	bd
12	123678-HxCDF	4.05e6	3.32e6	7.37e6	36.04	1.000	1.22	NO	1043.881	0.975	0.934	4.26	0.192	8.39e7	6641	12634.2	7.00e7	4257	16448.9	db	db
13	234678-HxCDF	3.80e6	3.02e6	6.82e6	36.51	1.000	1.26	NO	1041.922	1.076	1.033	4.35	0.203	7.89e7	6641	11887.9	6.44e7	4257	15127.5	bd	bb
14	123789-HxCDF	3.20e6	2.61e6	5.81e6	37.28	1.000	1.23	NO	1042.807	0.994	0.953	4.84	0.273	5.82e7	6641	8769.8	4.80e7	4257	11270.3	bb	bb
15	1234678-HpCDF	2.88e6	2.83e6	5.71e6	38.77	1.000	1.02	NO	1044.921	1.146	1.097	3.98	0.280	4.93e7	4709	10464.7	4.84e7	5591	8650.7	bb	bb
16	1234789-HpCDF	2.38e6	2.32e6	4.71e6	40.65	1.000	1.03	NO	1065.114	1.181	1.109	6.52	0.409	3.38e7	4709	7181.6	3.30e7	5591	5904.4	bb	bb
17	OCDF	4.30e6	4.85e6	9.15e6	44.49	1.007	0.89	NO	2191.726	1.011	0.922	7.27	0.398	4.76e7	3742	12718.3	5.35e7	3546	15078.8	bb	bb
18	13C-2378-TCDD	3.56e5	4.56e5	8.13e5	31.18	1.018	0.78	NO	105.948	1.210	1.142	2.94	0.114	6.04e6	2991	2019.2	7.70e6	1641	4691.6	bb	bb
19	13C-12378-PeCDD	4.27e5	2.66e5	6.93e5	34.06	1.112	1.61	NO	107.200	1.031	0.962	4.38	0.0905	1.07e7	1452	7387.0	6.54e6	1640	3986.6	bb	bb
20	13C-123478-HxCDD	3.29e5	2.69e5	5.98e5	36.64	0.991	1.22	NO	99.529	1.022	1.027	0.74	0.0713	7.06e6	2007	3517.1	5.76e6	1378	4182.0	bd	bd
21	13C-123678-HxCDD	3.68e5	3.03e5	6.71e5	36.72	0.993	1.21	NO	102.086	1.147	1.123	1.81	0.0652	7.17e6	2007	3575.5	5.97e6	1378	4333.6	db	db
22	13C-1234678-HpCDD	2.24e5	2.17e5	4.41e5	39.99	1.082	1.03	NO	100.015	0.753	0.753	2.07	0.0779	3.46e6	1344	2572.2	3.40e6	1366	2486.6	bb	bb
23	13C-OCDD	4.20e5	4.85e5	9.05e5	44.19	1.196	0.87	NO	213.290	0.774	0.726	4.08	0.108	4.61e6	1910	2414.6	5.34e6	1696	3150.7	bb	bb
24	13C-2378-TCDF	3.98e5	5.25e5	9.23e5	30.39	0.992	0.76	NO	102.813	1.374	1.337	1.60	0.150	4.71e6	4459	1057.0	6.25e6	2672	2337.1	bb	bb
25	13C-12378-PeCDF	5.41e5	3.39e5	8.80e5	33.27	1.086	1.60	NO	105.467	1.310	1.242	3.08	0.105	1.37e7	2567	5334.3	8.34e6	2063	4044.4	bb	bb
26	13C-23478-PeCDF	5.48e5	3.43e5	8.91e5	33.87	1.105	1.60	NO	107.456	1.326	1.234	4.20	0.106	1.34e7	2567	5210.8	8.26e6	2063	4005.7	bb	bb
27	13C-123478-HxCDF	2.17e5	4.20e5	6.36e5	35.93	0.972	0.52	NO	98.995	1.088	1.099	0.83	0.118	4.73e6	2624	1801.4	9.08e6	3366	2698.3	bd	bd
28	13C-123678-HxCDF	2.57e5	4.99e5	7.56e5	36.03	0.975	0.51	NO	101.638	1.293	1.272	2.46	0.102	5.17e6	2624	1969.6	1.02e7	3366	3019.7	dd	dd
29	13C-234678-HxCDF	2.15e5	4.19e5	6.34e5	36.51	0.988	0.51	NO	100.448	1.084	1.079	1.03	0.120	4.40e6	2624	1675.6	8.56e6	3366	2542.2	bd	bd
30	13C-123789-HxCDF	2.01e5	3.84e5	5.85e5	37.26	1.008	0.52	NO	101.257	0.999	0.987	1.26	0.131	3.60e6	2624	1369.9	6.94e6	3366	2061.2	bd	bb
31	13C-1234678-HpCDF	1.51e5	3.47e5	4.98e5	38.76	1.049	0.44	NO	100.205	0.851	0.849	1.50	0.0929	2.55e6	1388	1839.7	5.82e6	2259	2574.8	bb	bb
32	13C-1234789-HpCDF	1.20e5	2.79e5	3.99e5	40.64	1.099	0.43	NO	100.913	0.681	0.675	2.06	0.117	1.71e6	1388	1229.0	3.96e6	2259	1752.1	bb	bb
33	13C-1234-TCDD	2.96e5	3.76e5	6.72e5	30.64	0.000	0.79	NO	100.000	1.000	1.000	0.00	0.130	3.91e6	2991	1308.7	4.99e6	1641	3041.0	bb	bb
34	13C-123789-HxCDD	3.20e5	2.65e5	5.85e5	36.96	0.000	1.21	NO	100.000	1.000	1.000	0.00	0.0733	6.32e6	2007	3150.1	5.25e6	1378	3811.2	bb	bb
35	37Cl-2378-TCDD	1.70e6		1.70e6	31.19	1.018			217.622	1.263	1.161	5.41	0.0420	3.01e7	1730	17413.5				bb	

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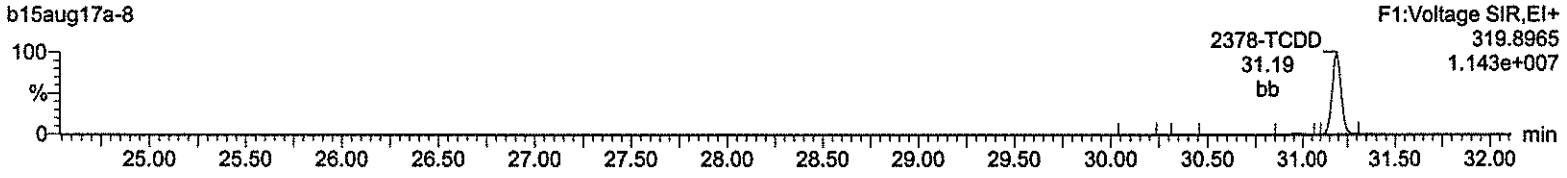
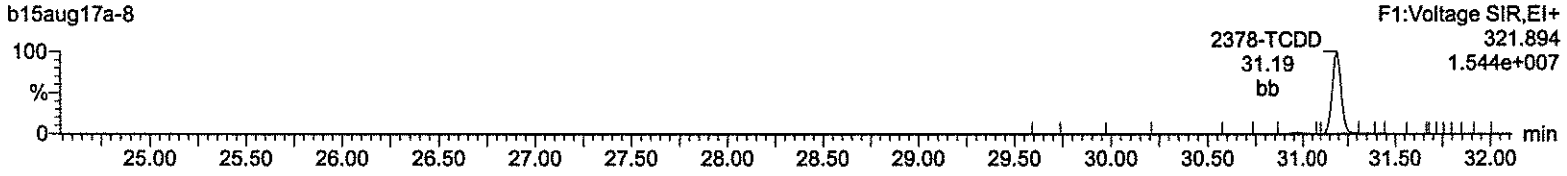
Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

Total-tetradioxins



Total-tetradioxins



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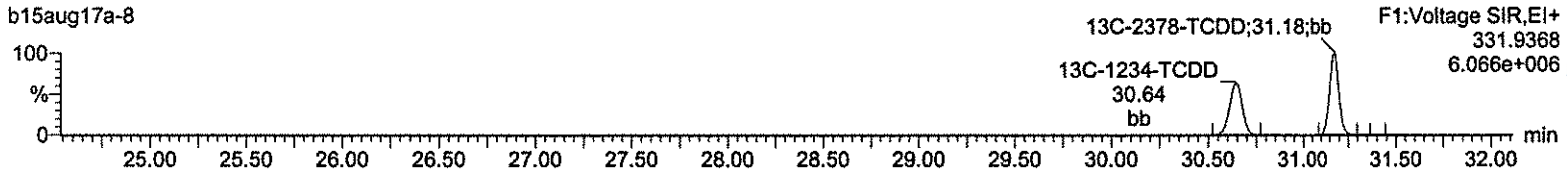

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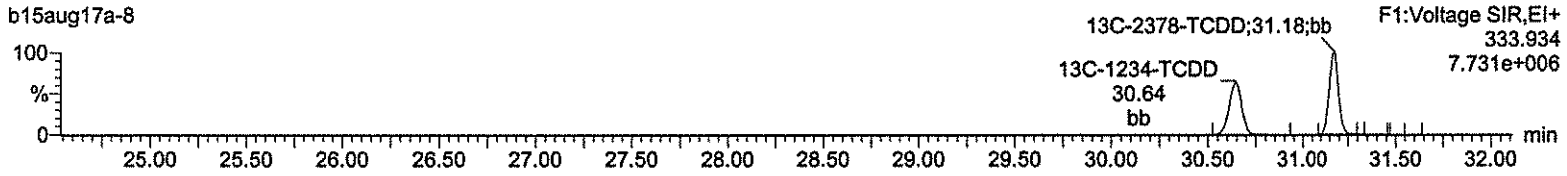

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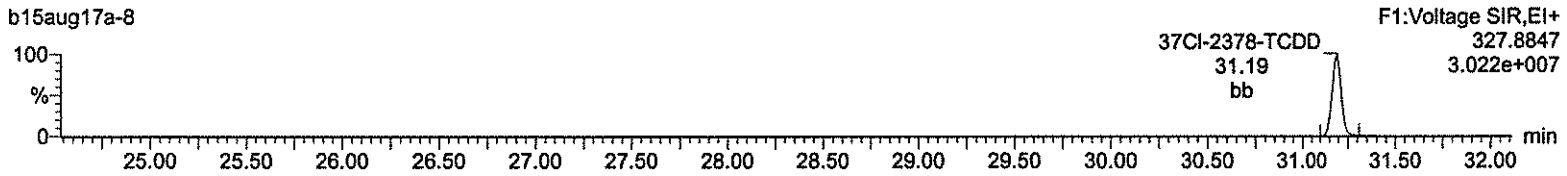
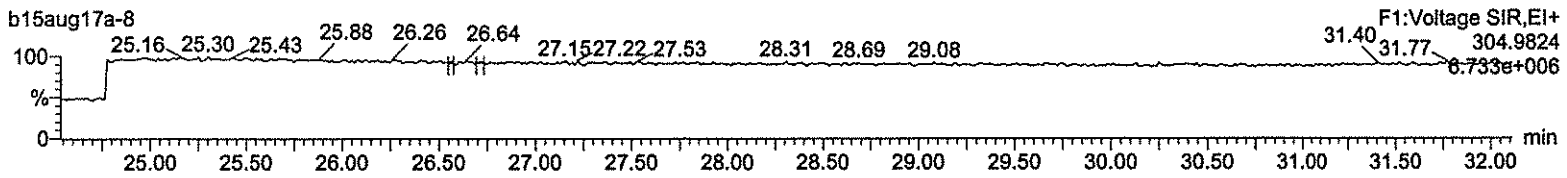


Lock Mass F1



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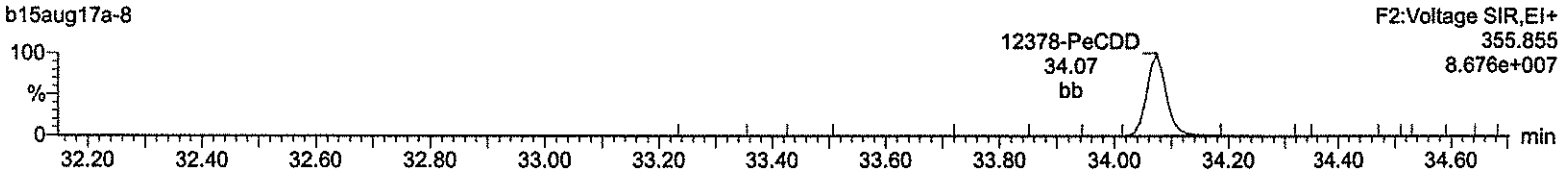
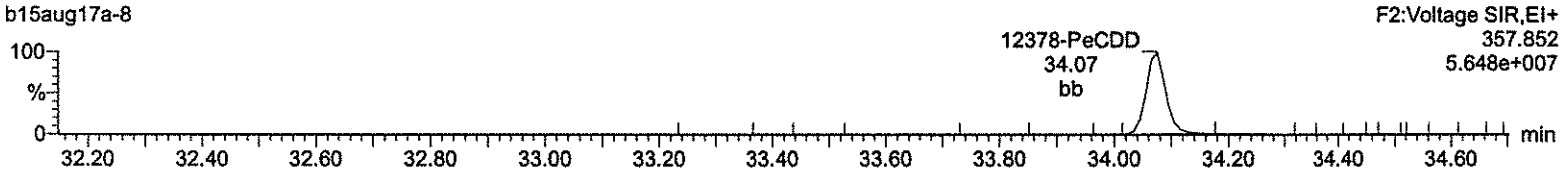
Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

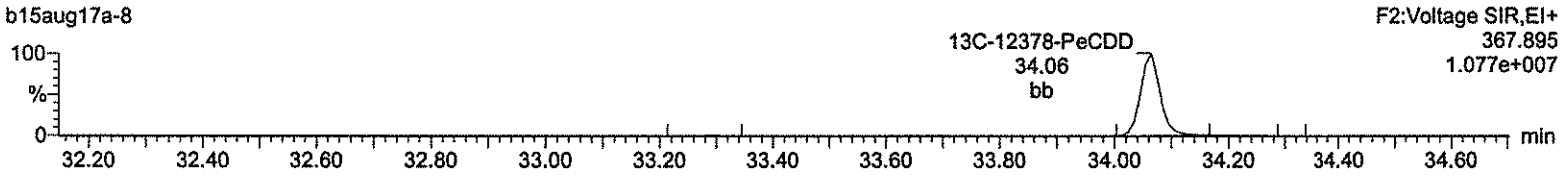
Total-pentadioxins



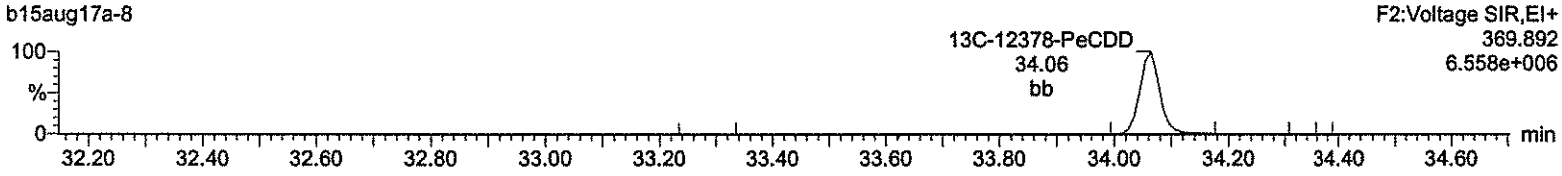
Total-pentadioxins



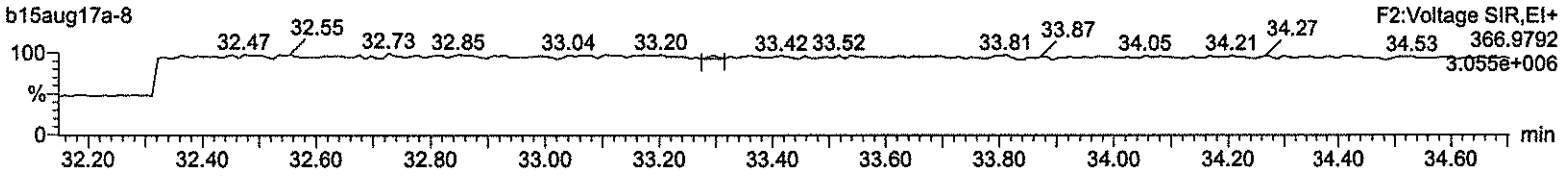
13C-12378-PeCDD



13C-12378-PeCDD



Lock Mass F2



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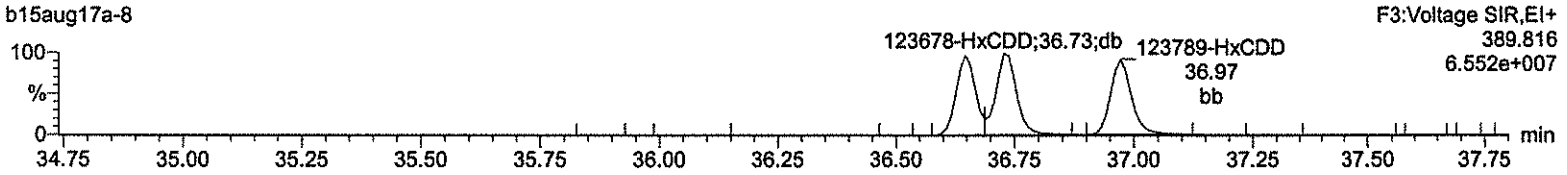
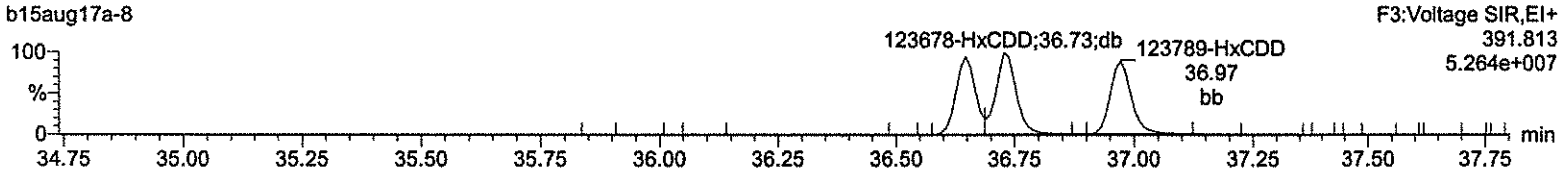
Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

Total-hexadioxins



Total-hexadioxins



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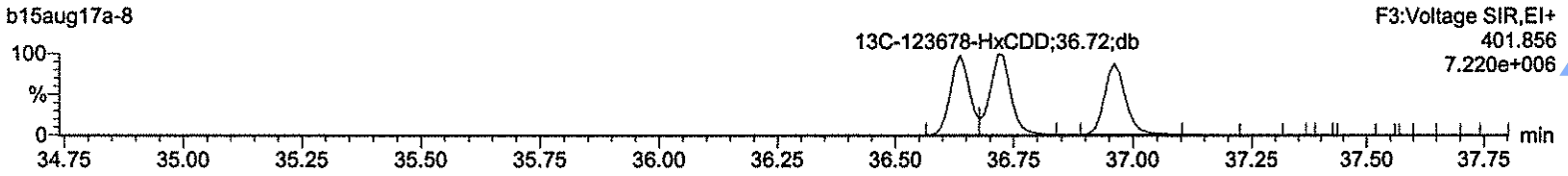

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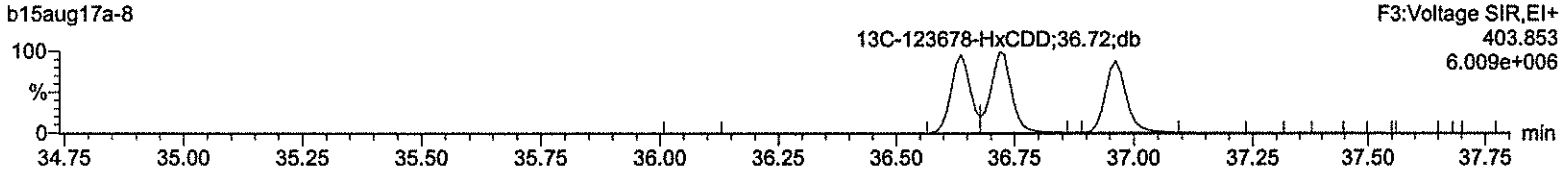

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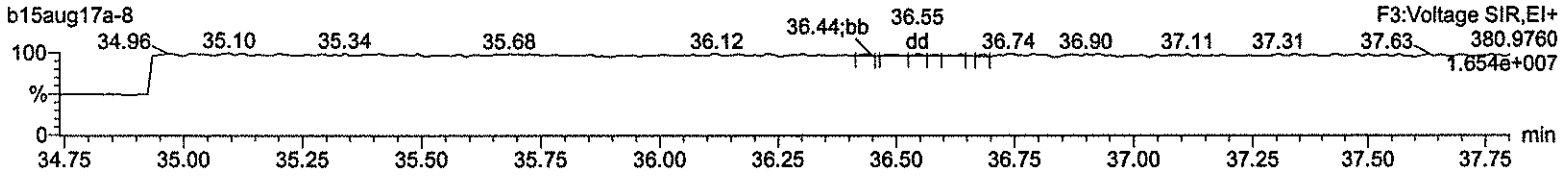

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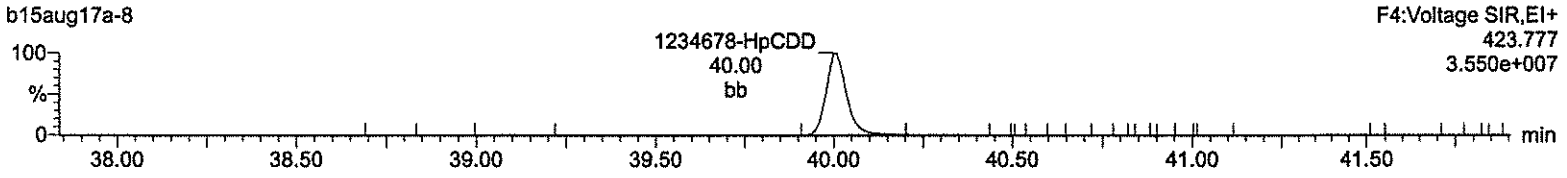
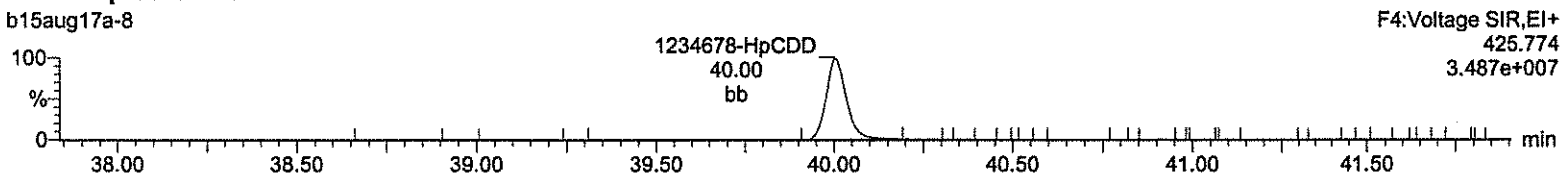
Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

Total-heptadioxins



Total-heptadioxins



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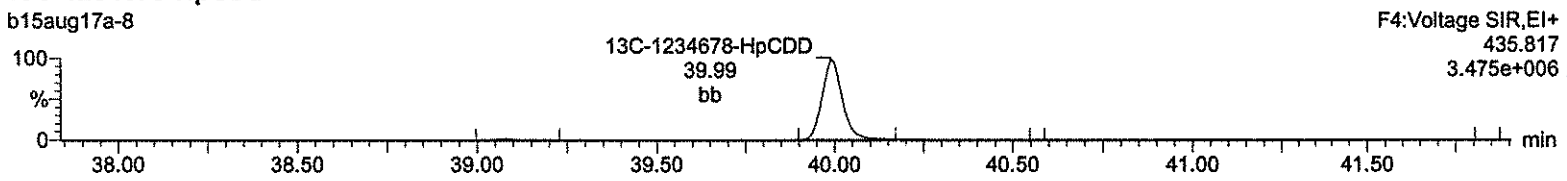

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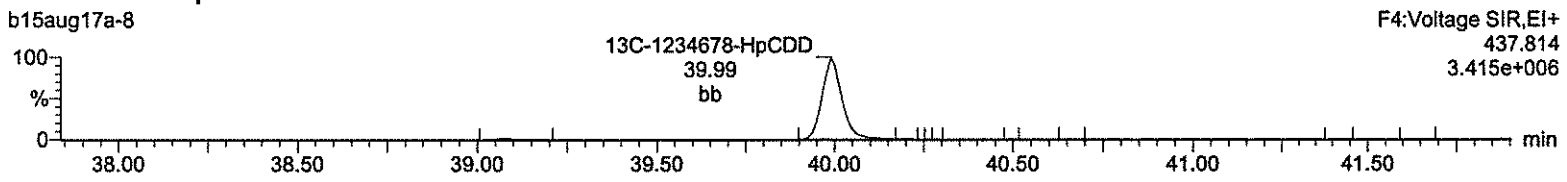

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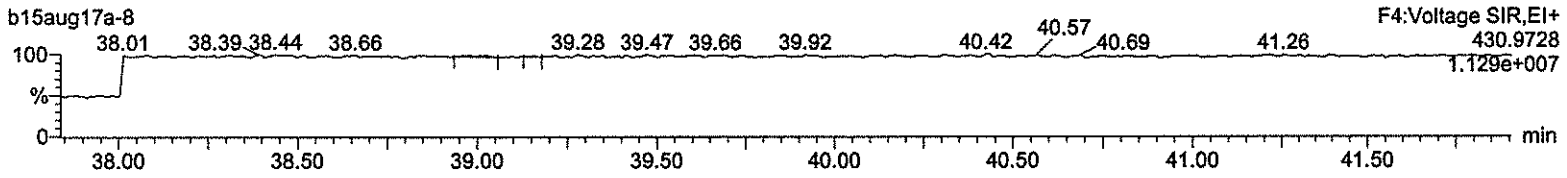

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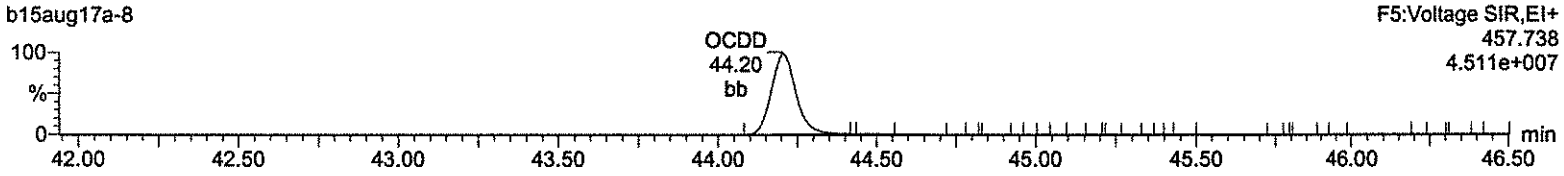
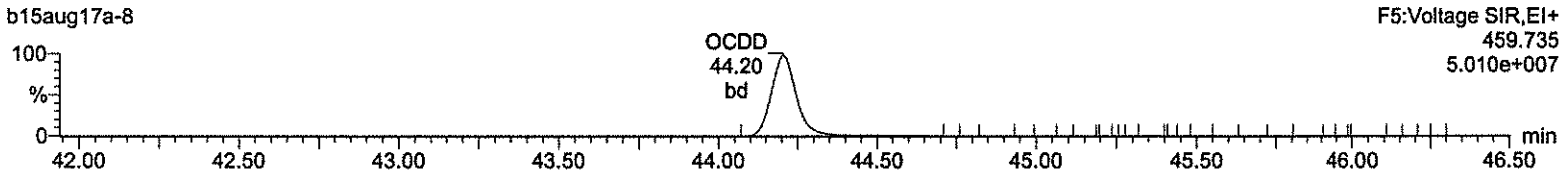
OCDD



OCDD



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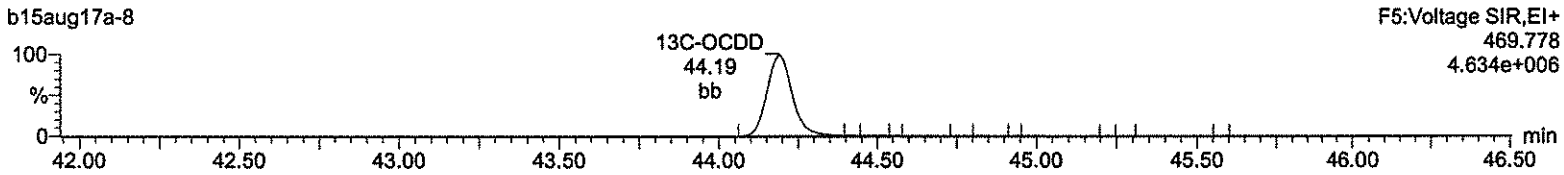

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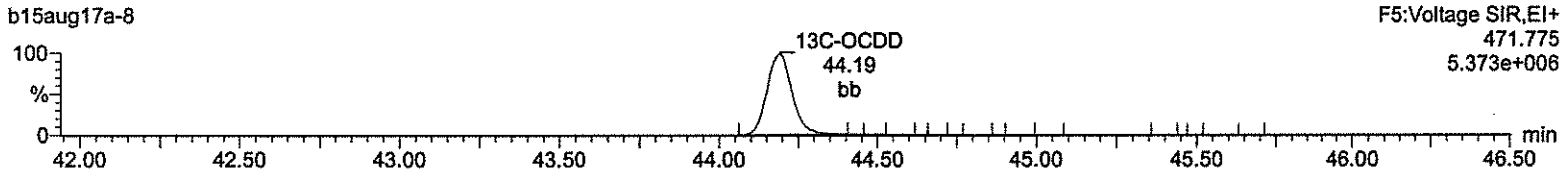
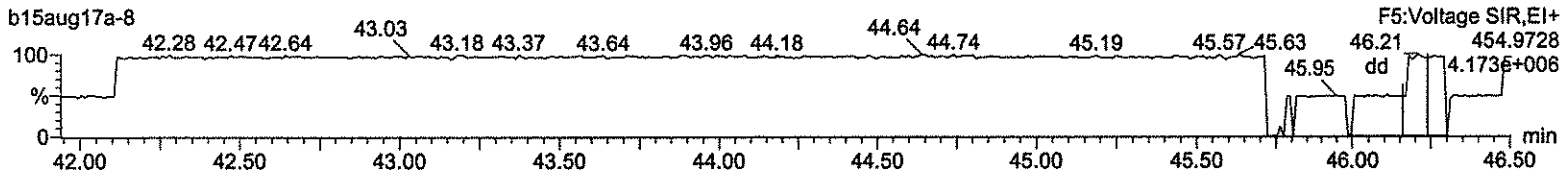


Lock Mass F5



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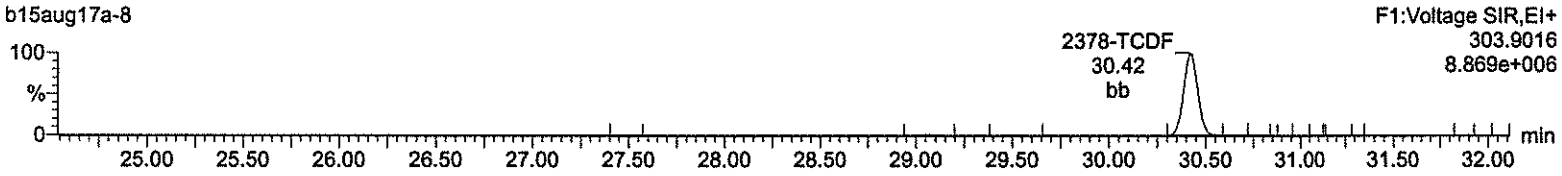
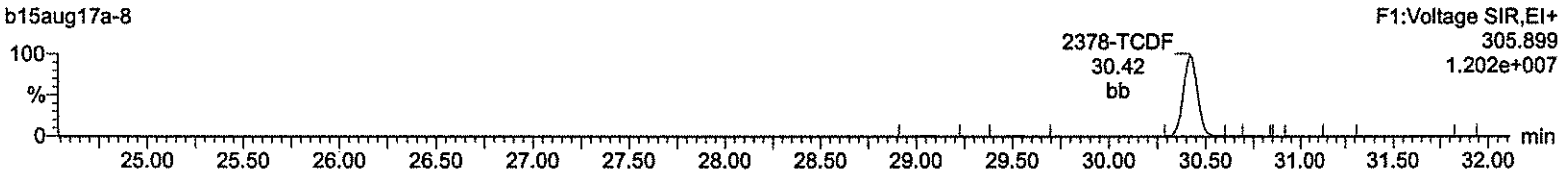
Total-tetrafurans



Total-tetrafurans



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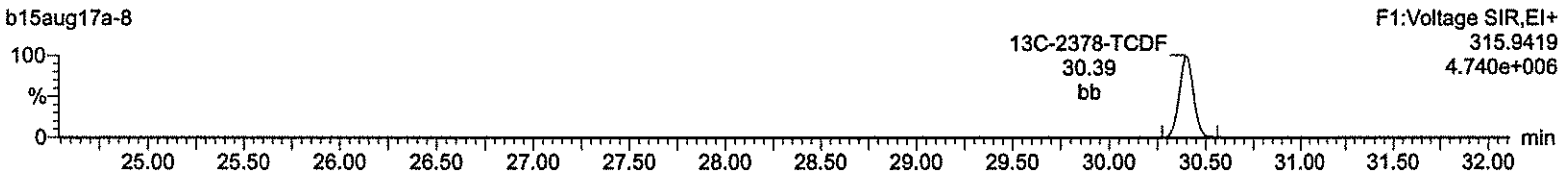

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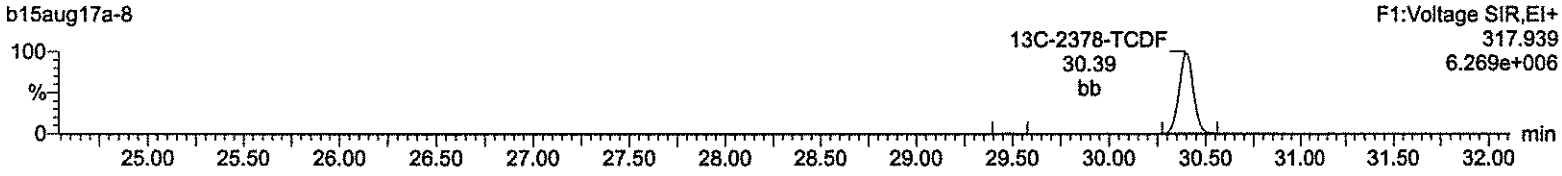
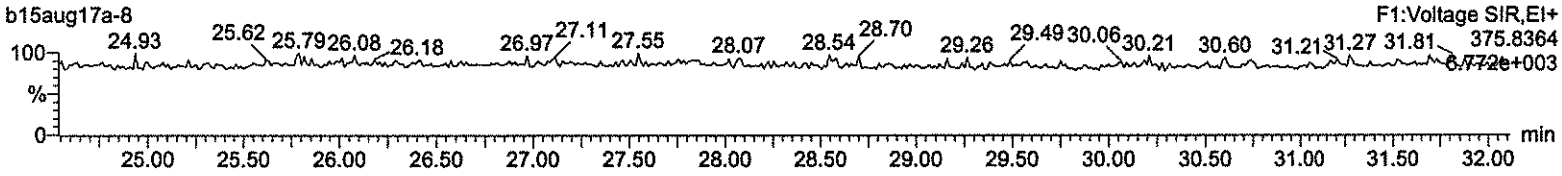
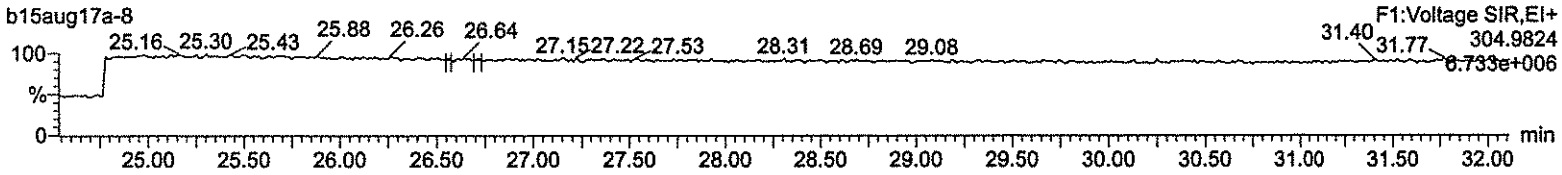


HxDPE



Lock Mass F1



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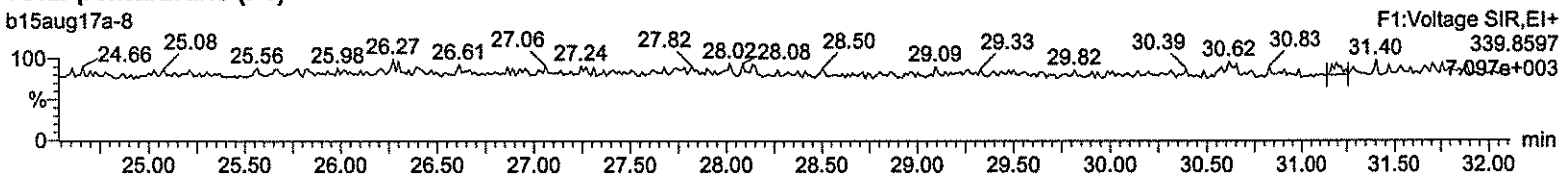
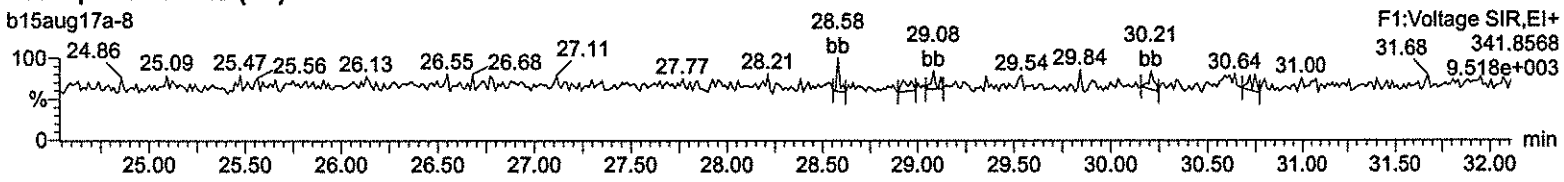
Total-pentafurans (F1)



Total-pentafurans (F1)



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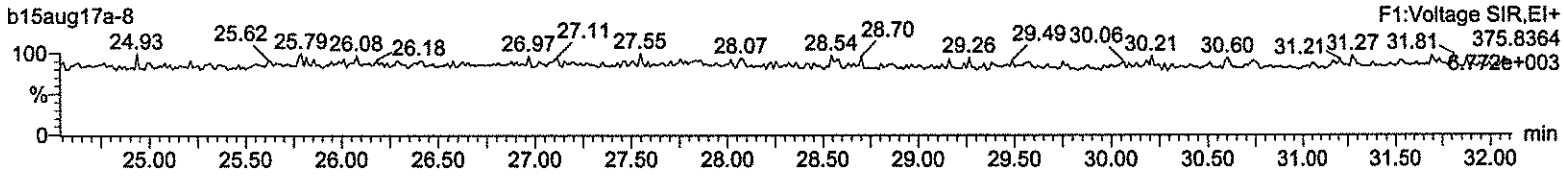
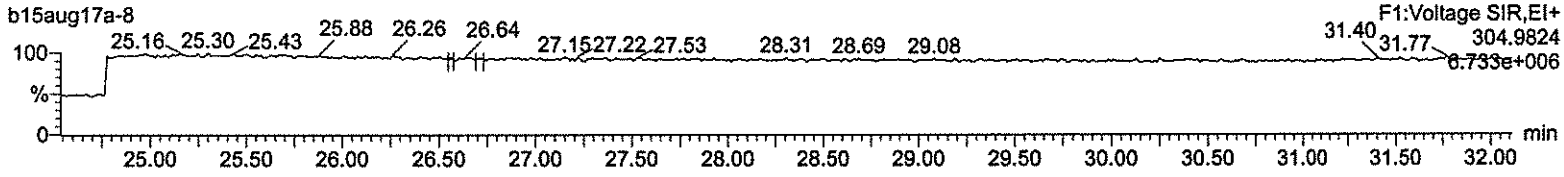


Lock Mass F1



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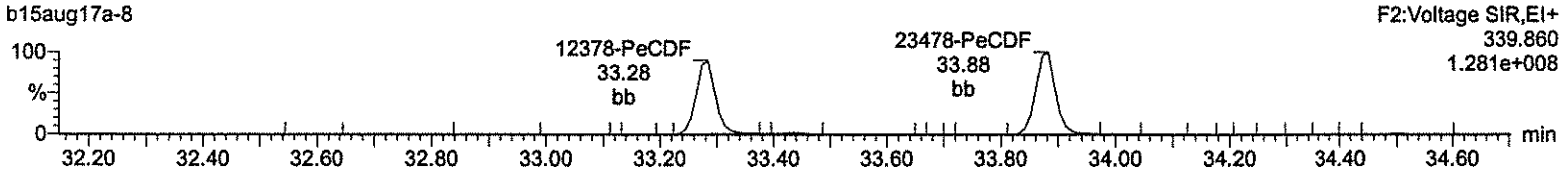
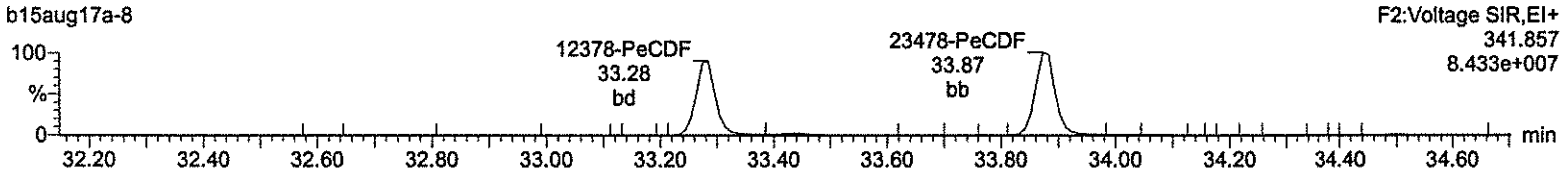
Name: b15aug17a-8, Date: 15-Aug-2017, Time: 16:12:43, ID: CS5 UD170815-06 CS53F

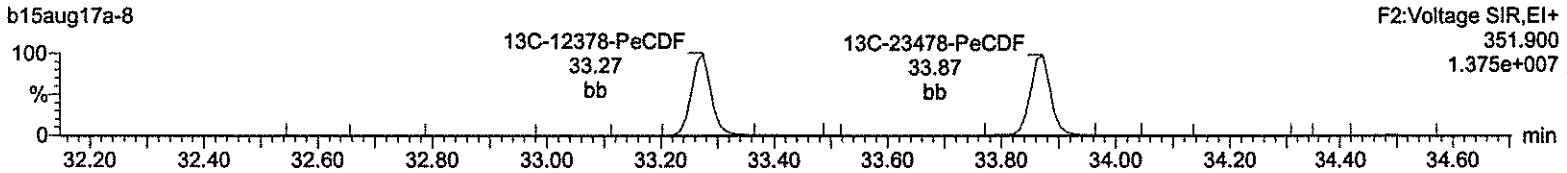
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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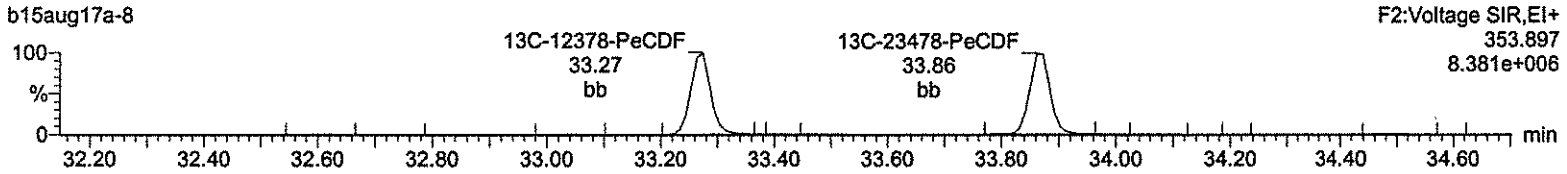

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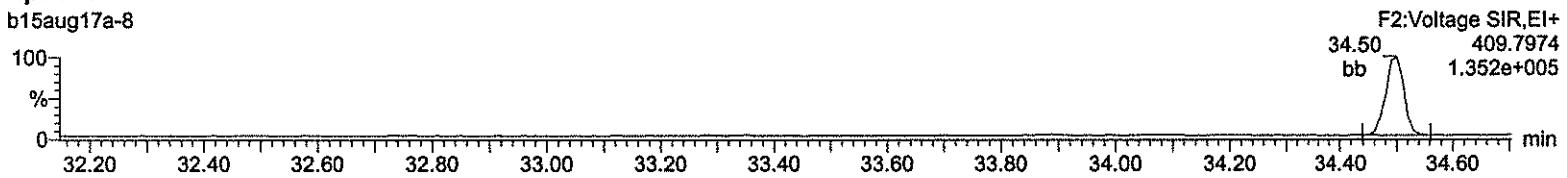
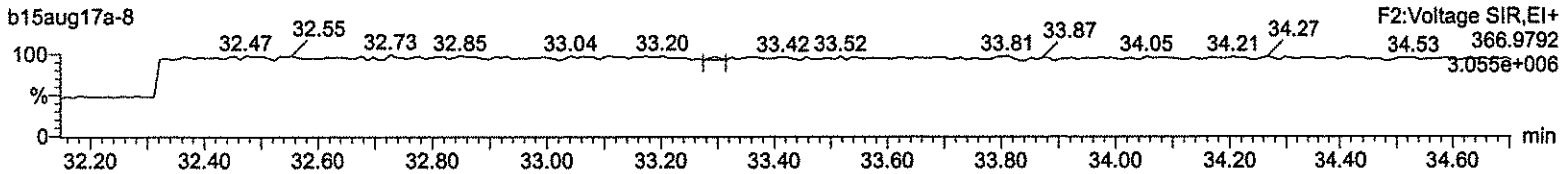


Lock Mass F2



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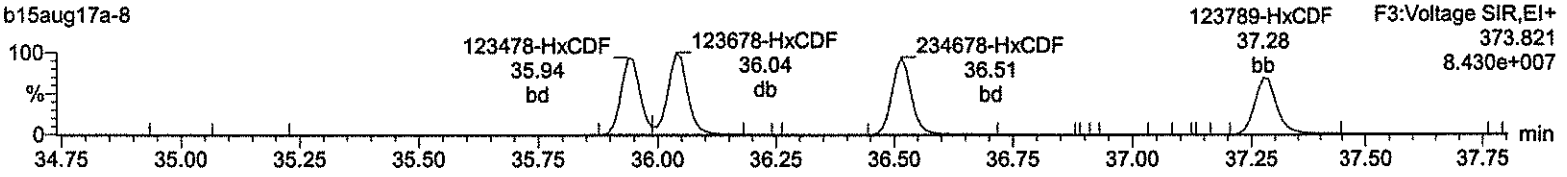
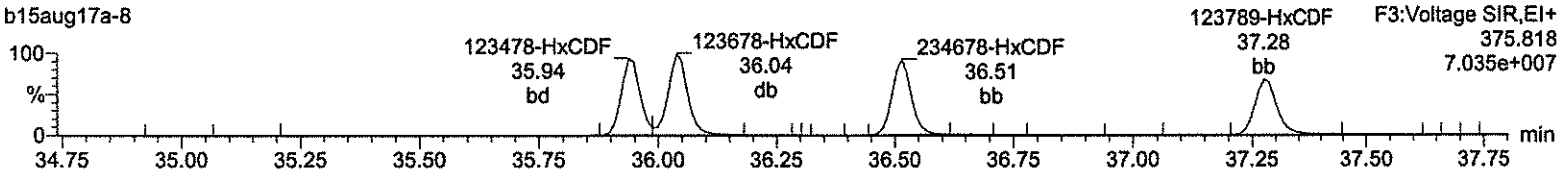
Total-hexafurans



Total-hexafurans



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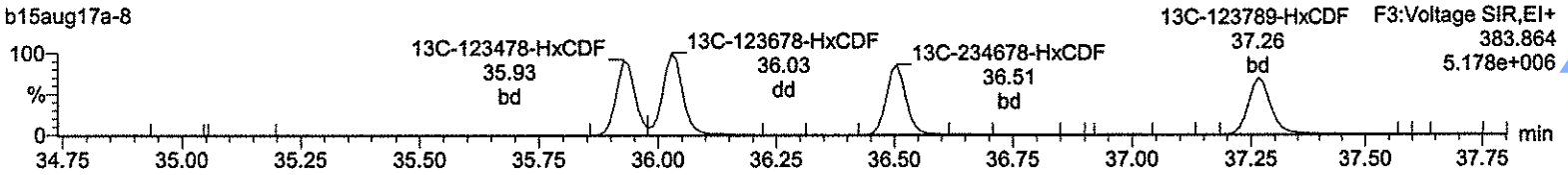

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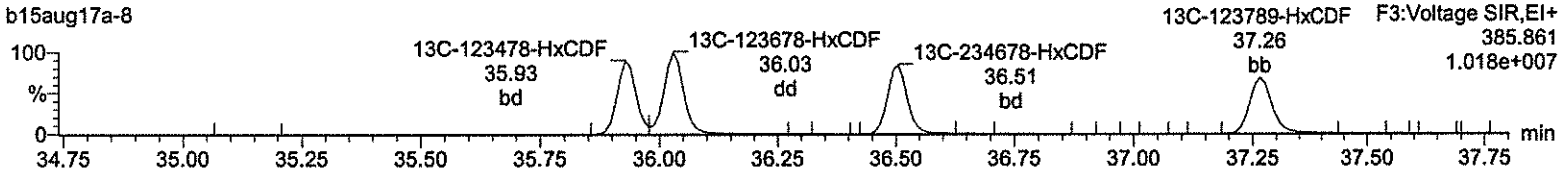
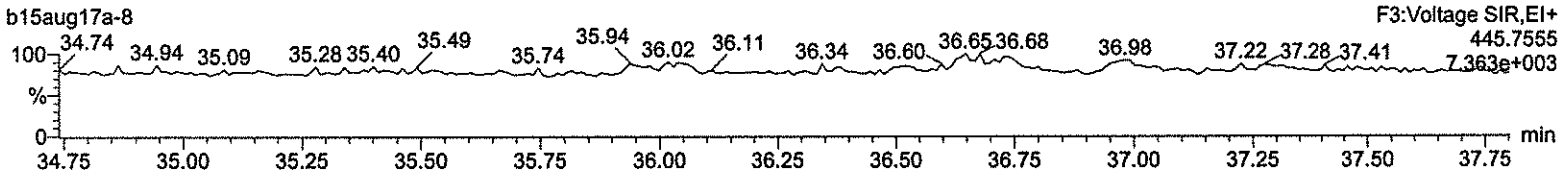


OcDPE



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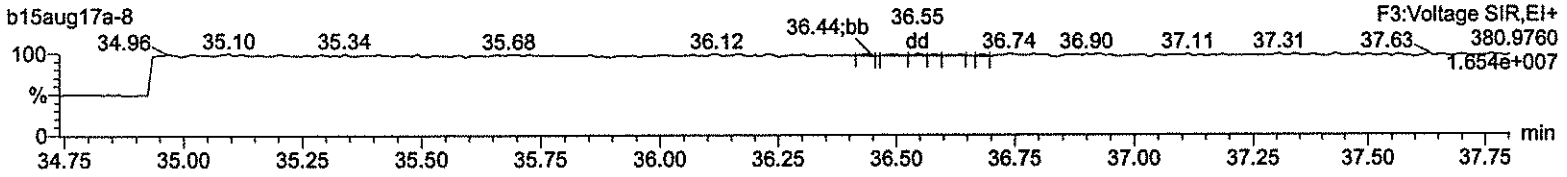

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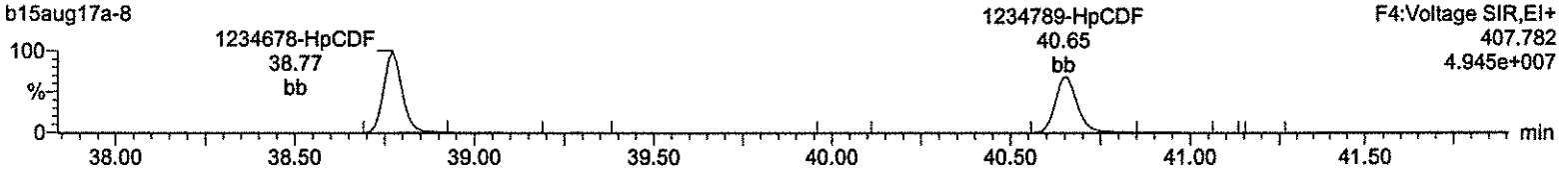
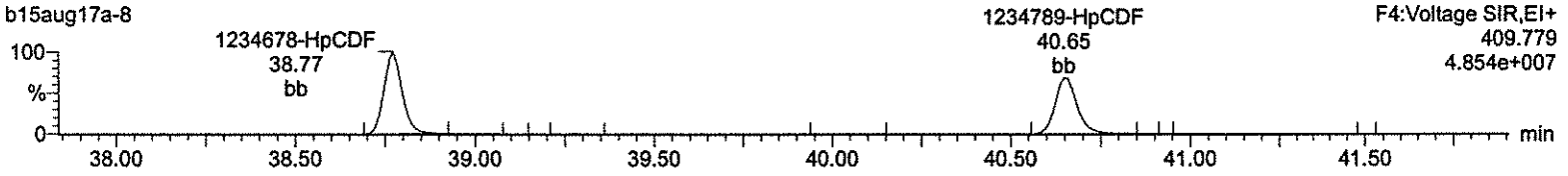
Total-heptafurans



Total-heptafurans



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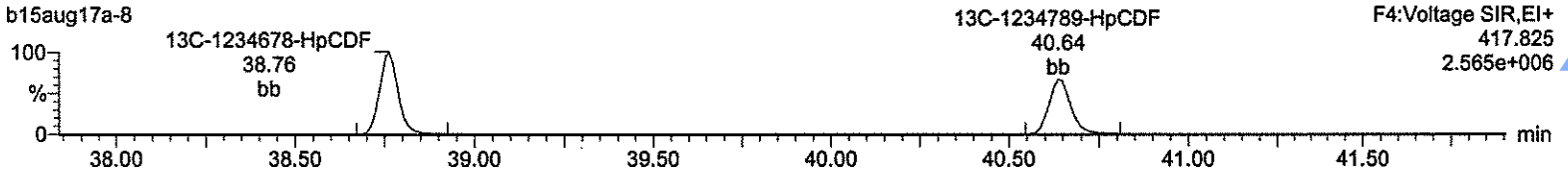

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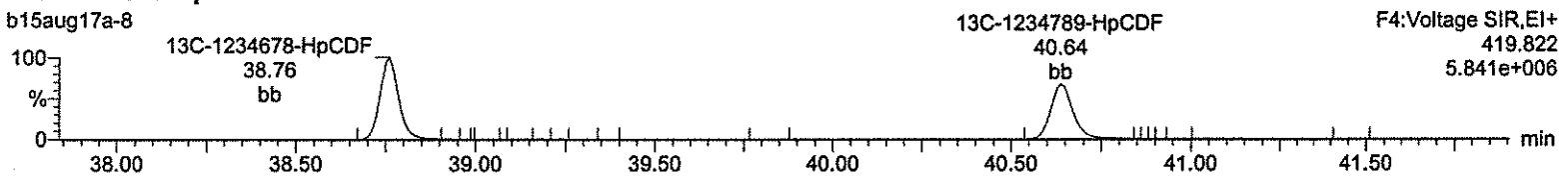
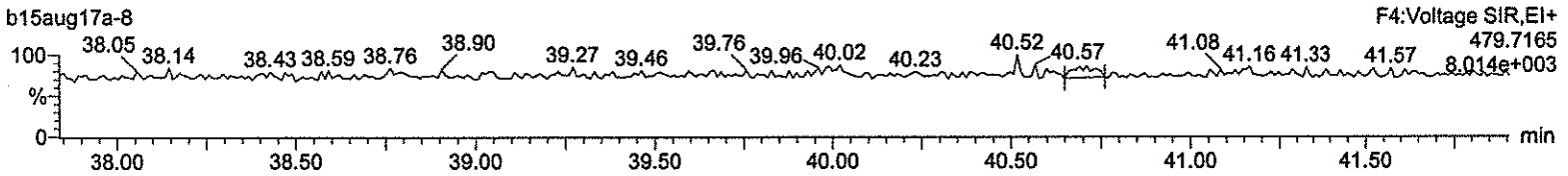
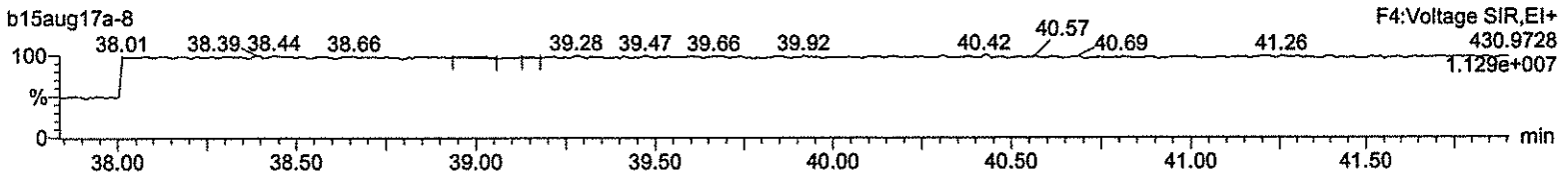


NoDPE



Lock Mass F4



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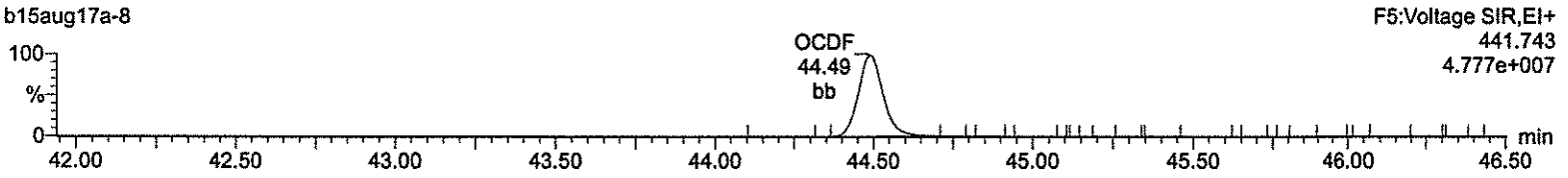
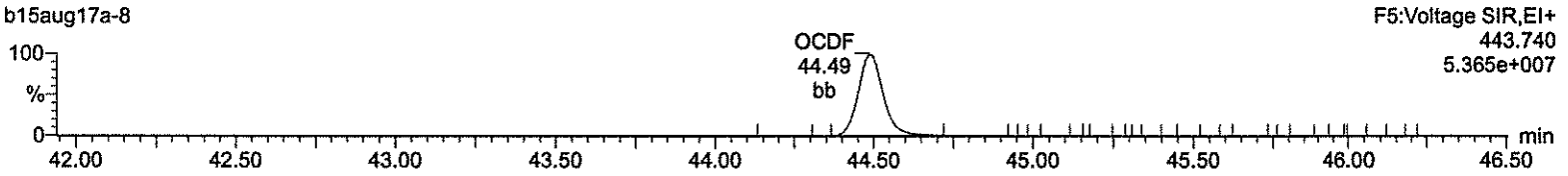
OCDF



OCDF



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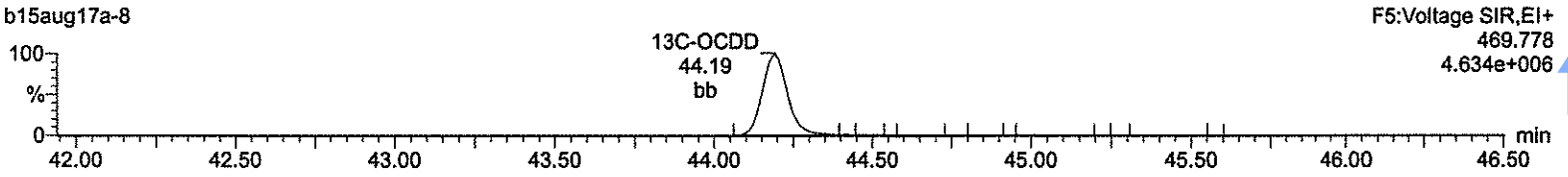
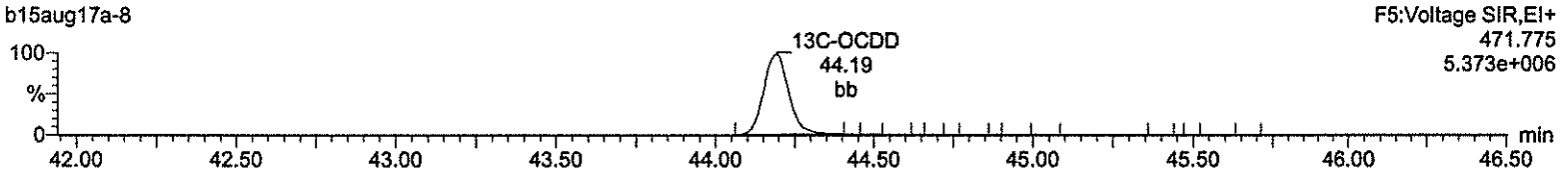
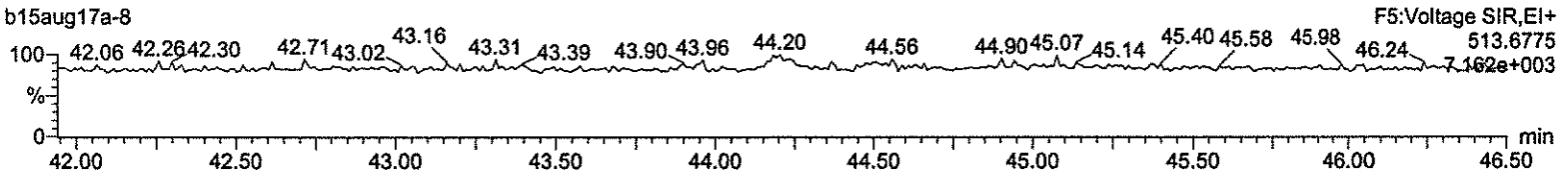


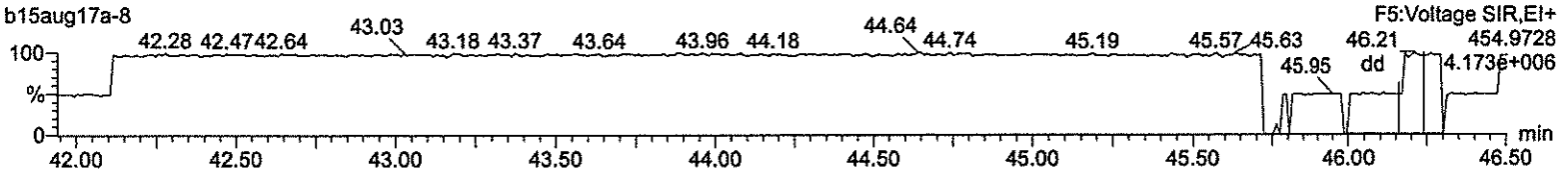
13C-OCDD



DeDPE



Lock Mass F5



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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Method: C:\MassLynx\DEFAULT.PRO\MethDB\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: C:\MassLynx\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	2.89e4	4.02e4	6.91e4	31.21	1.000	0.72	NO	10.176	0.0514	0.907	0.891	1.8	5.20e5	1277	407.5	7.08e5	1055	671.6	db	db
2	12378-PeCDD	1.61e5	1.05e5	2.66e5	34.08	1.000	1.53	NO	51.618	0.0666	0.815	0.789	3.2	3.89e6	2031	1915.1	2.50e6	1273	1965.0	bb	bb
3	123478-HxCDD	1.33e5	1.07e5	2.40e5	36.66	1.000	1.25	NO	51.585	0.113	0.864	0.838	3.2	2.93e6	2631	1111.8	2.34e6	1856	1259.1	bd	bd
4	123678-HxCDD	1.52e5	1.21e5	2.73e5	36.75	1.000	1.26	NO	51.114	0.110	0.859	0.840	2.2	2.88e6	2631	1094.9	2.30e6	1856	1240.2	db	db
5	123789-HxCDD	1.40e5	1.11e5	2.51e5	36.98	1.007	1.27	NO	51.825	0.115	0.844	0.814	3.7	2.68e6	2631	1017.3	2.07e6	1856	1113.6	bd	bd
6	1234678-HpCDD	1.06e5	1.02e5	2.07e5	40.02	1.001	1.04	NO	51.145	0.130	1.025	1.003	2.3	1.56e6	1386	1128.2	1.52e6	1747	871.9	bd	bd
7	OCDD	1.62e5	1.79e5	3.41e5	44.21	1.000	0.91	NO	100.373	0.187	0.914	0.910	0.4	1.67e6	1233	1354.0	1.87e6	1453	1284.2	bd	bd
8	2378-TCDF	3.55e4	4.66e4	8.21e4	30.43	1.000	0.76	NO	10.016	0.0614	0.922	0.921	0.2	4.22e5	998	422.7	5.33e5	1315	405.5	bb	bb
9	12378-PeCDF	2.18e5	1.42e5	3.61e5	33.29	1.000	1.53	NO	50.870	0.0879	0.836	0.822	1.7	5.52e6	3028	1822.4	3.62e6	2973	1216.6	bd	bd
10	23478-PeCDF	2.38e5	1.57e5	3.95e5	33.89	1.000	1.52	NO	50.821	0.0794	0.942	0.926	1.6	6.12e6	3028	2022.4	3.98e6	2973	1339.2	bb	bb
11	123478-HxCDF	1.74e5	1.42e5	3.16e5	35.96	1.000	1.23	NO	52.518	0.115	1.049	0.998	5.0	3.78e6	3458	1094.6	3.06e6	2466	1240.9	bd	bd
12	123678-HxCDF	1.83e5	1.51e5	3.34e5	36.06	1.001	1.22	NO	50.194	0.114	0.938	0.934	0.4	3.70e6	3458	1070.4	2.99e6	2466	1214.4	db	db
13	234678-HxCDF	1.75e5	1.45e5	3.20e5	36.53	1.000	1.21	NO	51.650	0.117	1.067	1.033	3.3	3.66e6	3458	1058.2	3.00e6	2466	1218.5	bb	bb
14	123789-HxCDF	1.48e5	1.20e5	2.68e5	37.30	1.001	1.23	NO	50.379	0.159	0.960	0.953	0.8	2.62e6	3458	757.7	2.11e6	2466	856.0	bb	bb
15	1234678-HpCDF	1.32e5	1.28e5	2.60e5	38.78	1.000	1.03	NO	50.767	0.107	1.113	1.097	1.5	2.21e6	2057	1076.5	2.15e6	1633	1317.0	bb	bb
16	1234789-HpCDF	1.06e5	1.01e5	2.07e5	40.67	1.001	1.04	NO	52.136	0.166	1.156	1.109	4.3	1.51e6	2057	735.5	1.40e6	1633	855.7	bd	bd
17	OCDF	1.64e5	1.86e5	3.51e5	44.50	1.007	0.88	NO	101.914	0.174	0.940	0.922	1.9	1.75e6	1152	1517.4	1.94e6	1388	1395.6	bb	bb
18	13C-2378-TCDD	3.35e5	4.28e5	7.63e5	31.19	1.018	0.78	NO	98.731	0.114	1.127	1.142	-1.3	5.59e6	3063	1824.7	7.31e6	1582	4622.1	bb	bb
19	13C-12378-PeCDD	4.04e5	2.50e5	6.53e5	34.07	1.112	1.62	NO	100.465	0.0747	0.966	0.962	0.5	9.71e6	1295	7499.0	6.01e6	1263	4761.0	bb	bb
20	13C-123478-HxCDD	3.06e5	2.50e5	5.56e5	36.65	0.991	1.22	NO	98.255	0.103	1.009	1.027	-1.7	6.55e6	2047	3197.9	5.35e6	2373	2256.6	bd	bd
21	13C-123678-HxCDD	3.46e5	2.90e5	6.36e5	36.74	0.994	1.19	NO	102.623	0.0940	1.153	1.123	2.6	6.59e6	2047	3218.8	5.42e6	2373	2282.3	db	db
22	13C-1234678-HpCDD	2.05e5	2.00e5	4.05e5	40.00	1.082	1.02	NO	97.422	0.0911	0.734	0.753	-2.6	3.04e6	1231	2467.9	2.93e6	1642	1786.3	bb	bd
23	13C-OCDD	3.44e5	4.03e5	7.47e5	44.19	1.195	0.85	NO	186.632	0.157	0.677	0.726	-6.7	3.64e6	2600	1400.4	4.18e6	2157	1936.1	bd	bd
24	13C-2378-TCDF	3.85e5	5.06e5	8.90e5	30.42	0.992	0.76	NO	98.481	0.134	1.316	1.337	-1.5	4.42e6	4097	1078.6	5.88e6	2274	2584.9	bb	bb
25	13C-12378-PeCDF	5.30e5	3.32e5	8.62e5	33.28	1.086	1.59	NO	102.584	0.0953	1.274	1.242	2.6	1.28e7	2140	5960.5	7.99e6	2073	3853.6	bd	bd
26	13C-23478-PeCDF	5.16e5	3.23e5	8.39e5	33.88	1.105	1.60	NO	100.491	0.0959	1.240	1.234	0.5	1.25e7	2140	5861.7	7.89e6	2073	3807.8	bb	bb
27	13C-123478-HxCDF	2.08e5	3.95e5	6.03e5	35.95	0.972	0.53	NO	99.552	0.147	1.094	1.099	-0.4	4.45e6	4008	1110.2	8.56e6	2755	3106.9	bd	bd
28	13C-123678-HxCDF	2.40e5	4.73e5	7.12e5	36.04	0.975	0.51	NO	101.581	0.127	1.292	1.272	1.6	4.67e6	4008	1166.2	9.04e6	2755	3281.6	dd	dd
29	13C-234678-HxCDF	2.09e5	3.91e5	6.00e5	36.51	0.988	0.53	NO	100.858	0.150	1.088	1.079	0.9	4.28e6	4008	1067.0	8.19e6	2755	2973.3	bd	bb
30	13C-123789-HxCDF	1.90e5	3.68e5	5.58e5	37.28	1.008	0.52	NO	102.621	0.164	1.013	0.987	2.6	3.32e6	4008	827.8	6.52e6	2755	2364.9	bd	bd
31	13C-1234678-HpCDF	1.39e5	3.28e5	4.67e5	38.77	1.049	0.43	NO	99.767	0.116	0.847	0.849	-0.2	2.34e6	1490	1570.4	5.27e6	2634	1999.6	bb	bd

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	1.07e5	2.51e5	3.58e5	40.65	1.099	0.43	NO	96.176	0.146	0.649	0.675	-3.8	1.49e6	1490	1000.2	3.46e6	2634	1315.2	bb	bd
33	13C-1234-TCDD	2.98e5	3.78e5	6.76e5	30.65	0.000	0.79	NO	100.000	0.130	1.000	1.000	0.0	3.92e6	3063	1281.1	5.06e6	1582	3201.9	bb	bb
34	13C-123789-HxCDD	3.00e5	2.51e5	5.51e5	36.97	0.000	1.20	NO	100.000	0.106	1.000	1.000	0.0	5.70e6	2047	2782.2	4.74e6	2373	1997.8	bb	bd
35	37Cl-2378-TCDD	7.67e4		7.67e4	31.21	1.018			9.767	0.0325	1.134	1.161	-2.3	1.38e6	1345	1023.9				bb	

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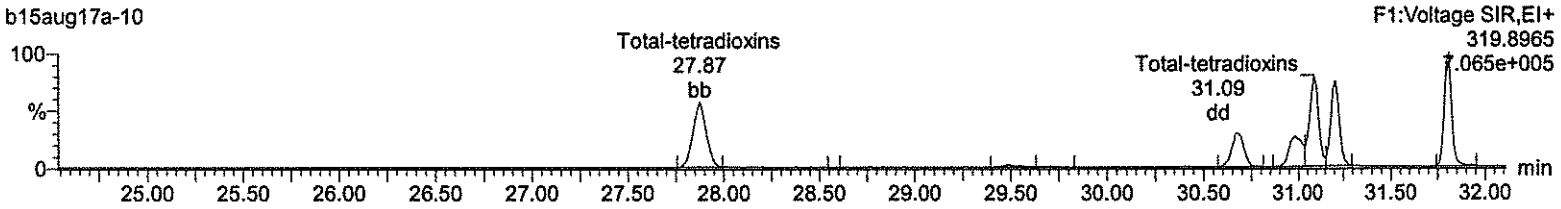
Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

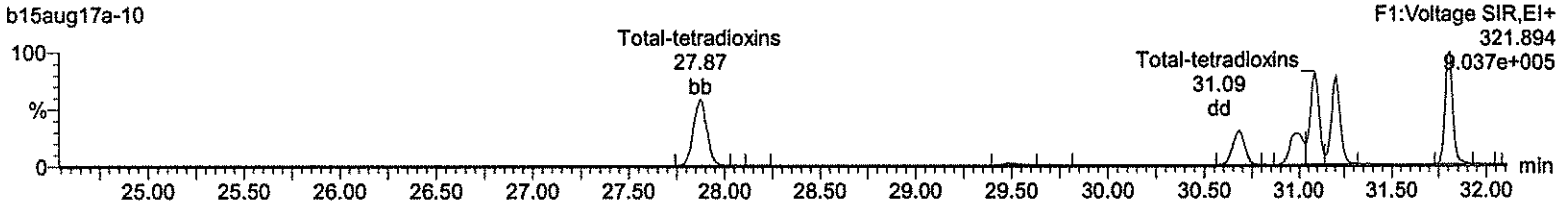
Method: C:\MassLynx\DEFAULT.PRO\MethDB\CFA_1613_b09aug17.mdb 09 Aug 2017 13:09:39
Calibration: C:\MassLynx\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

Total-tetradioxins



Total-tetradioxins



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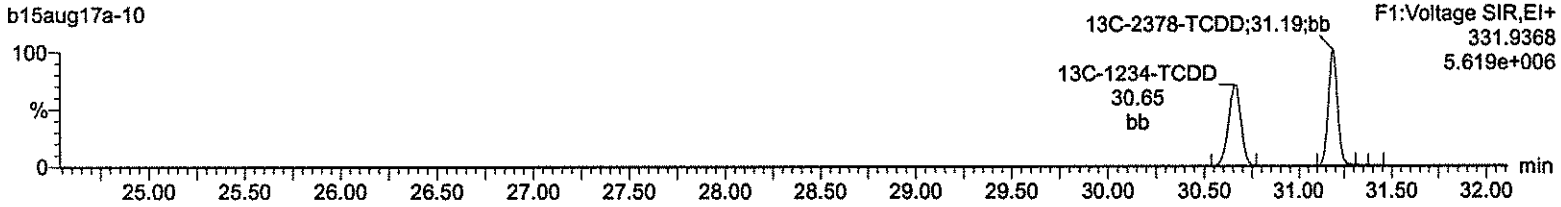

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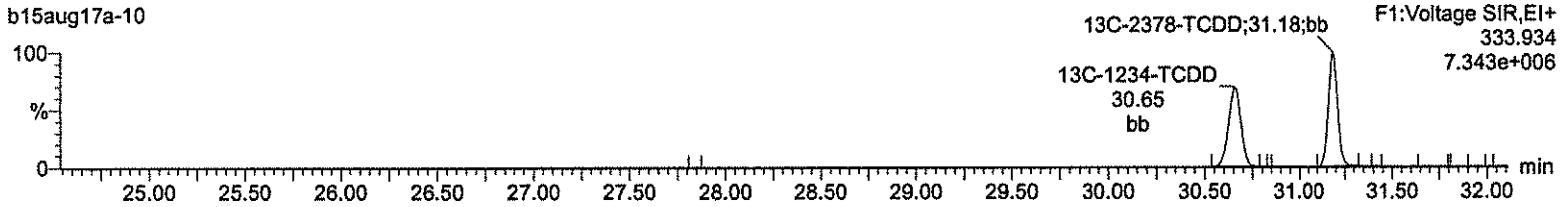

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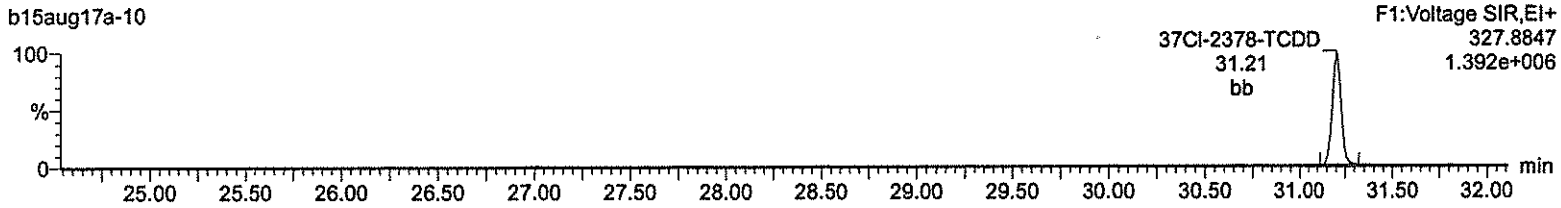
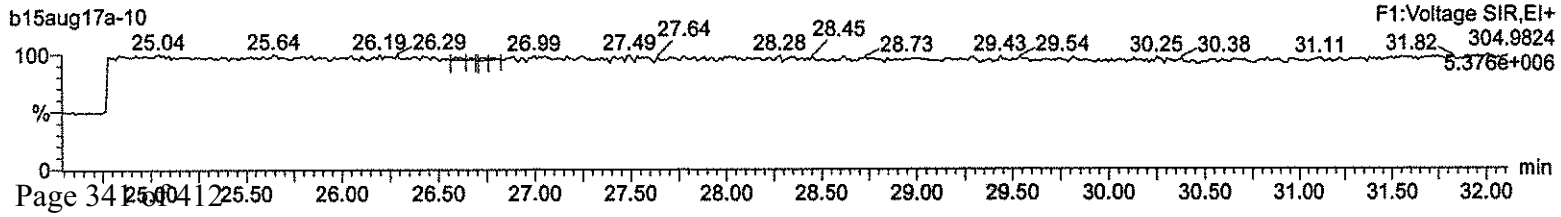


Lock Mass F1

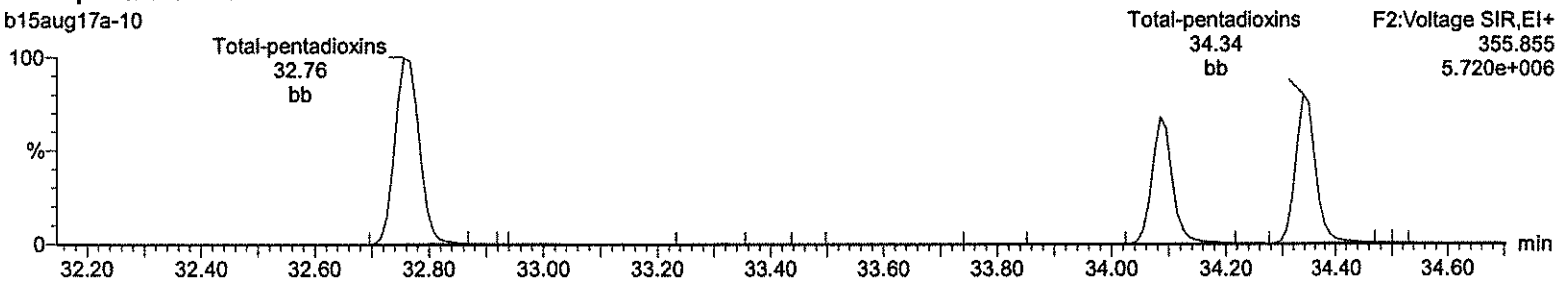


Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

Total-pentadioxins



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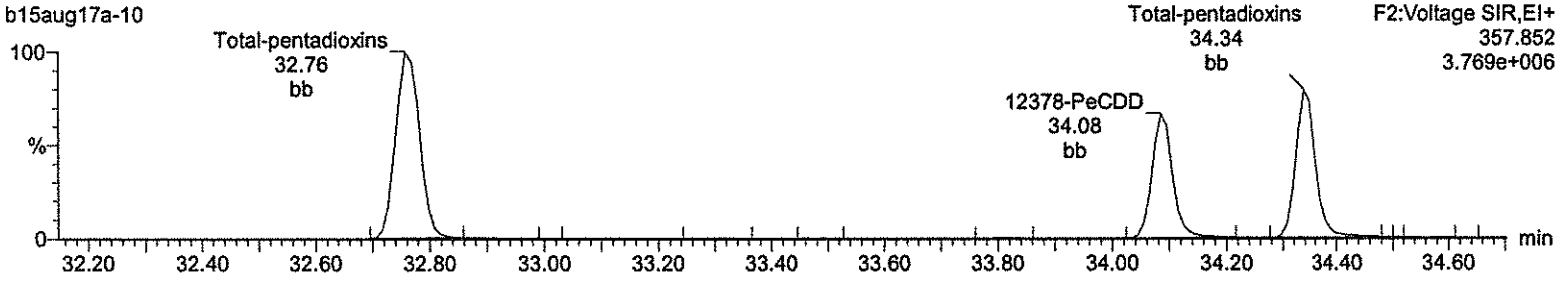

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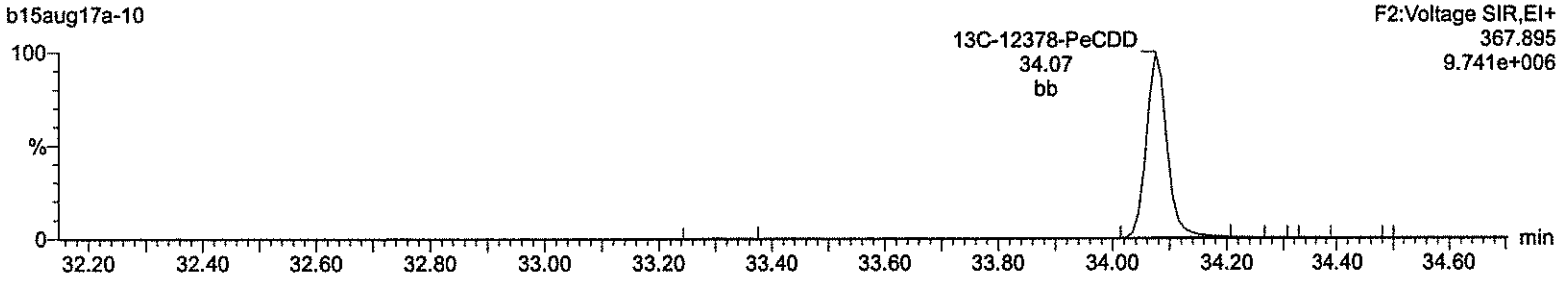

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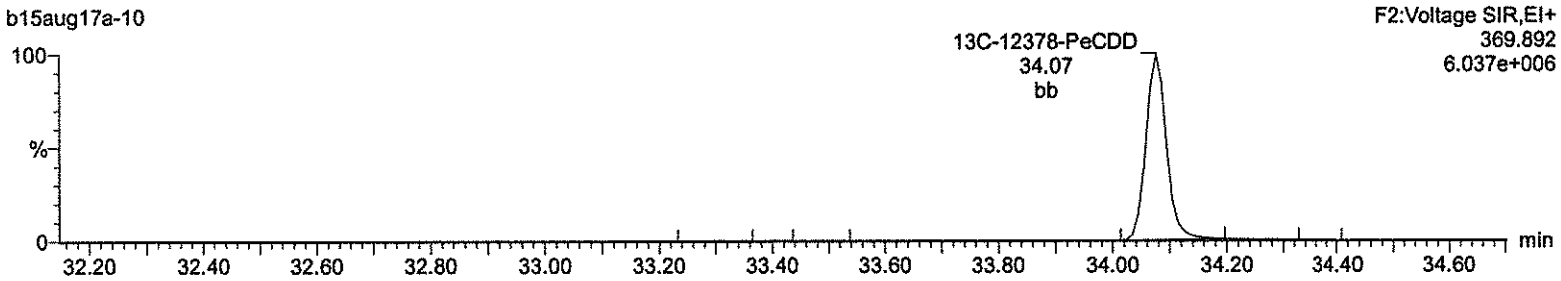

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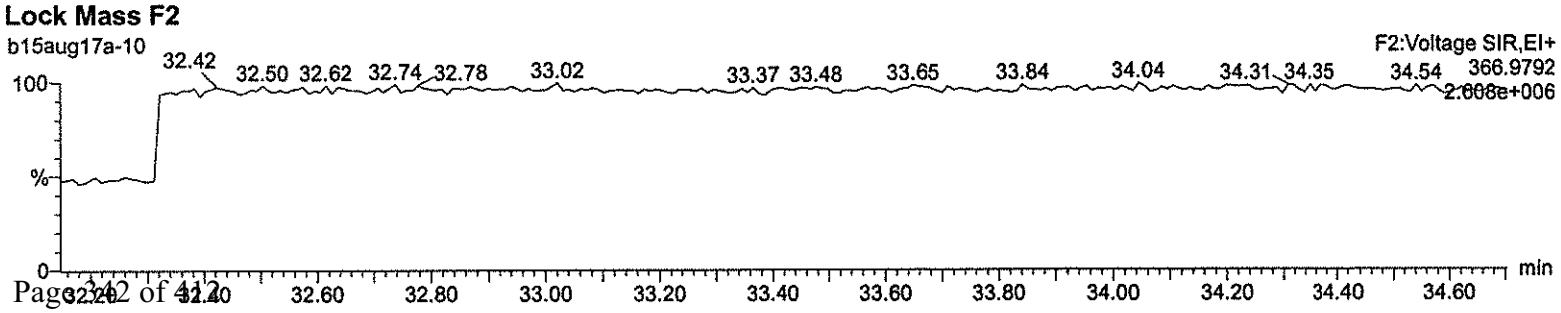

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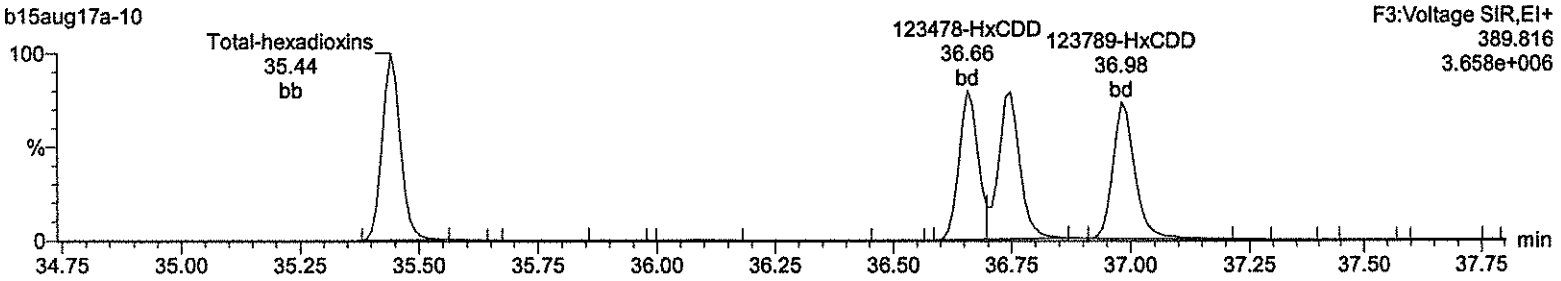
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

Total-hexadioxins



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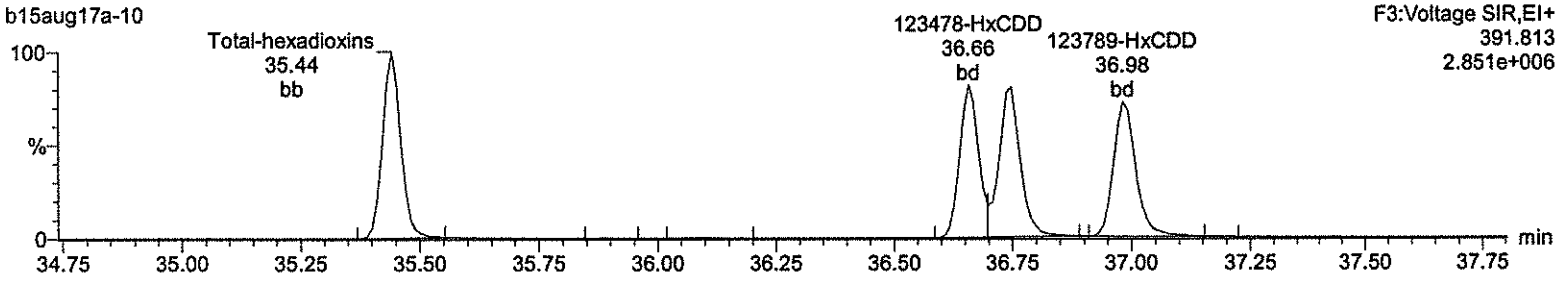

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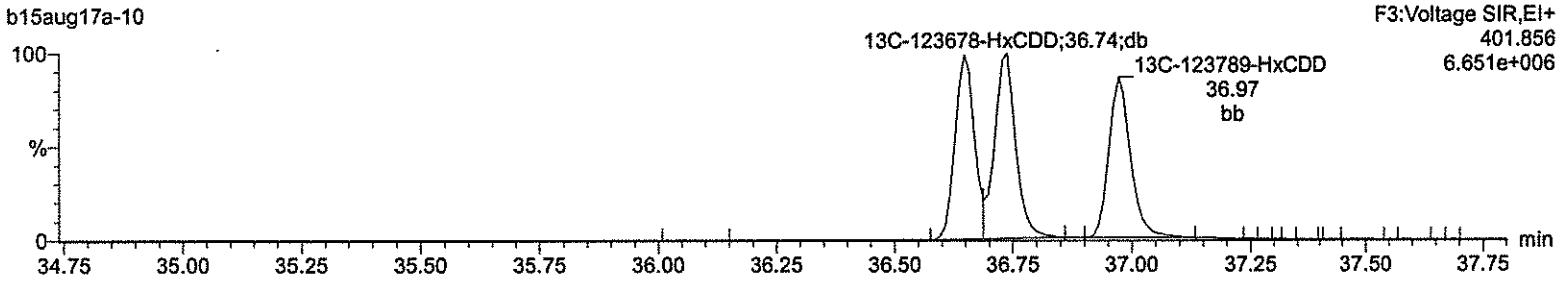

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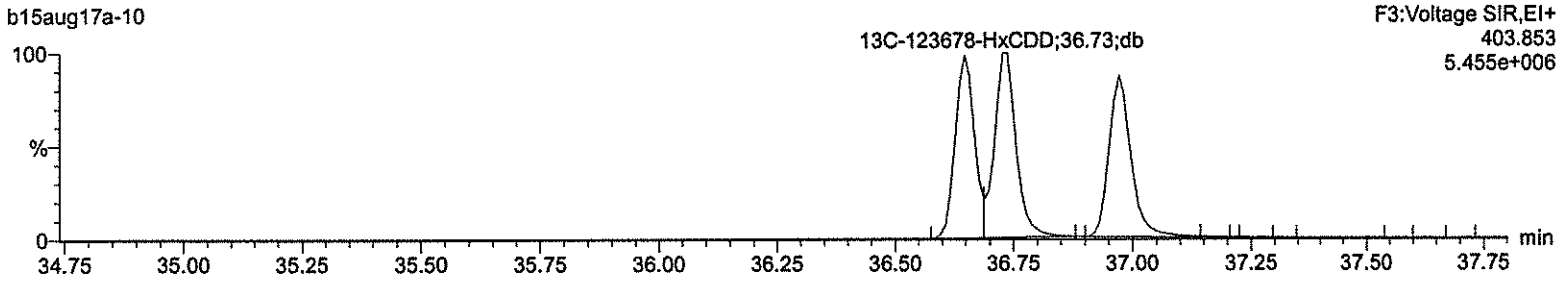

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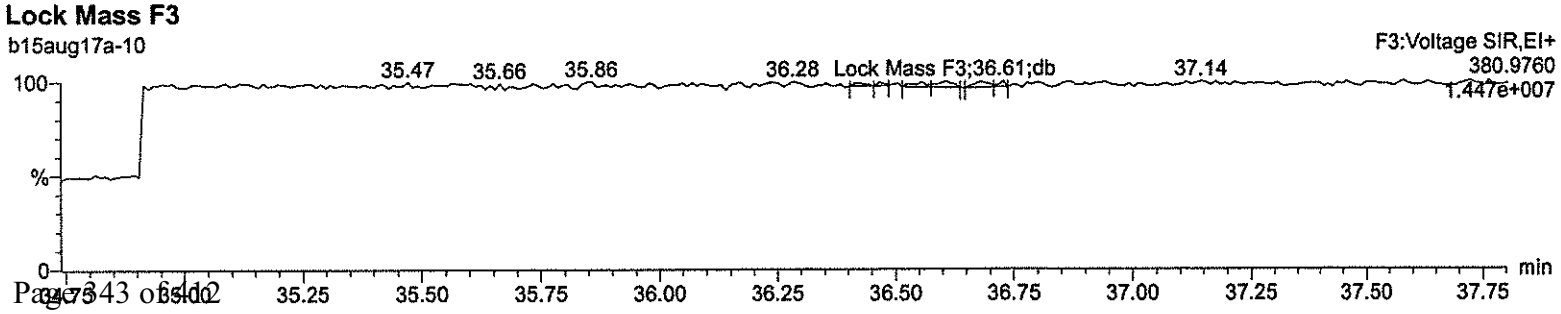

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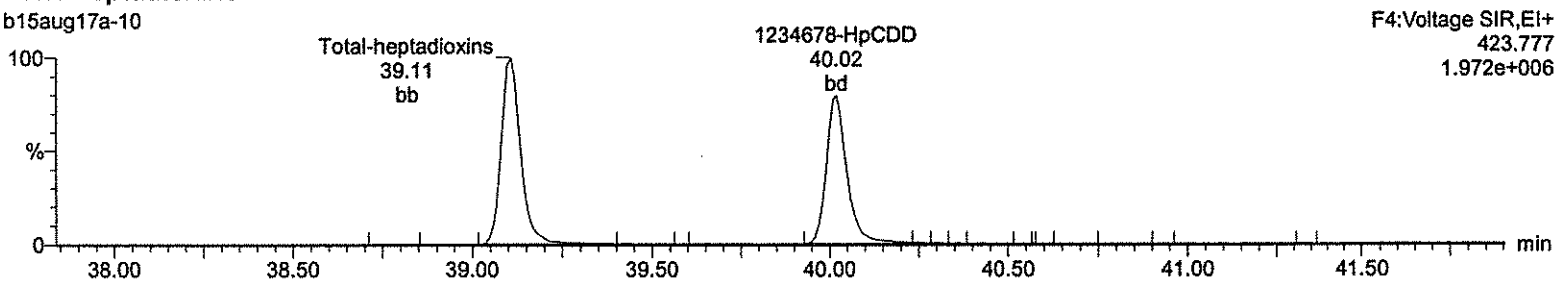
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

Total-heptadioxins



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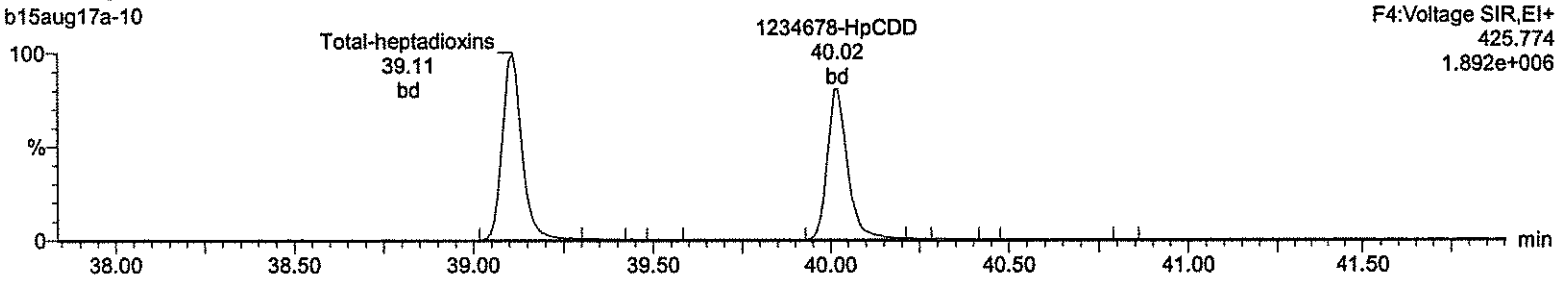

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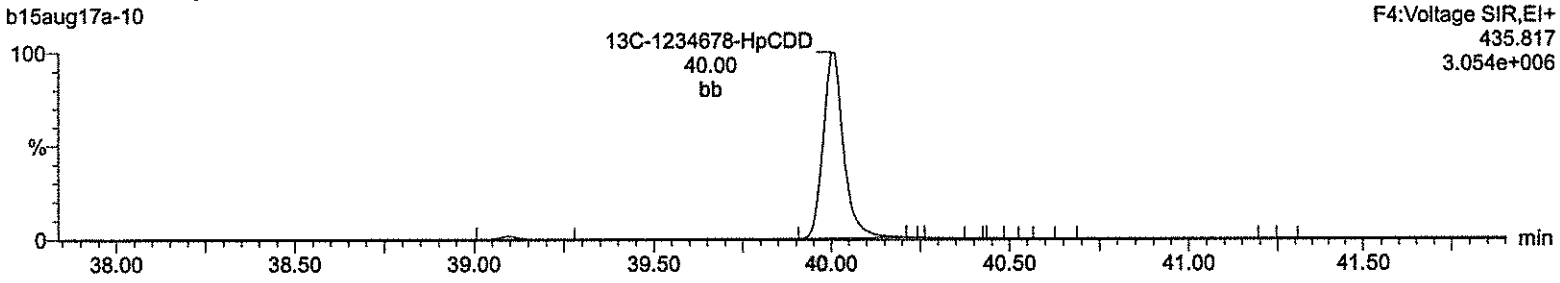

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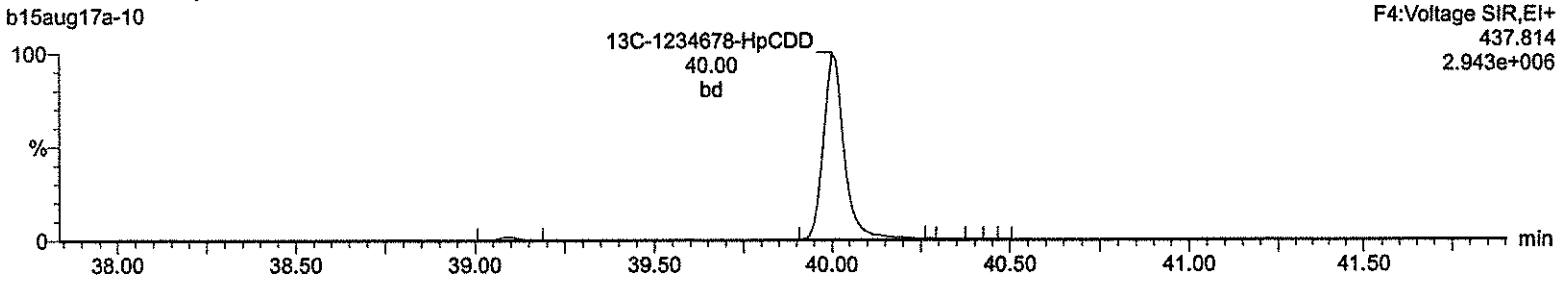

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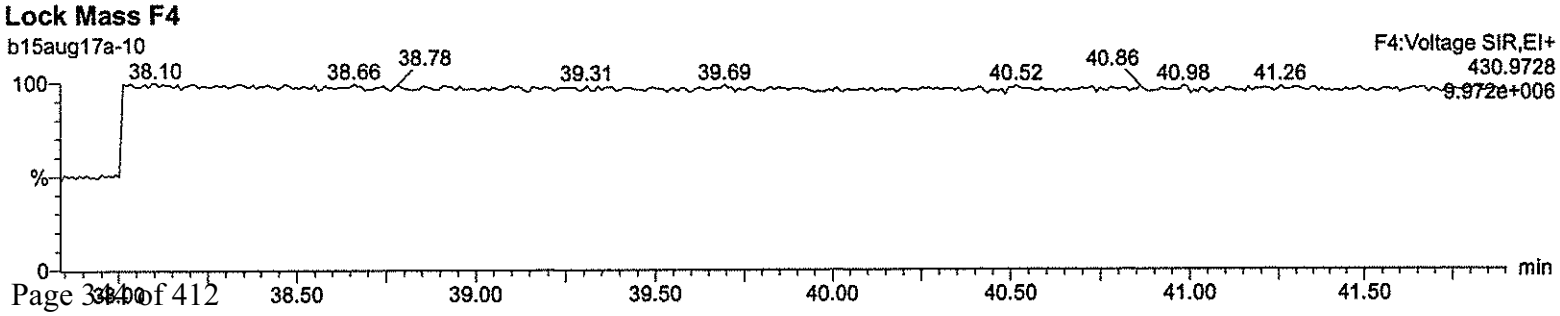
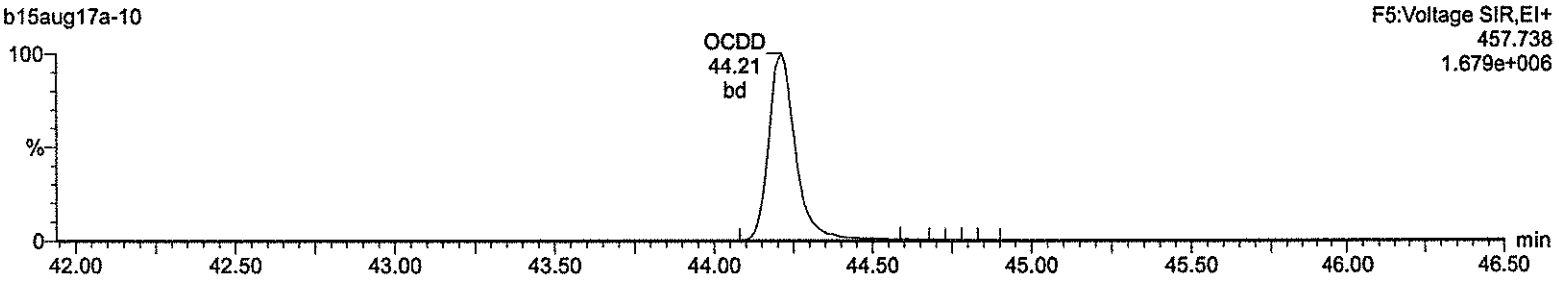


Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

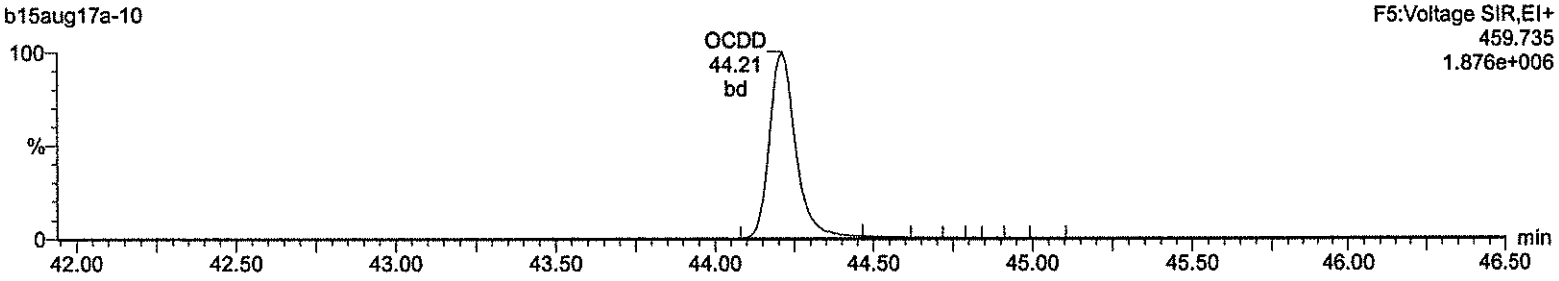
Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

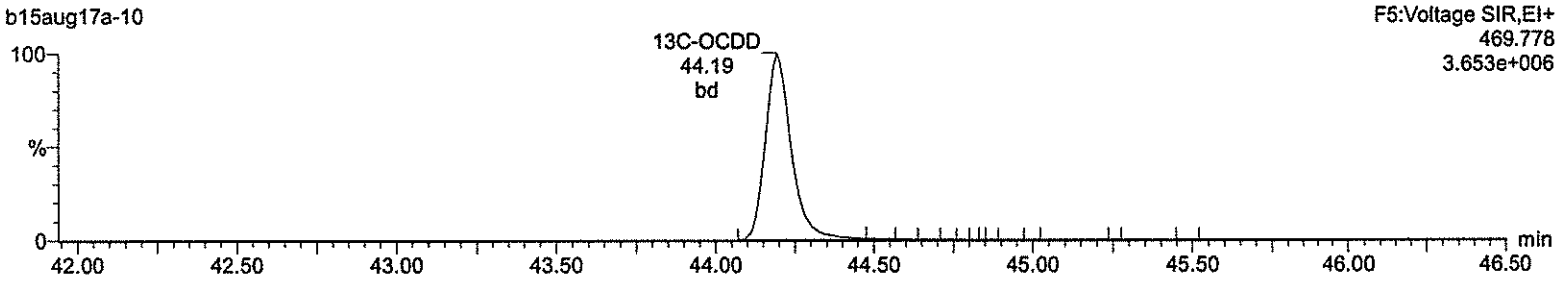
OCDD



OCDD



13C-OCDD



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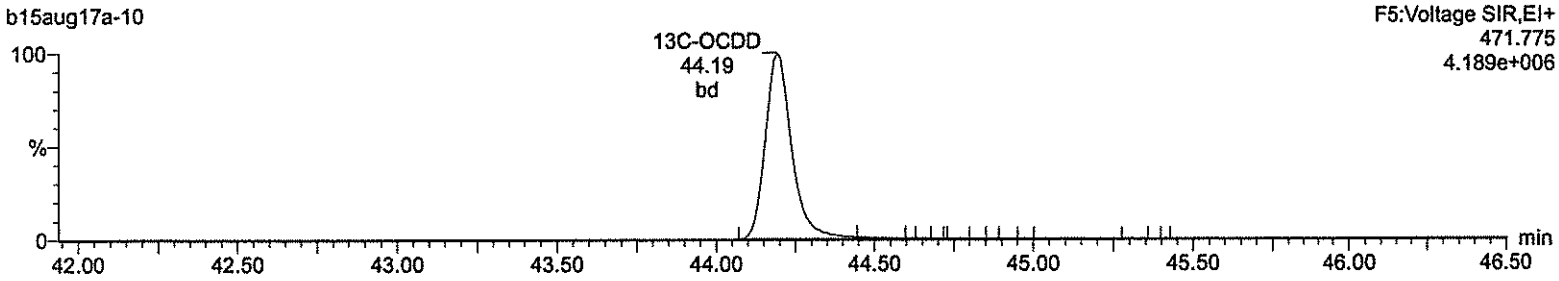
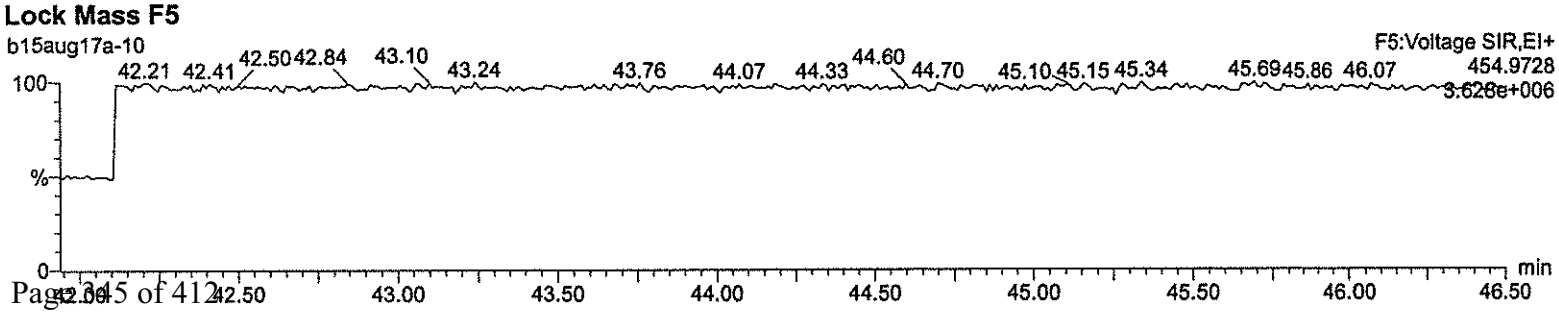


Lock Mass F5

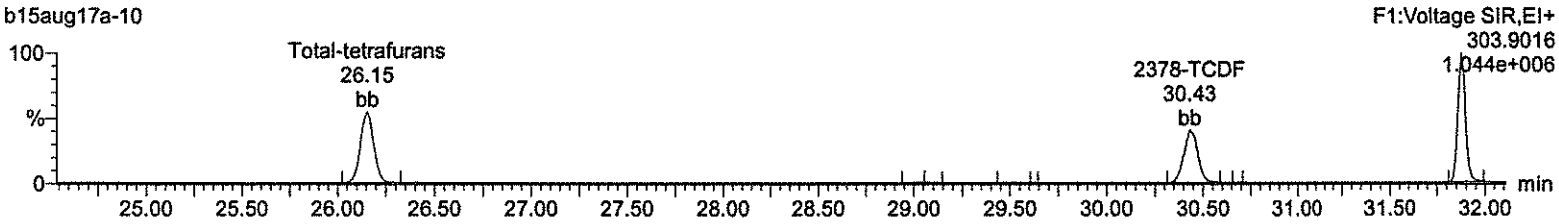


Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

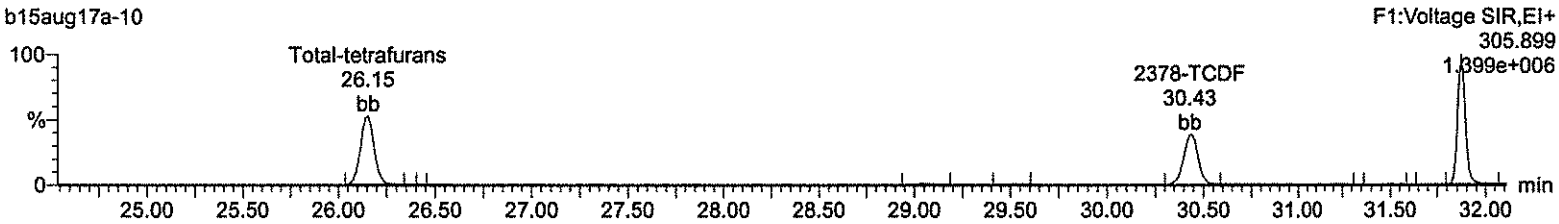
Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

Total-tetrafurans



Total-tetrafurans



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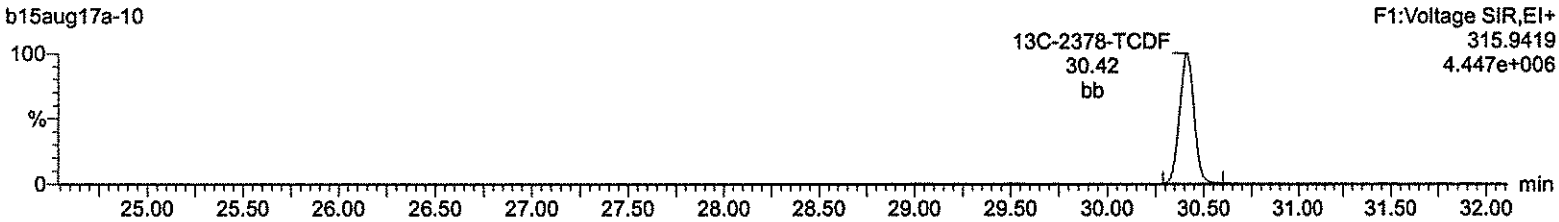

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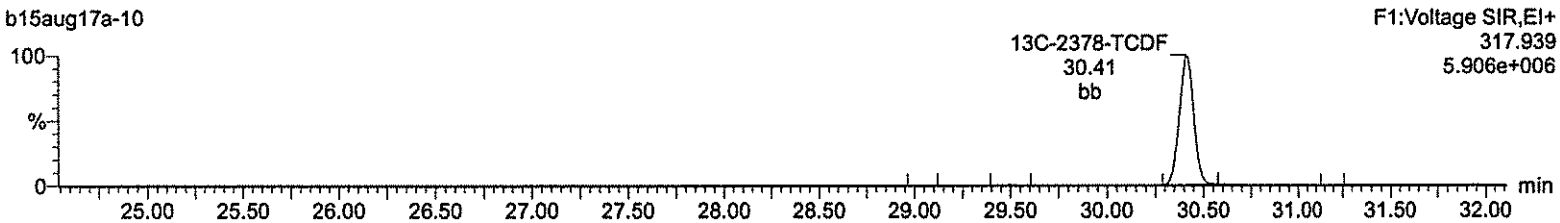
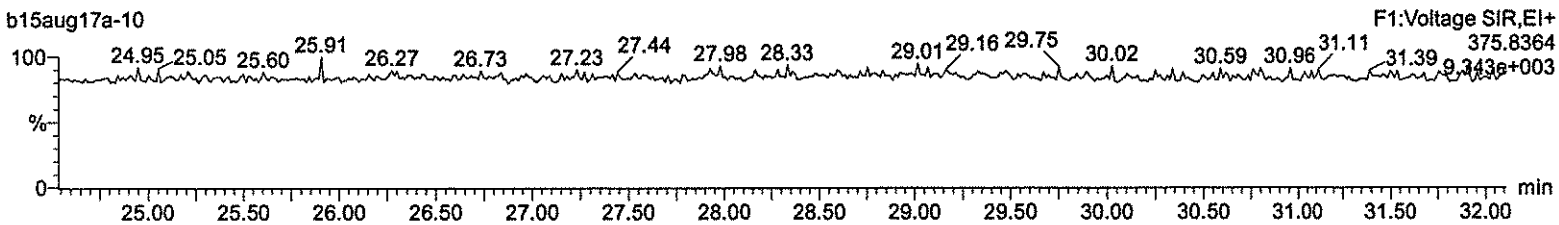
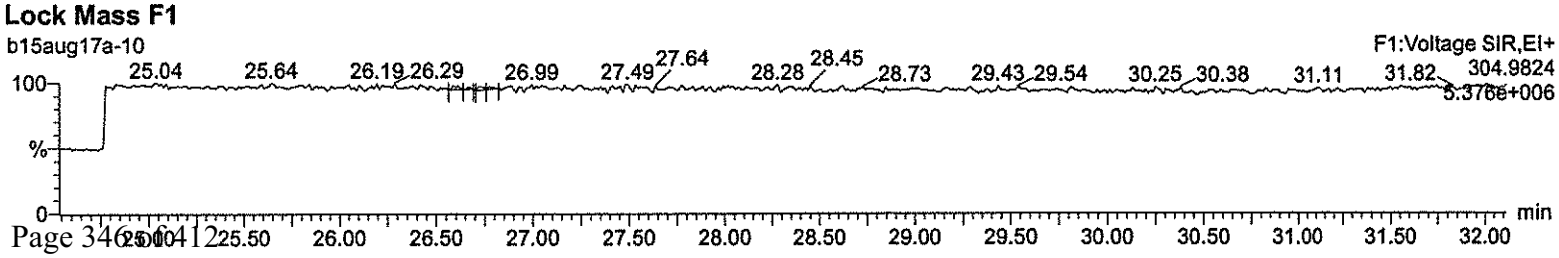


HxDPE



Lock Mass F1



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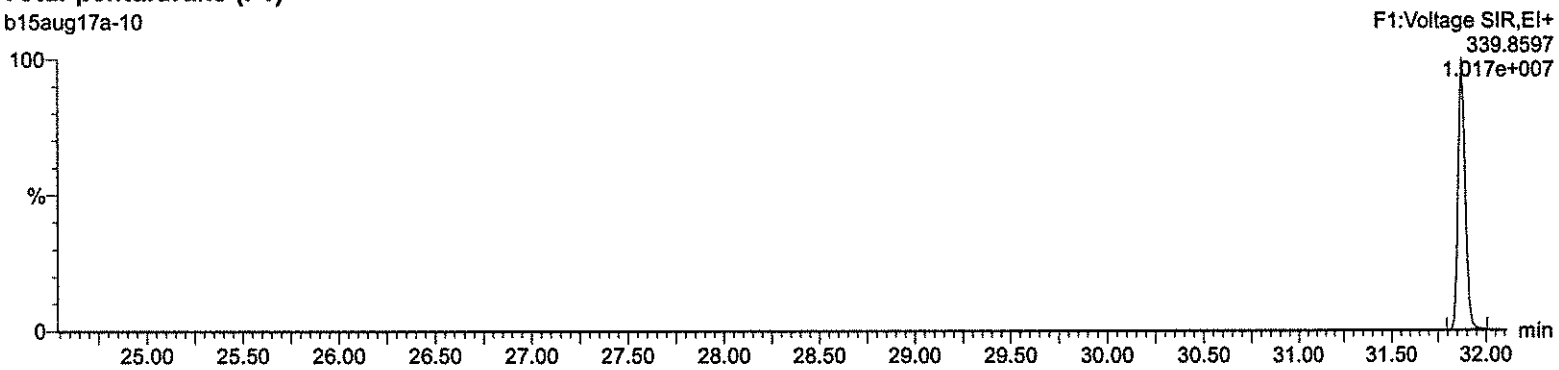
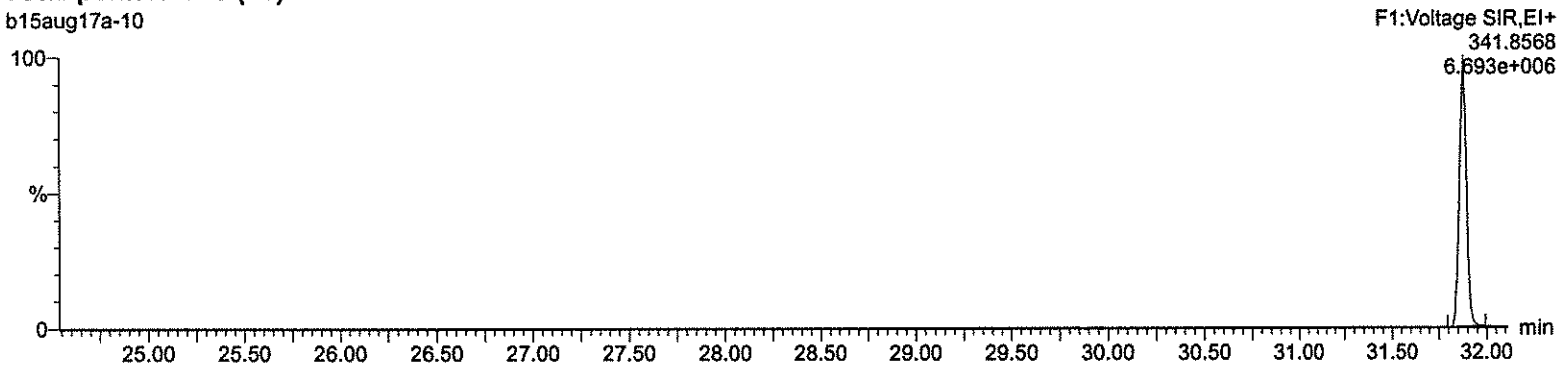
Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
Printed: Wednesday, August 16, 2017 10:28:03 Eastern Standard Time

Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

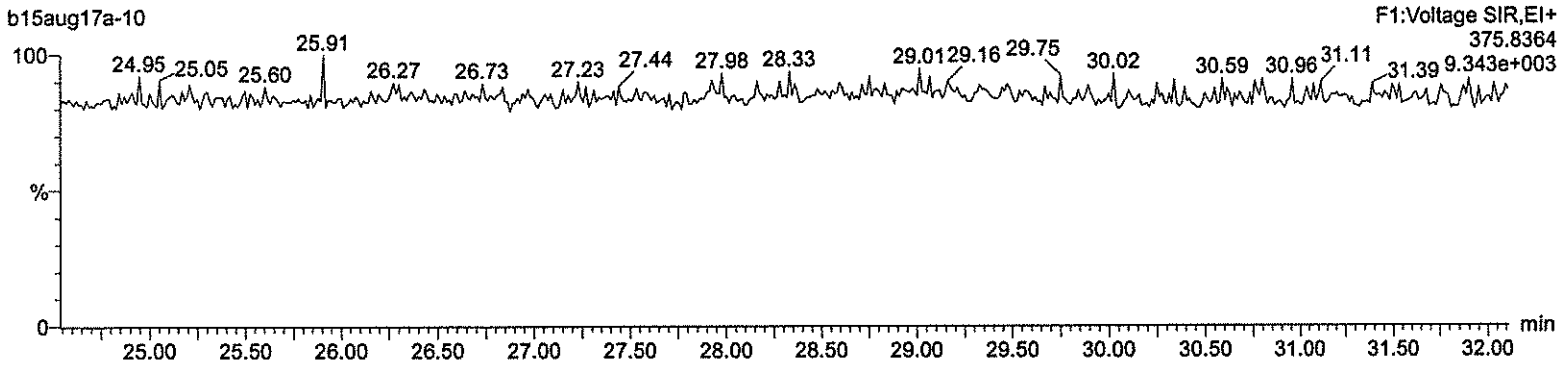
Total-pentafurans (F1)



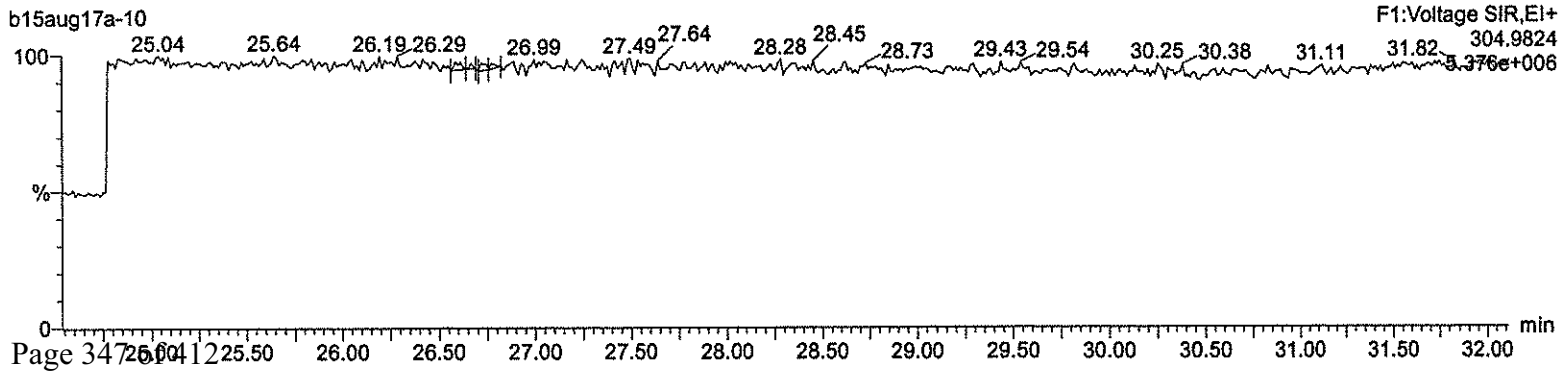
Total-pentafurans (F1)



HxDPE



Lock Mass F1



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Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
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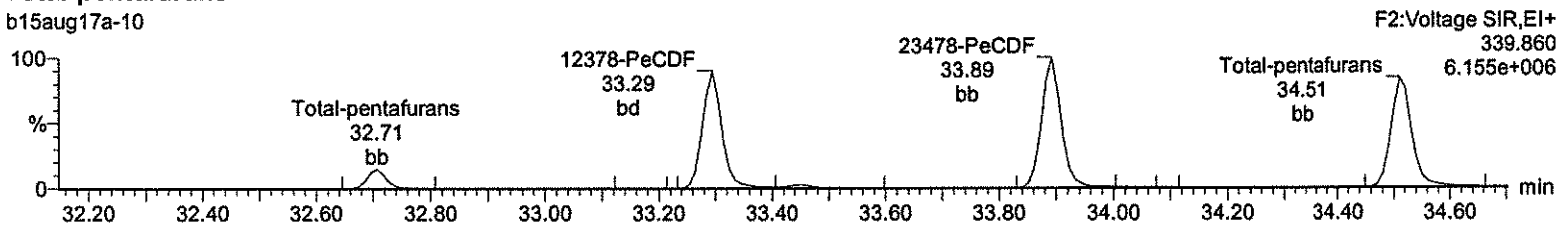
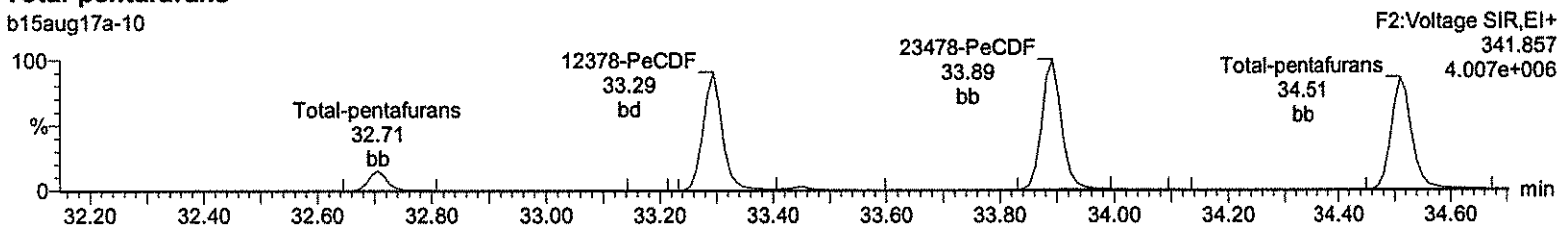
Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

Total-pentafurans



Total-pentafurans



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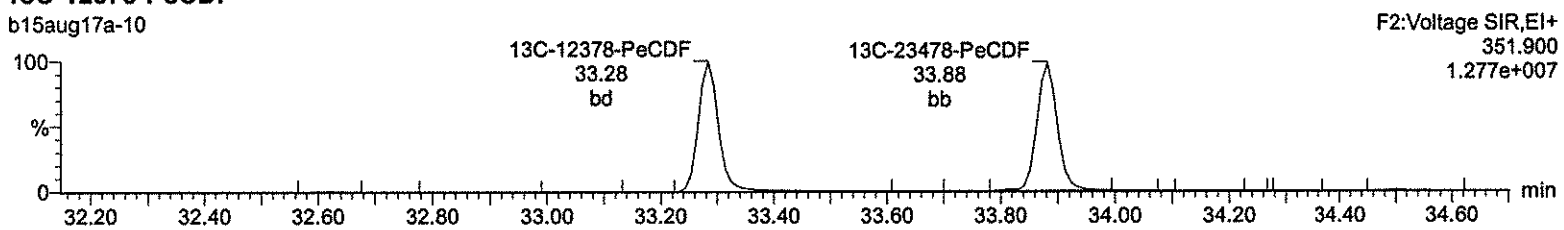

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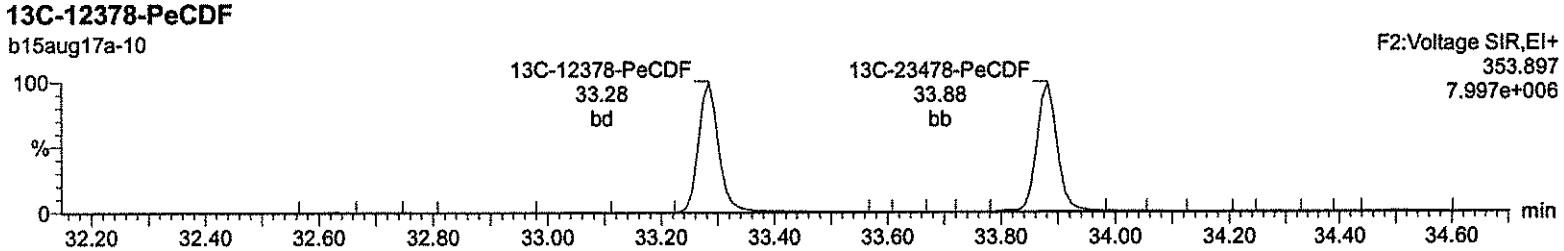
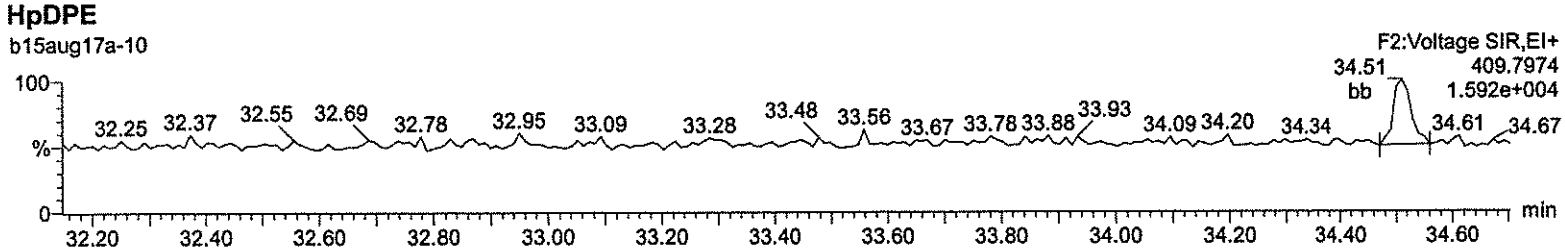
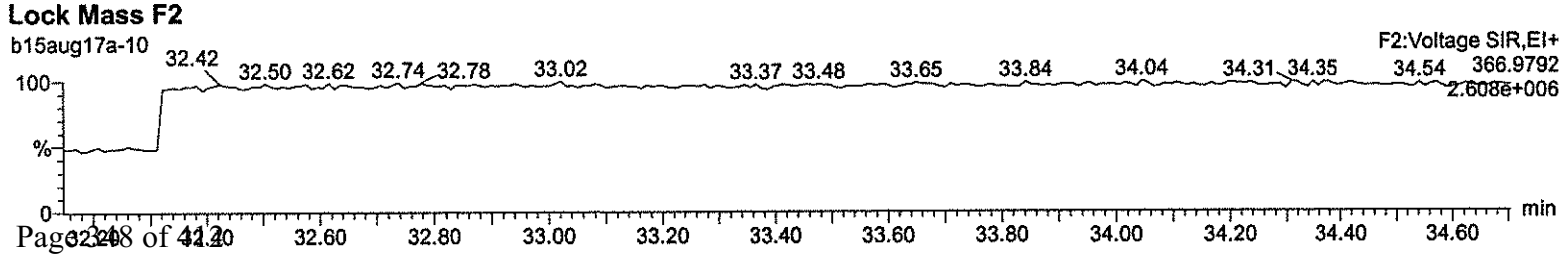


HpDPE



Lock Mass F2



Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b15aug17a-10.qld

Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
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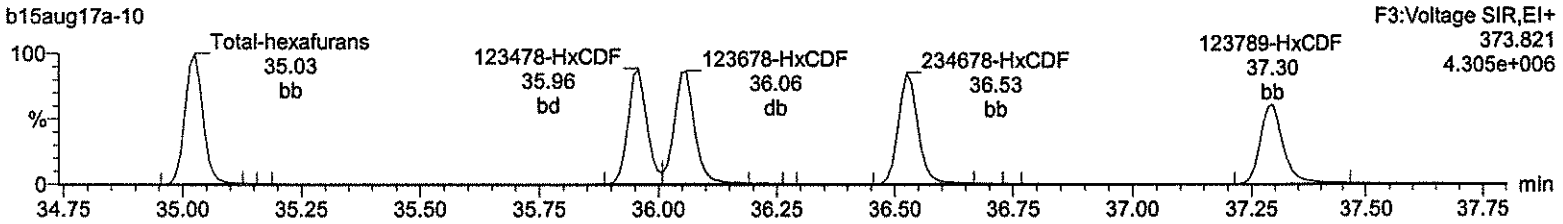
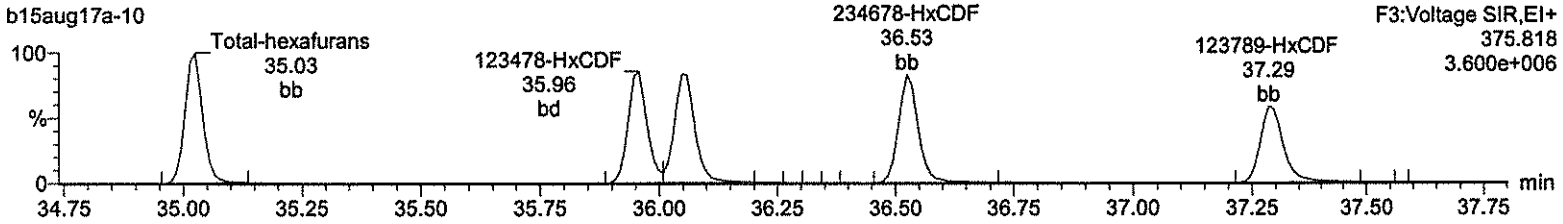
Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

Total-hexafurans



Total-hexafurans



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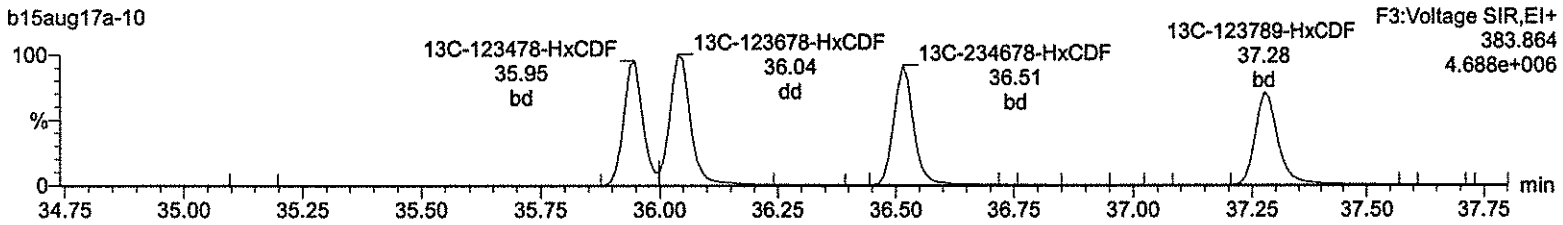

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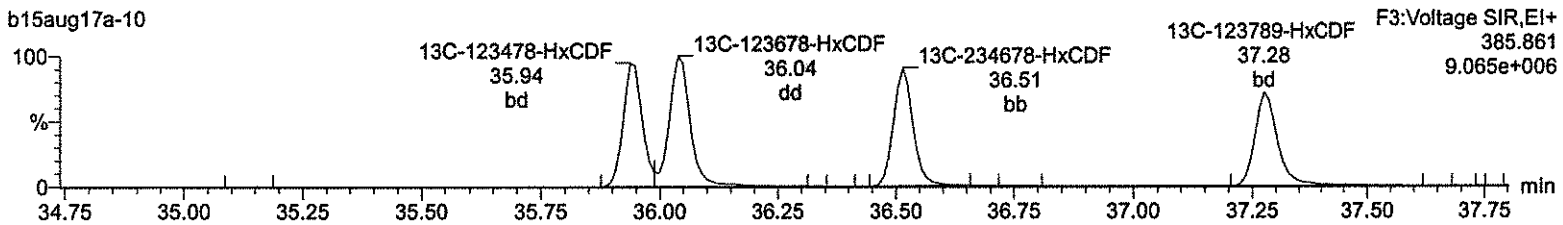
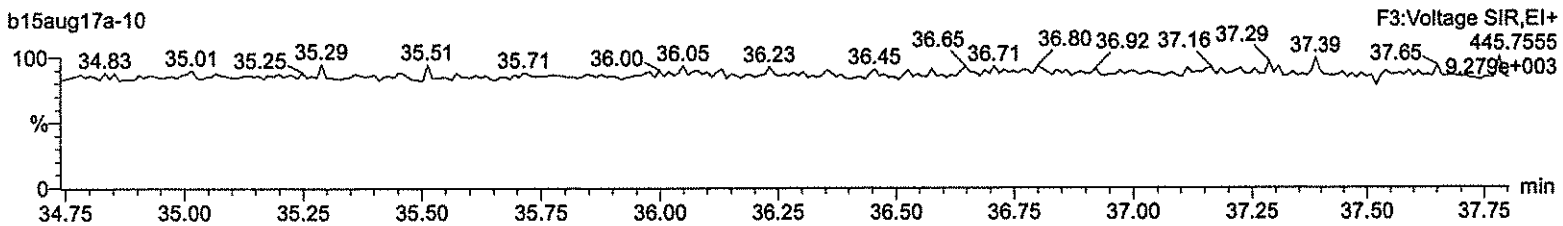
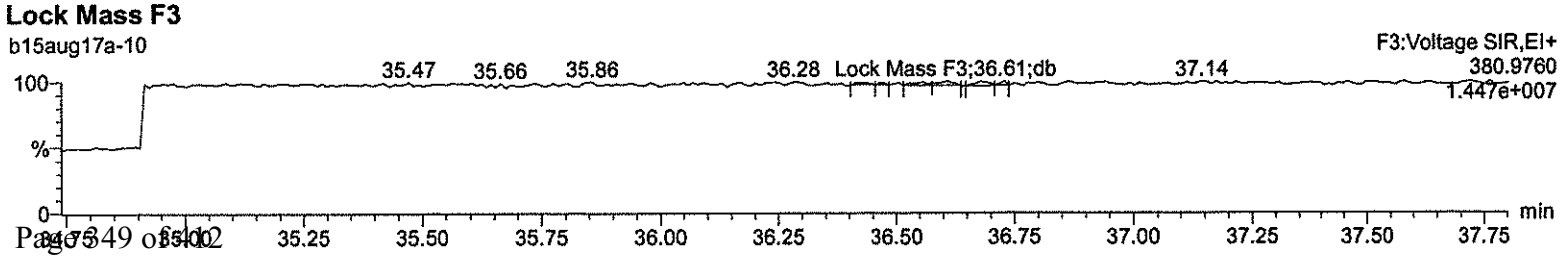


OcDPE



Lock Mass F3



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Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
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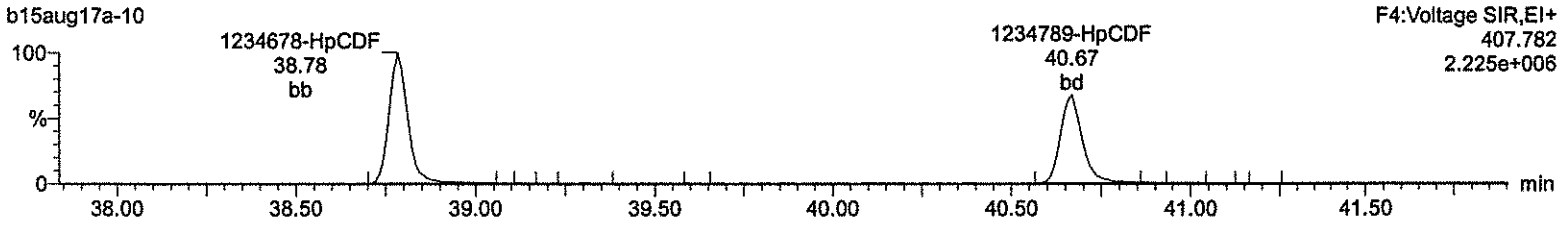
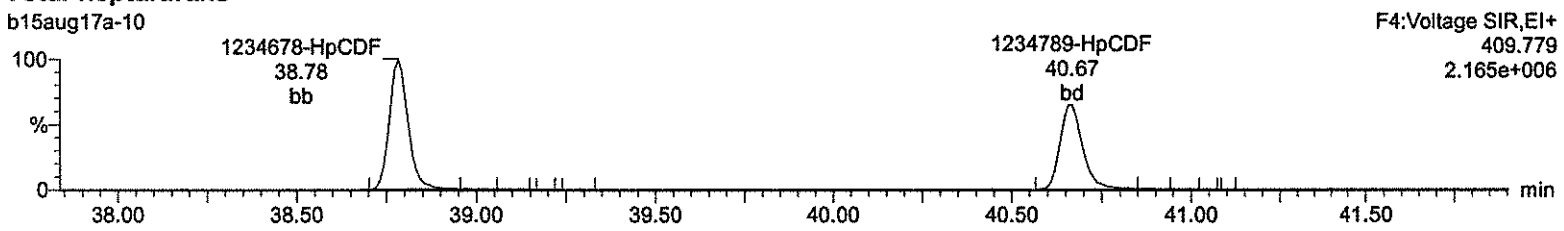
Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

Total-heptafurans



Total-heptafurans



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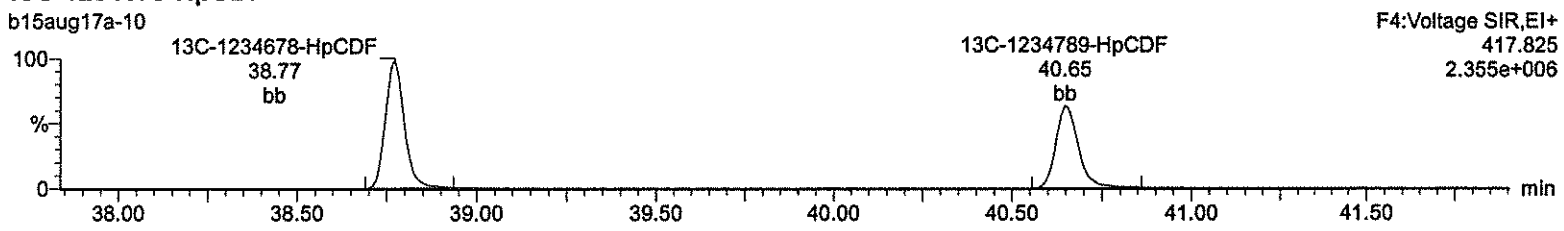

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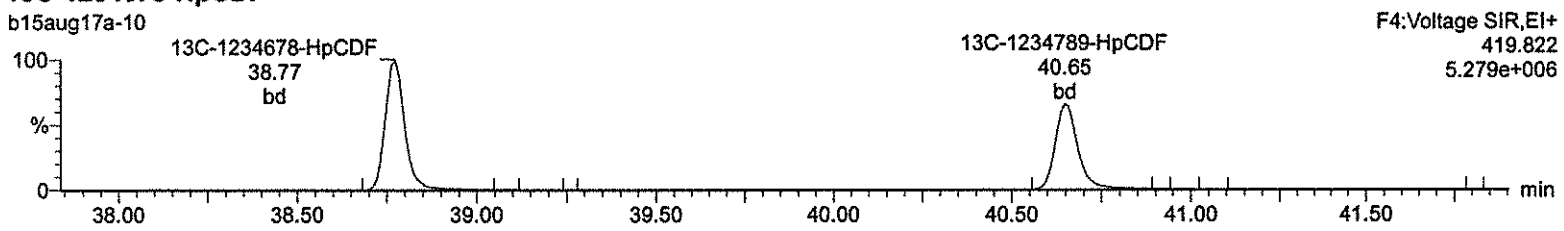

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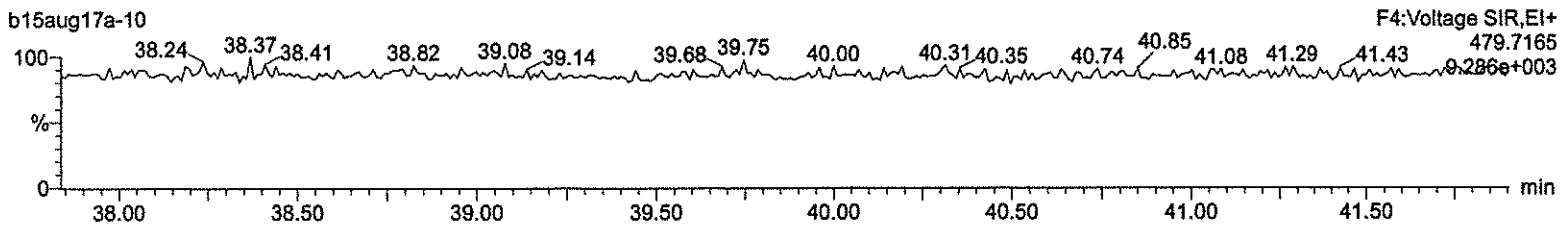
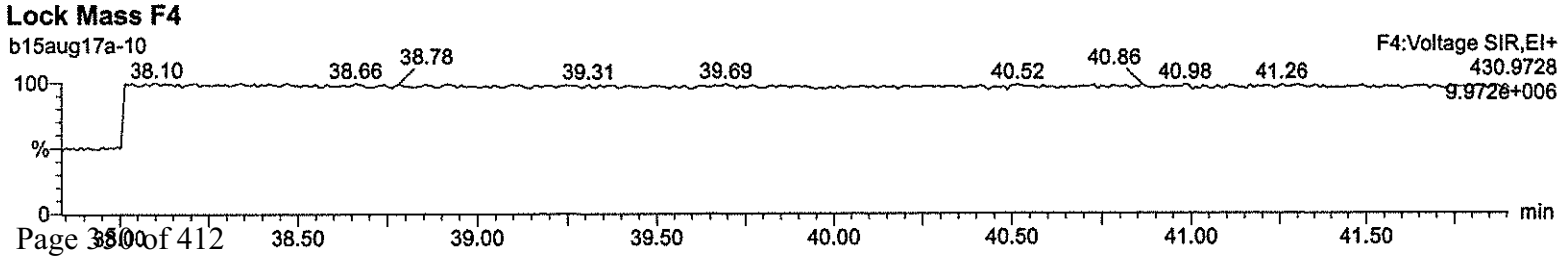


Lock Mass F4



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Last Altered: Wednesday, August 16, 2017 10:27:15 Eastern Standard Time
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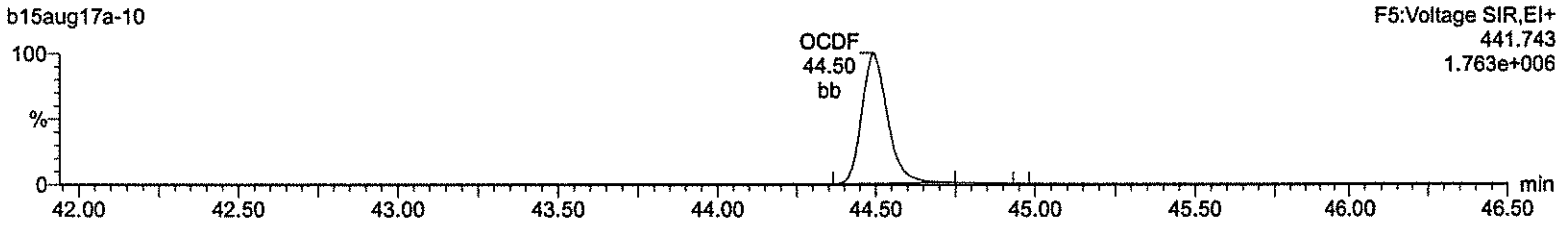
Name: b15aug17a-10, Date: 15-Aug-2017, Time: 17:49:35, ID: CS3WT UD170522-01.1 CPS6C, Description: , Job: b15aug17a, Task: HRP763_1, User: CLP

OCDF



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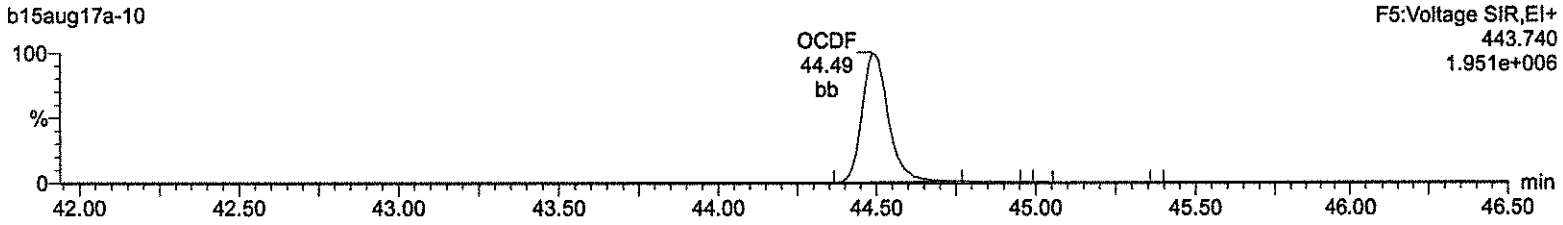

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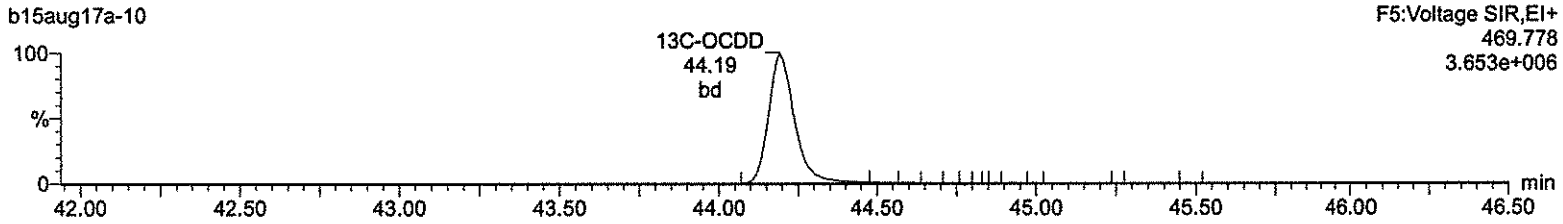

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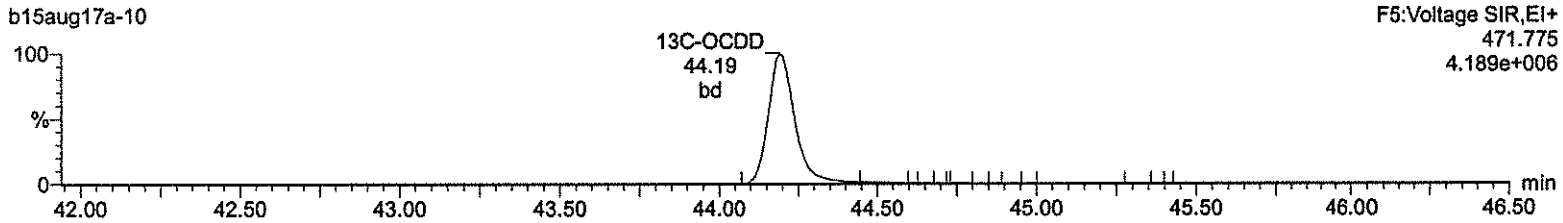
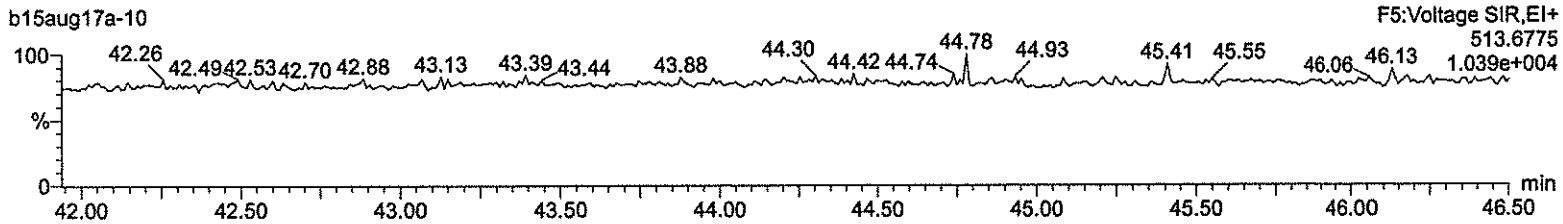
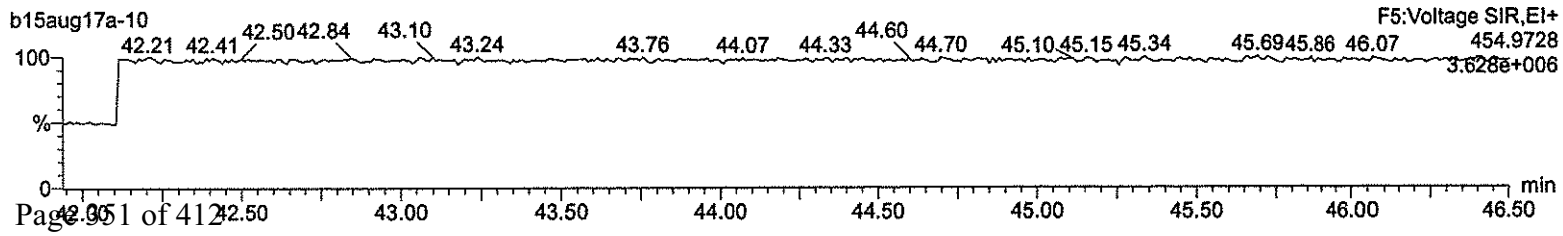


DeDPE



Lock Mass F5



Continuing Calibration Data

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Instrument: HRP763_1

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b28mar18b_3-1	29-MAR-2018 09:48:33	Chris Presnell	12020962-1 LCS	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-2	29-MAR-2018 10:36:19	Chris Presnell	12020963-1 LCSD	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-3	29-MAR-2018 11:24:51	Chris Presnell	12020961-1 MB	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-4	29-MAR-2018 12:13:24	Chris Presnell	13098001-1	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-5	29-MAR-2018 13:01:58	Chris Presnell	12020965-1 MS	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-6	29-MAR-2018 13:50:32	Chris Presnell	12020966-1 MSD	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-7	29-MAR-2018 14:39:06	Chris Presnell	13098002-1	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-8	29-MAR-2018 15:27:39	Chris Presnell	13098003-1	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-9	29-MAR-2018 16:16:13	Chris Presnell	13098004-1	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-10	29-MAR-2018 17:04:47	Chris Presnell	13098005-1	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-11	29-MAR-2018 17:53:21	Chris Presnell	13098006-1	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-12	29-MAR-2018 18:41:55	Chris Presnell	13098007-1	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-13	29-MAR-2018 19:30:29	Chris Presnell	13098008-1	37255	1 uL	dioxin_db5ms	10K
b28mar18b_3-14	29-MAR-2018 20:19:03	Chris Presnell	CS3WT UD180115-01.2		1 uL	dioxin_db5ms	10K

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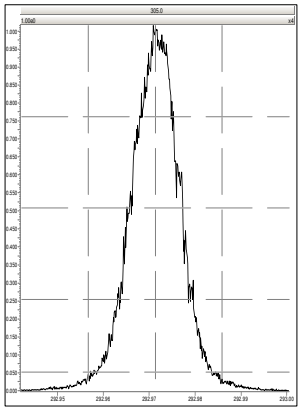
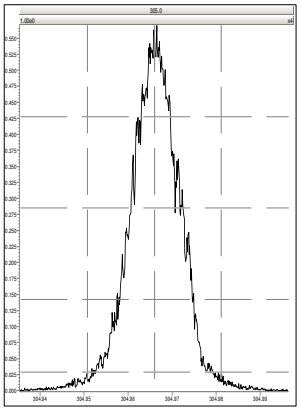
Resolution Check Report **MassLynx 4.1**

Printed: Thursday, March 29, 2018 09:48:28 Eastern Standard Time

M 292.9824 R 11471



M 304.9824 R 11709



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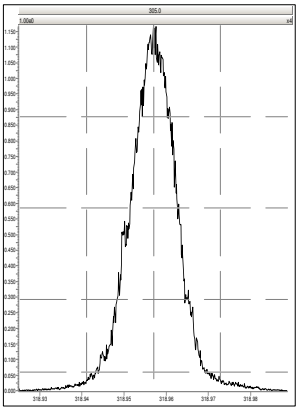
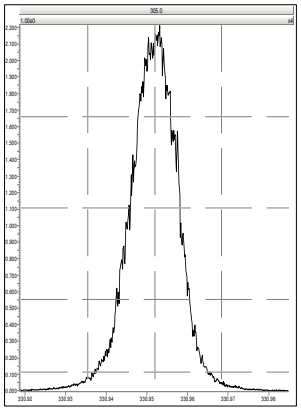


M 330.9792 R 11821



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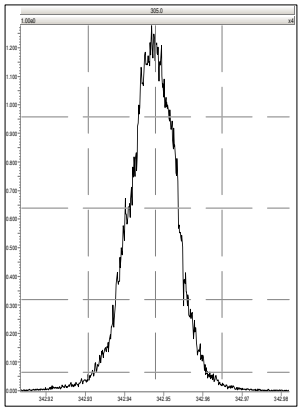

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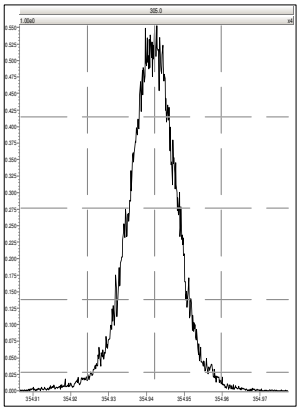

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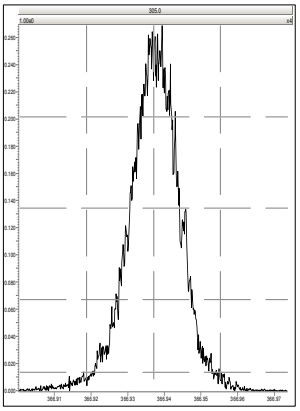

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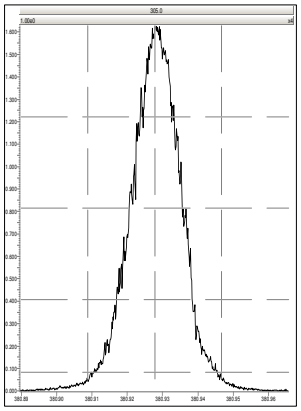

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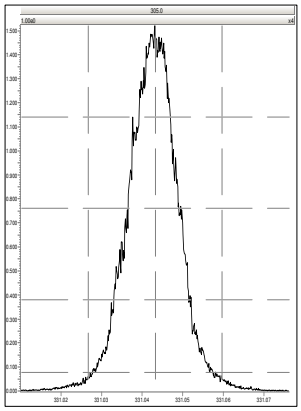

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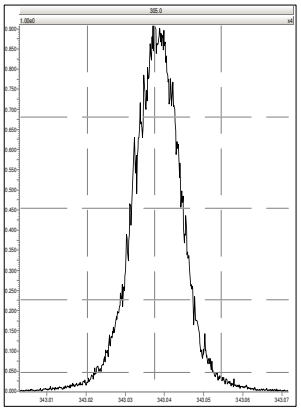

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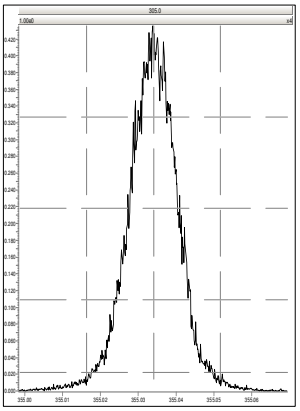

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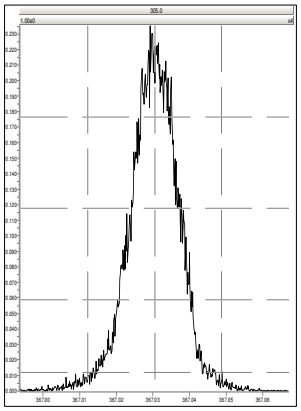

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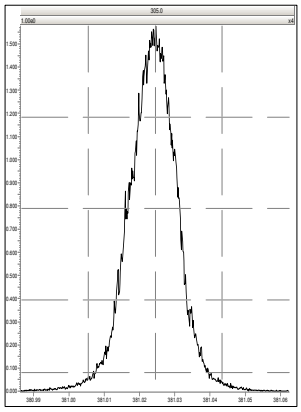

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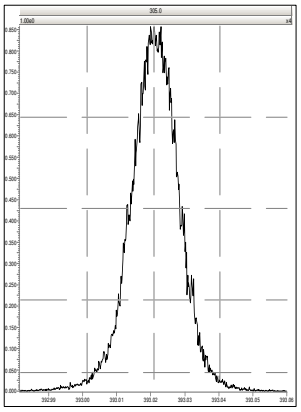

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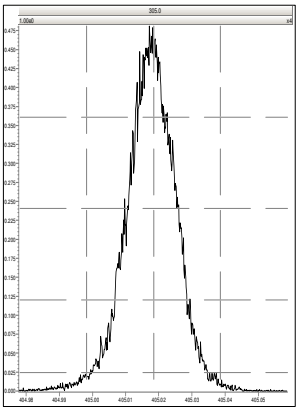

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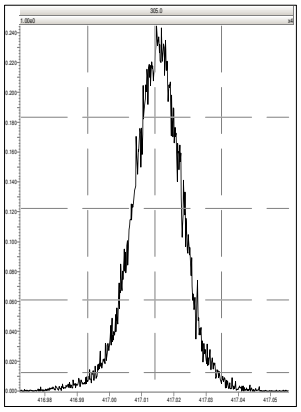

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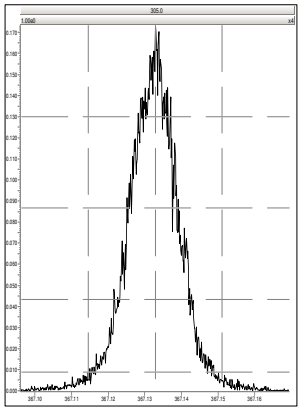

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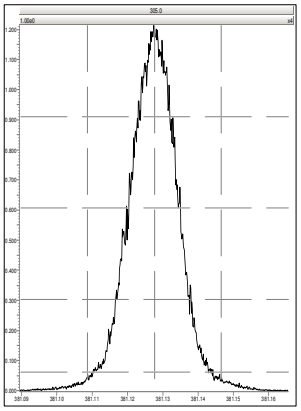

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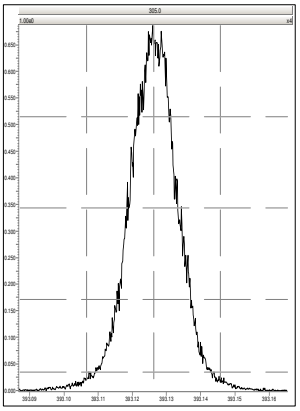

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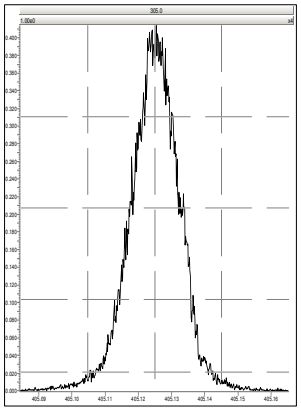

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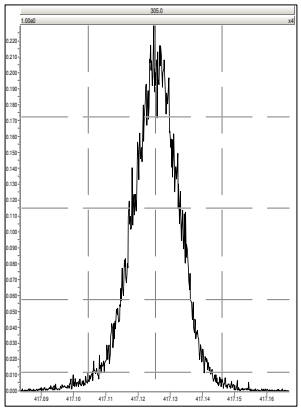

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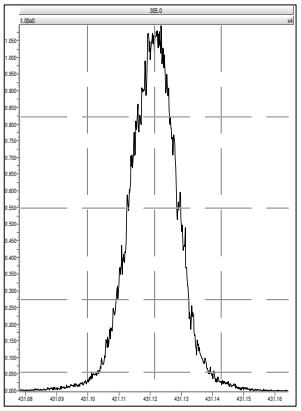

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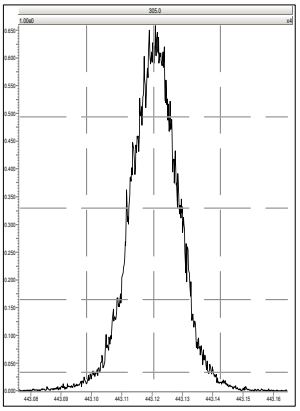

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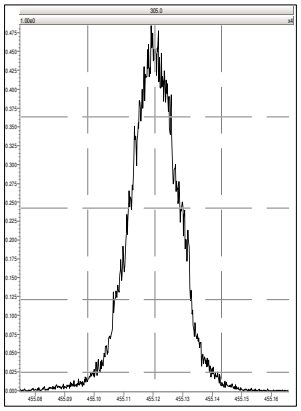

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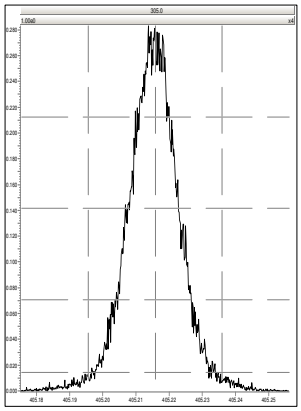

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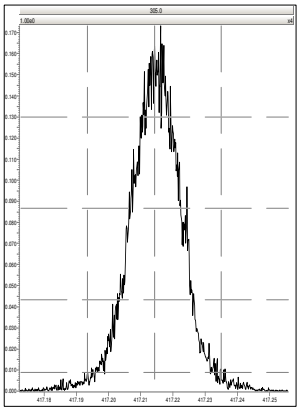

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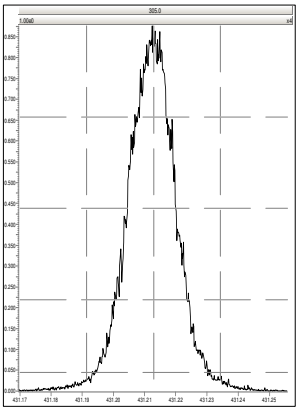

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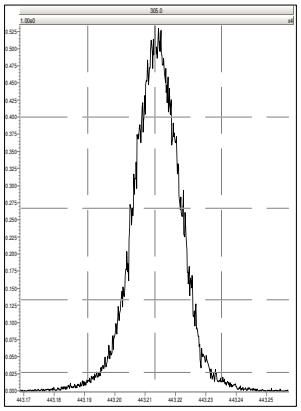

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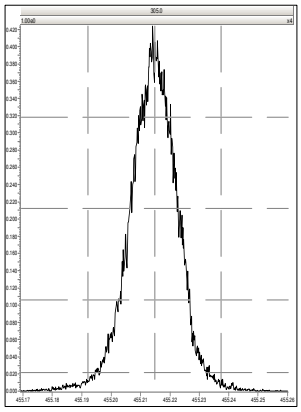

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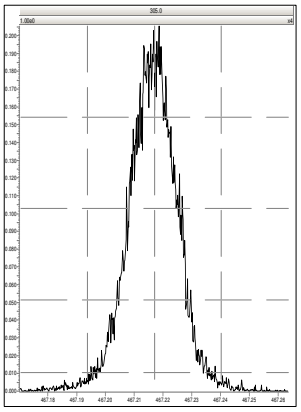

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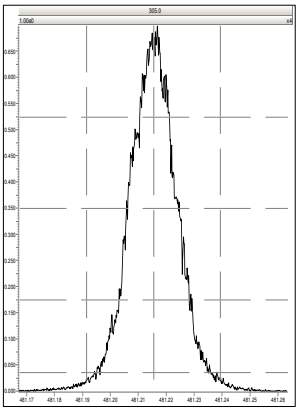

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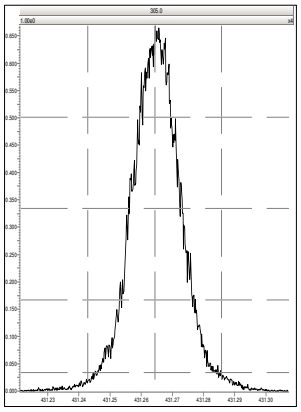

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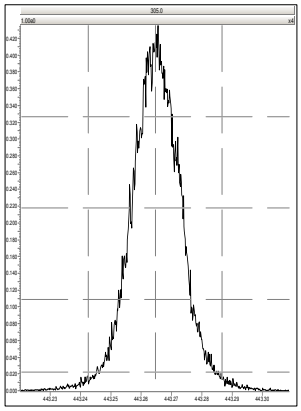

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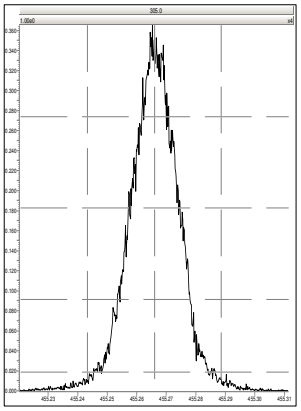

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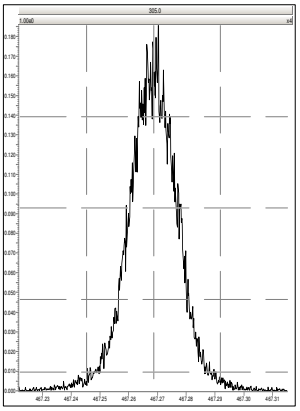

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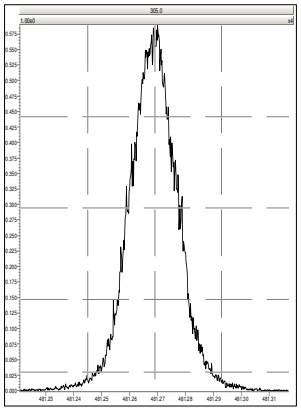

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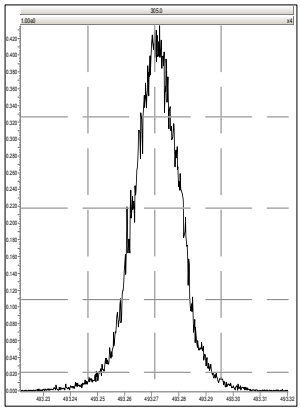

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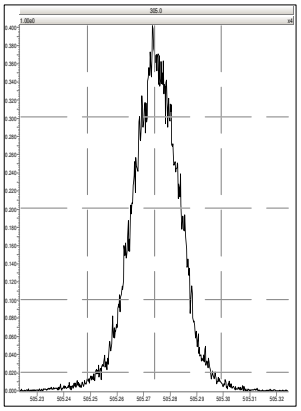

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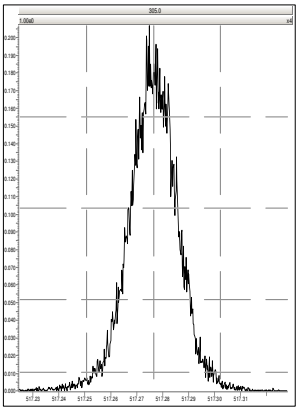

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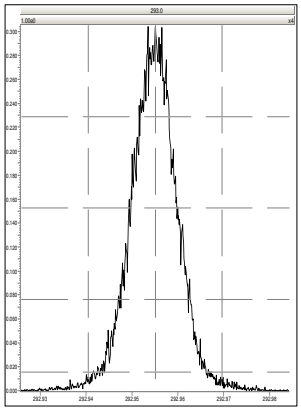

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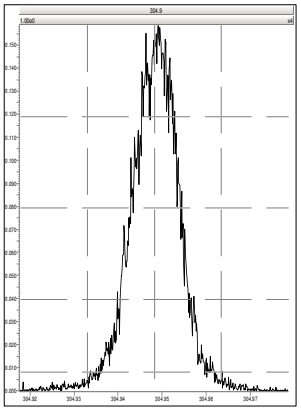

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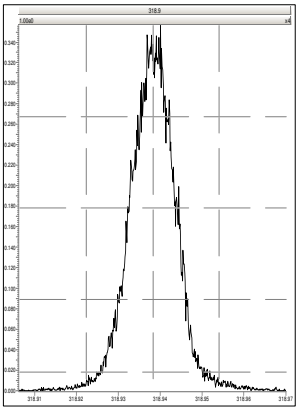

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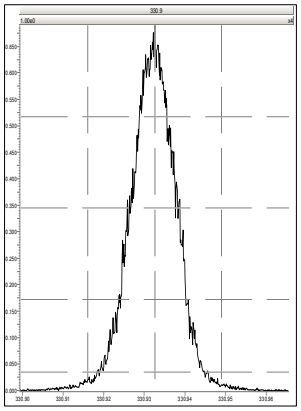

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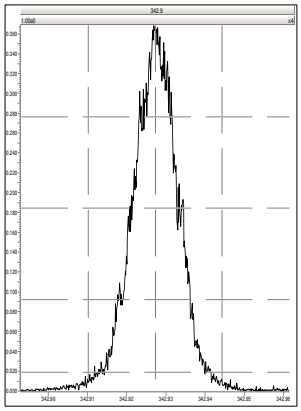

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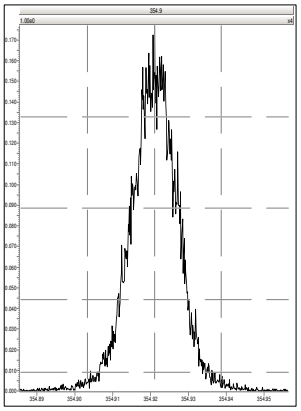

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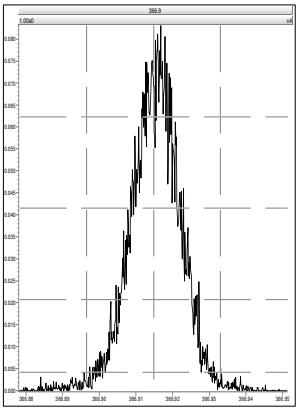

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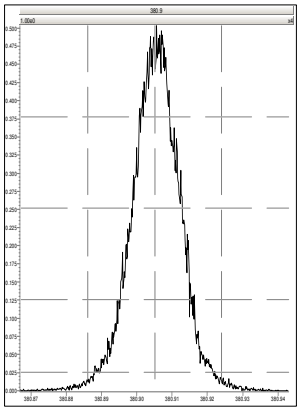

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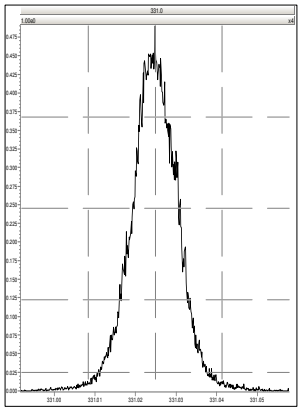

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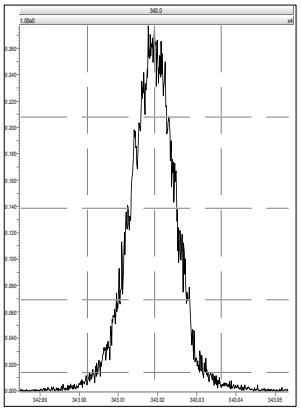

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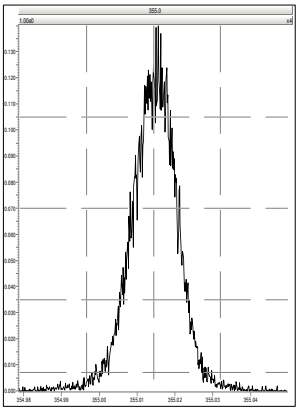

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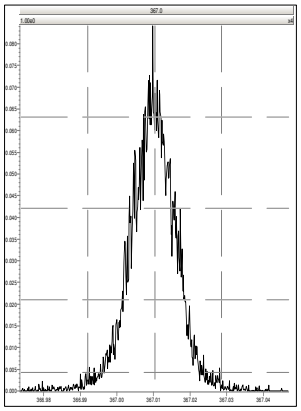

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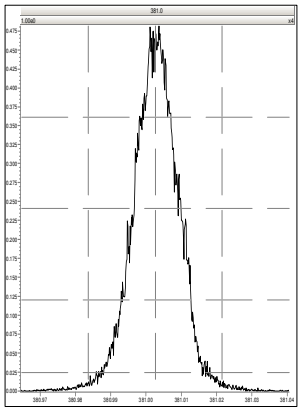

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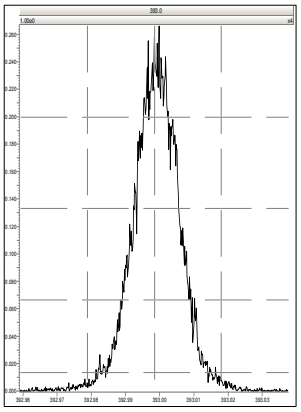

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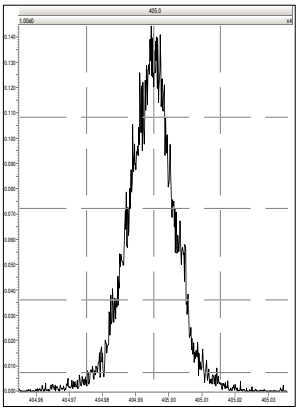

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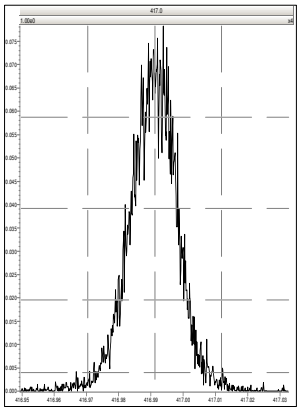

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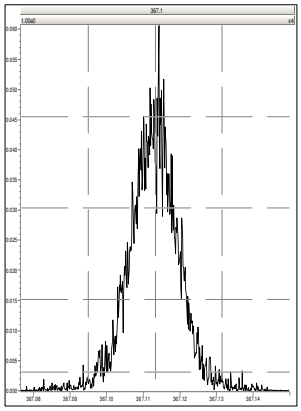

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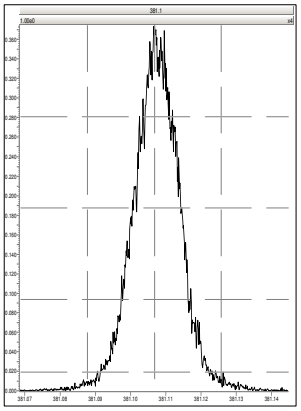

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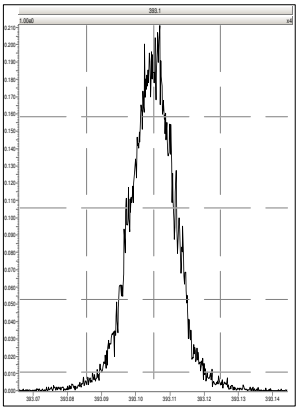

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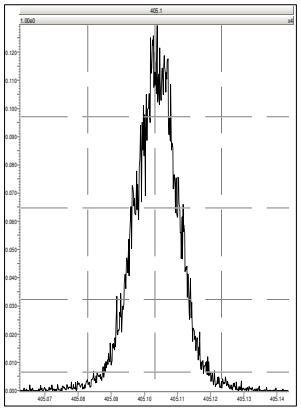

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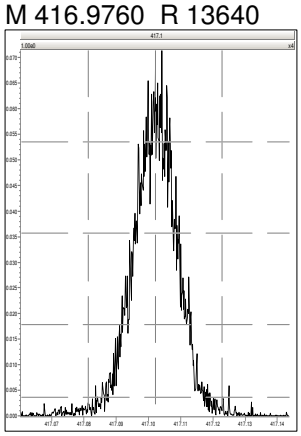

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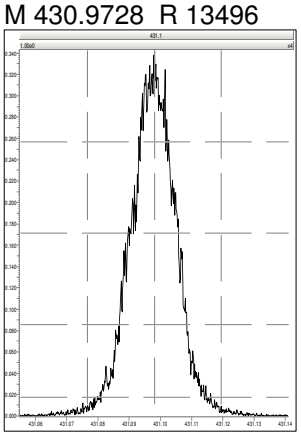

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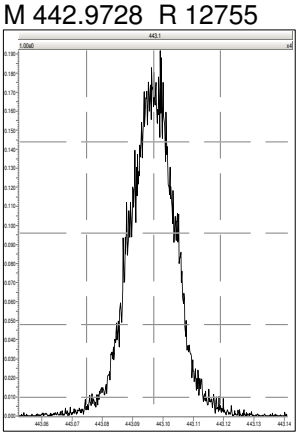

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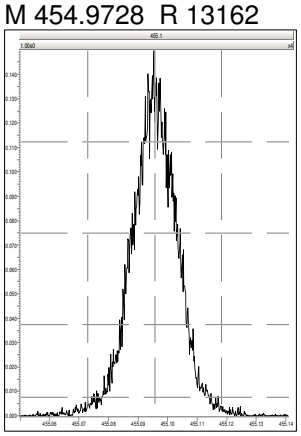

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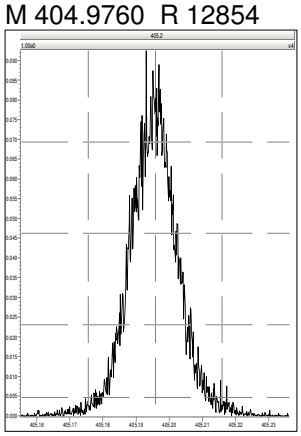
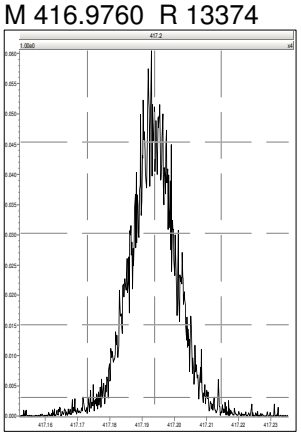
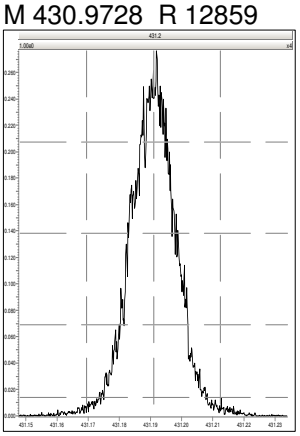


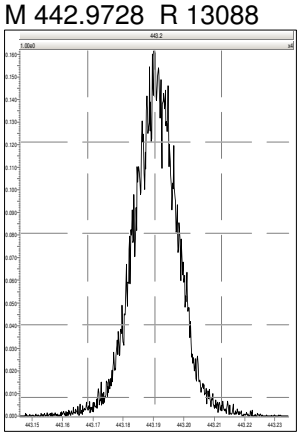
M 416.9760 R 13374



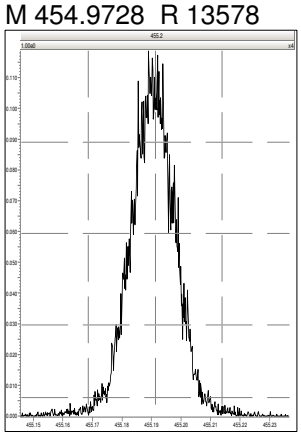
M 430.9728 R 12859



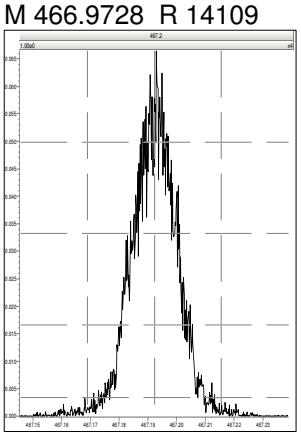
M 442.9728 R 13088



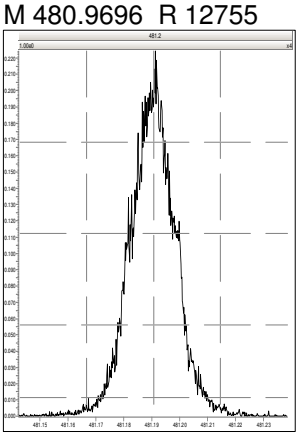
M 454.9728 R 13578



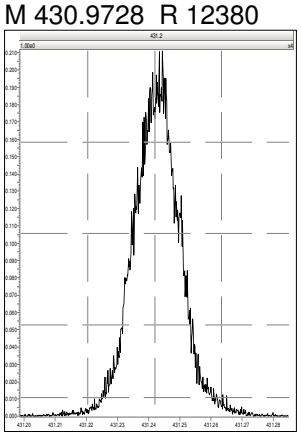
M 466.9728 R 14109



M 480.9696 R 12755



M 430.9728 R 12380



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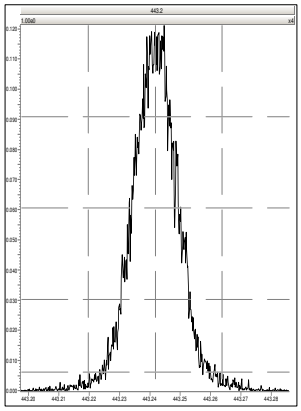
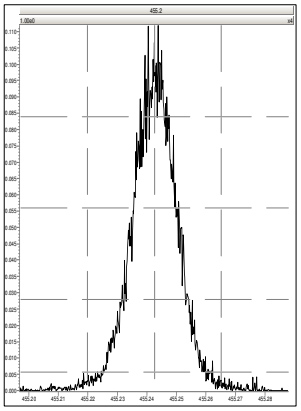
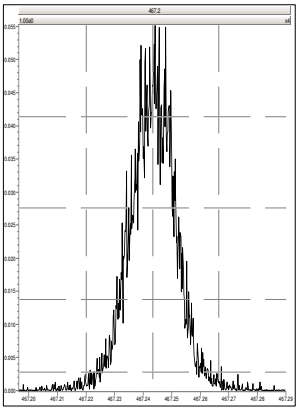
M 442.9728 R 13094



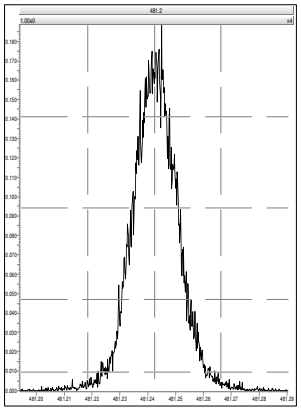
M 454.9728 R 12574



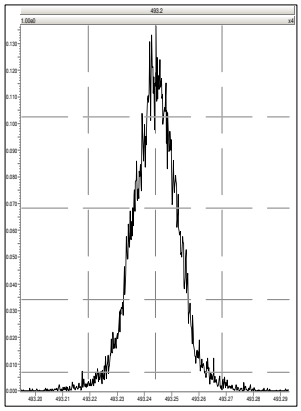
M 466.9728 R 13441



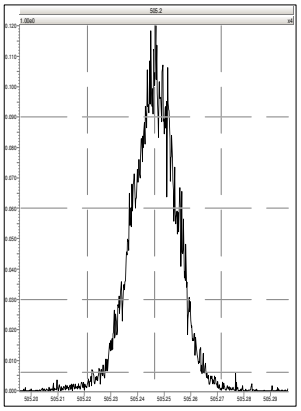
M 480.9696 R 13661



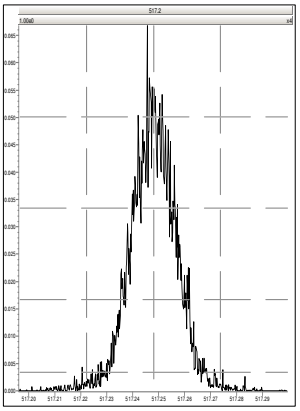
M 492.9696 R 13776



M 504.9696 R 13557



M 516.9697 R 13903



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Quantify Sample Summary Report **MassLynx 4.1**
Method Window Defining Report

Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b28mar18b_3-14.qld

Last Altered: Friday, March 30, 2018 10:02:05 Eastern Standard Time
Printed: Friday, March 30, 2018 10:03:31 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\WDM_b22mar18.mdb 23 Mar 2018 09:35:02
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

	Name	RT
1	First TCDF	25.19
2	Last TCDF	31.33
3	First PeCDF	31.32
4	Last PeCDF	34.01
5	First HxCDF	34.49
6	Last HxCDF	36.65
7	First HpCDF	38.05
8	Last HpCDF	39.84
9	OCDF	43.40
10	First TCDD	26.90
11	2378-TCDD	30.40
12	Last TCDD	31.24
13	First PeCDD	32.32
14	Last PeCDD	33.85
15	First HxCDD	34.89
16	Last HxCDD	36.37
17	First HpCDD	38.36
18	Last HpCDD	39.22
19	OCDD	43.13

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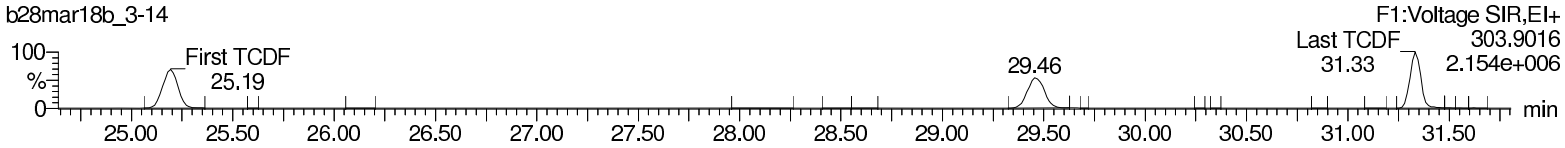
Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b28mar18b_3-14.qld

Last Altered: Friday, March 30, 2018 10:02:05 Eastern Standard Time
Printed: Friday, March 30, 2018 10:03:31 Eastern Standard Time

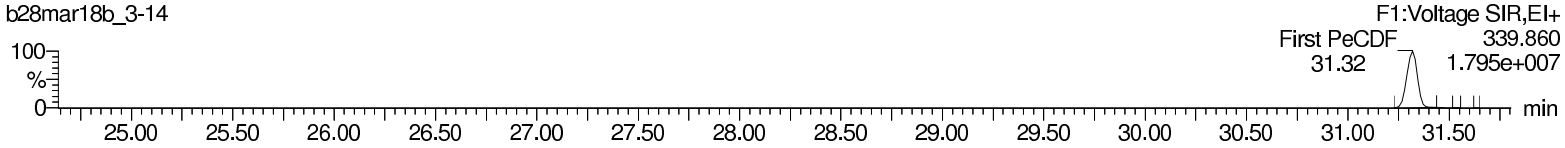
Method: C:\MassLynxBackUp\Default.pro\Methdb\WDM_b22mar18.mdb 23 Mar 2018 09:35:02
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

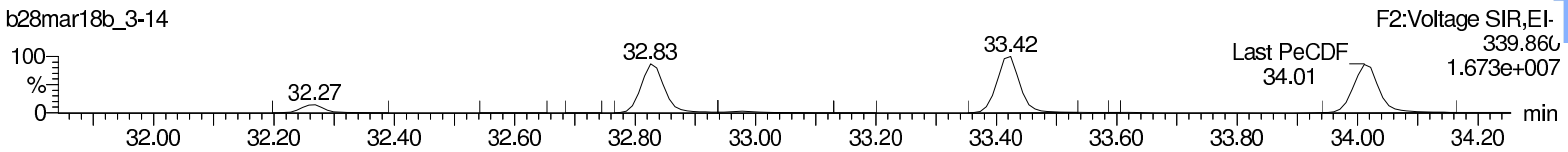
First TCDF



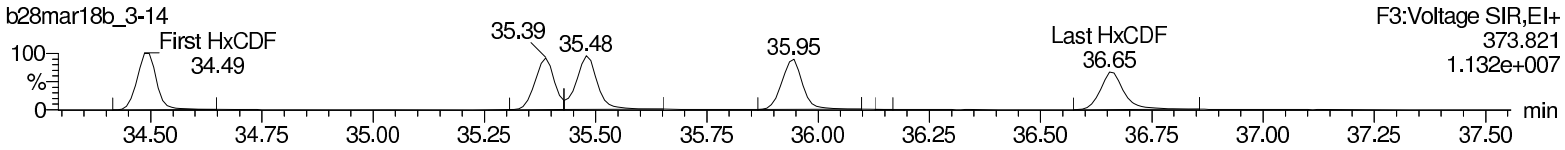
First PeCDF



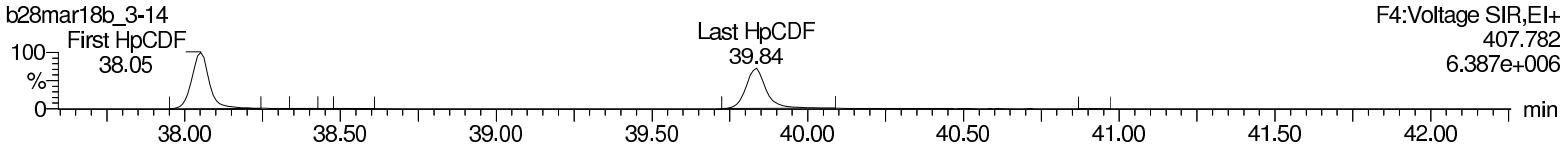
Last PeCDF



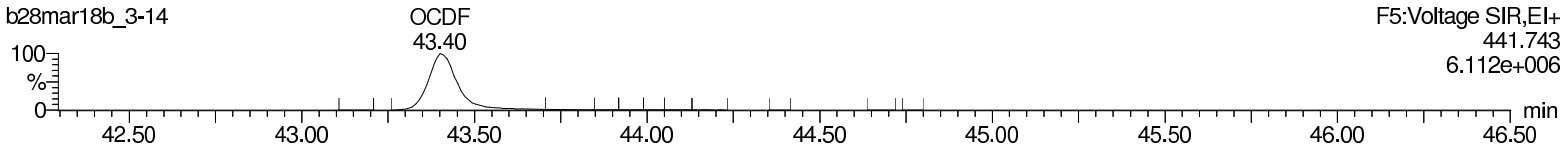
First HxCDF



First HpCDF



OCDF



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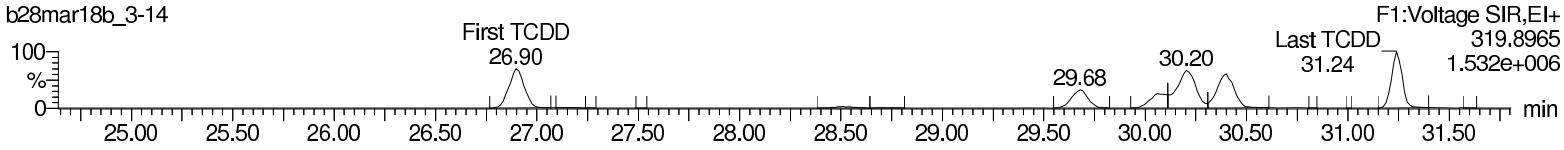
Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b28mar18b_3-14.qld

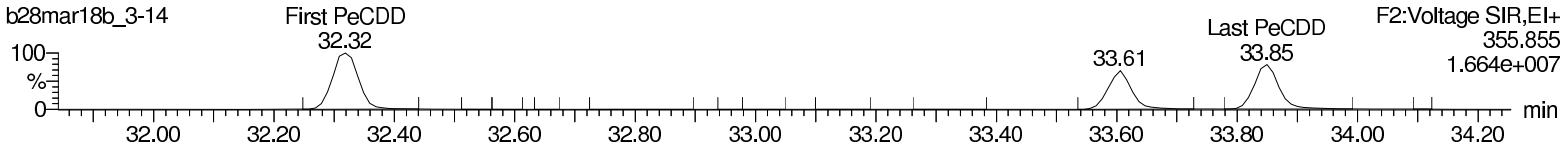
Last Altered: Friday, March 30, 2018 10:02:05 Eastern Standard Time
Printed: Friday, March 30, 2018 10:03:31 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

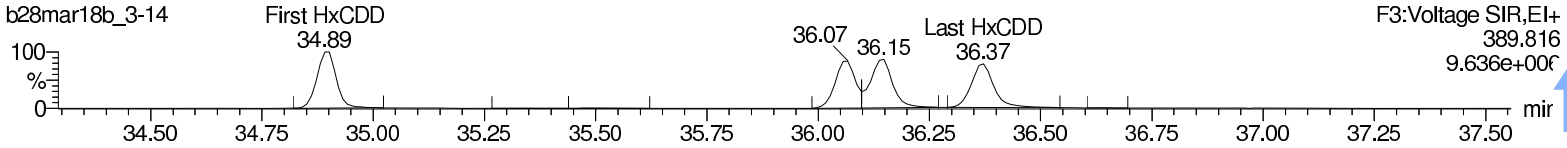
First TCDD



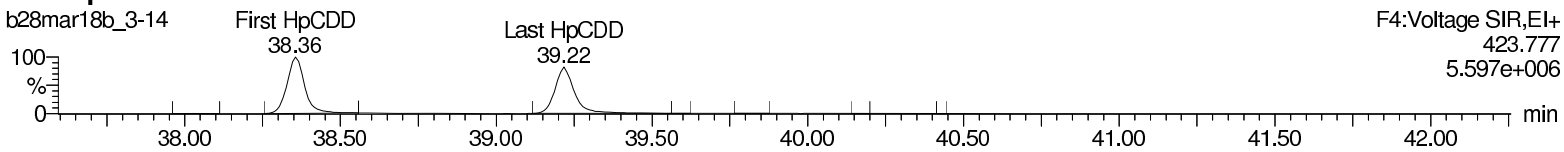
First PeCDD



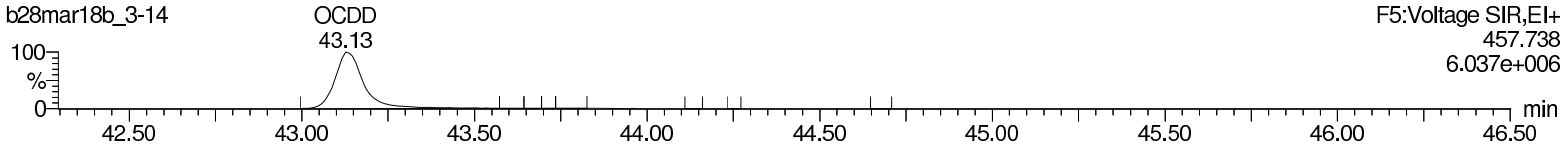
First HxCDD



First HpCDD



OCDD



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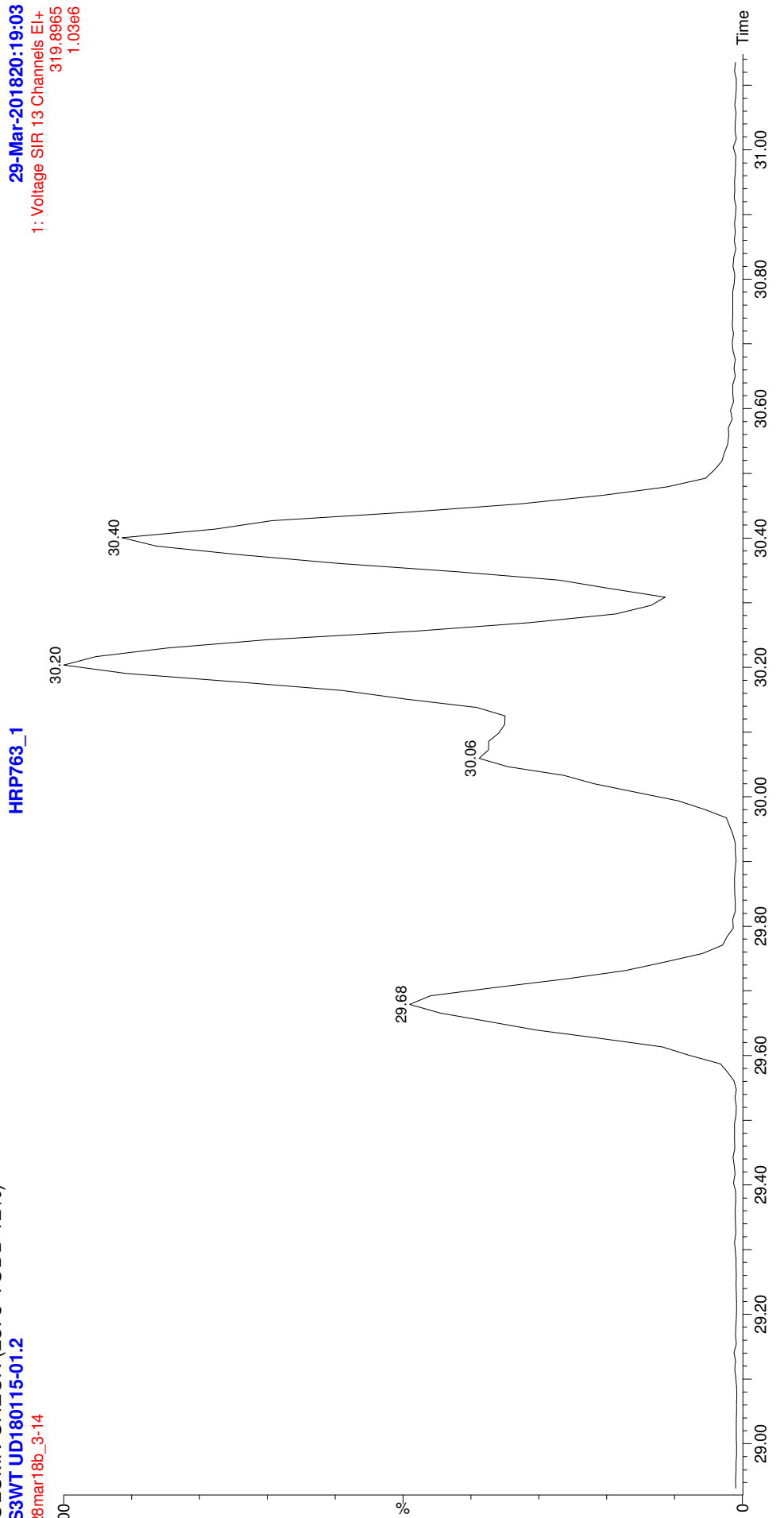

COLUMN CHECK (2378-TCDD 12%)
CS3WT UD180115-01.2
b28mar18b_3-14

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	8.99e4	1.20e5	2.10e5	30.40	1.001	0.75	NO	10.315	0.0877	0.919	0.891	3.1	9.32e5	2768	336.6	1.21e6	4388	275.8	db	dd
2	12378-PeCDD	5.08e5	3.25e5	8.33e5	33.61	1.000	1.57	NO	57.635	0.107	0.910	0.789	15.3	1.14e7	8059	1418.4	7.18e6	5274	1360.7	bb	bb
3	123478-HxCDD	4.20e5	3.36e5	7.56e5	36.07	1.000	1.25	NO	55.687	0.133	0.933	0.838	11.4	8.01e6	7738	1035.4	6.56e6	5858	1119.1	bd	bd
4	123678-HxCDD	4.80e5	3.86e5	8.66e5	36.15	1.001	1.24	NO	54.977	0.122	0.924	0.840	10.0	8.26e6	7738	1067.5	6.70e6	5858	1144.5	db	db
5	123789-HxCDD	4.40e5	3.58e5	7.98e5	36.37	1.007	1.23	NO	56.075	0.131	0.913	0.814	12.1	7.46e6	7738	963.6	5.92e6	5858	1010.7	bb	bb
6	1234678-HpCDD	3.30e5	3.25e5	6.55e5	39.22	1.000	1.02	NO	47.597	0.138	0.954	1.003	-4.8	4.59e6	5520	830.6	4.36e6	4945	880.8	bd	bb
7	OCDD	5.94e5	6.69e5	1.26e6	43.13	1.000	0.89	NO	107.383	0.144	0.978	0.910	7.4	6.02e6	3159	1905.8	6.91e6	3871	1784.7	bd	bd
8	2378-TCDF	1.12e5	1.47e5	2.58e5	29.46	1.000	0.76	NO	9.507	0.0406	0.875	0.921	-4.9	1.16e6	2037	567.8	1.52e6	2515	604.3	bb	bb
9	12378-PeCDF	6.49e5	4.24e5	1.07e6	32.83	1.000	1.53	NO	48.588	0.0824	0.799	0.822	-2.8	1.45e7	9905	1462.0	9.65e6	6012	1604.4	bd	bd
10	23478-PeCDF	7.31e5	4.76e5	1.21e6	33.42	1.000	1.53	NO	49.566	0.0714	0.918	0.926	-0.9	1.67e7	9905	1681.0	1.07e7	6012	1776.7	bb	bb
11	123478-HxCDF	5.17e5	4.26e5	9.43e5	35.39	1.000	1.21	NO	53.237	0.134	1.063	0.998	6.5	1.03e7	8315	1243.2	8.43e6	10247	822.8	bd	bd
12	123678-HxCDF	5.89e5	4.82e5	1.07e6	35.48	1.000	1.22	NO	53.390	0.125	0.997	0.934	6.8	1.08e7	8315	1301.8	8.98e6	10247	876.8	db	db
13	234678-HxCDF	5.41e5	4.43e5	9.84e5	35.95	1.001	1.22	NO	52.982	0.138	1.094	1.033	6.0	1.01e7	8315	1211.1	8.14e6	10247	794.6	bb	bb
14	123789-HxCDF	4.64e5	3.87e5	8.51e5	36.65	1.000	1.20	NO	53.351	0.182	1.017	0.953	6.7	7.53e6	8315	905.7	6.19e6	10247	603.9	bb	bd
15	1234678-HpCDF	4.10e5	4.05e5	8.15e5	38.05	1.000	1.01	NO	52.008	0.0978	1.141	1.097	4.0	6.36e6	4749	1340.2	6.30e6	4633	1359.8	bb	bb
16	1234789-HpCDF	3.43e5	3.36e5	6.79e5	39.84	1.000	1.02	NO	52.897	0.141	1.173	1.109	5.8	4.58e6	4749	963.8	4.42e6	4633	953.1	bb	bb
17	OCDF	5.98e5	6.73e5	1.27e6	43.40	1.007	0.89	NO	106.697	0.171	0.984	0.922	6.7	6.10e6	5036	1211.6	6.87e6	3404	2018.6	bd	bd
18	13C-2378-TCDD	9.86e5	1.29e6	2.28e6	30.37	1.024	0.76	NO	101.798	0.0672	1.162	1.142	1.8	9.90e6	3840	2576.7	1.31e7	2462	5318.2	bb	bb
19	13C-12378-PeCDD	1.12e6	7.09e5	1.83e6	33.60	1.133	1.58	NO	97.044	0.0919	0.933	0.962	-3.0	2.42e7	4020	6024.1	1.52e7	3234	4689.6	bb	bb
20	13C-123478-HxCDD	8.94e5	7.28e5	1.62e6	36.06	0.992	1.23	NO	96.317	0.114	0.989	1.027	-3.7	1.68e7	5965	2818.1	1.39e7	7028	1973.3	bd	bd
21	13C-123678-HxCDD	1.04e6	8.36e5	1.87e6	36.13	0.994	1.24	NO	101.754	0.104	1.143	1.123	1.8	1.83e7	5965	3071.8	1.51e7	7028	2143.1	db	db
22	13C-1234678-HpCDD	6.94e5	6.79e5	1.37e6	39.21	1.078	1.02	NO	111.214	0.118	0.838	0.753	11.2	9.59e6	4948	1937.6	9.09e6	4976	1827.4	bb	bd
23	13C-OCDD	1.19e6	1.40e6	2.58e6	43.12	1.186	0.85	NO	217.199	0.110	0.788	0.726	8.6	1.23e7	4045	3042.6	1.41e7	4870	2893.4	bb	bd
24	13C-2378-TCDF	1.29e6	1.66e6	2.95e6	29.44	0.993	0.77	NO	112.591	0.0928	1.505	1.337	12.6	1.33e7	6286	2115.5	1.70e7	3896	4365.3	bb	bb
25	13C-12378-PeCDF	1.64e6	1.05e6	2.69e6	32.82	1.107	1.57	NO	110.231	0.166	1.369	1.242	10.2	3.59e7	10586	3389.8	2.34e7	6329	3695.5	bd	bd
26	13C-23478-PeCDF	1.60e6	1.02e6	2.63e6	33.41	1.127	1.57	NO	108.614	0.167	1.340	1.234	8.6	3.67e7	10586	3465.7	2.29e7	6329	3611.1	bb	bb
27	13C-123478-HxCDF	5.93e5	1.18e6	1.77e6	35.38	0.973	0.50	NO	98.431	0.102	1.082	1.099	-1.6	1.16e7	4571	2539.2	2.27e7	7915	2873.9	bd	bd
28	13C-123678-HxCDF	7.20e5	1.43e6	2.15e6	35.47	0.975	0.50	NO	102.948	0.0881	1.309	1.272	2.9	1.33e7	4571	2905.2	2.56e7	7915	3237.0	db	dd
29	13C-234678-HxCDF	6.02e5	1.20e6	1.80e6	35.93	0.988	0.50	NO	101.625	0.104	1.097	1.079	1.6	1.09e7	4571	2388.3	2.19e7	7915	2764.1	bb	bb
30	13C-123789-HxCDF	5.66e5	1.11e6	1.67e6	36.64	1.008	0.51	NO	103.369	0.114	1.020	0.987	3.4	9.04e6	4571	1977.6	1.77e7	7915	2237.8	bb	bb
31	13C-1234678-HpCDF	4.40e5	9.89e5	1.43e6	38.04	1.046	0.44	NO	102.623	0.113	0.872	0.849	2.6	6.73e6	4036	1668.7	1.52e7	6677	2272.5	bd	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	3.58e5	8.00e5	1.16e6	39.83	1.095	0.45	NO	104.617	0.142	0.706	0.675	4.6	4.63e6	4036	1147.2	1.03e7	6677	1547.8	bd	bb
33	13C-1234-TCDD	8.54e5	1.11e6	1.96e6	29.65	0.000	0.77	NO	100.000	0.0768	1.000	1.000	-0.0	8.93e6	3840	2325.2	1.15e7	2462	4683.8	bb	bb
34	13C-123789-HxCDD	9.04e5	7.36e5	1.64e6	36.36	0.000	1.23	NO	100.000	0.117	1.000	1.000	-0.0	1.54e7	5965	2574.1	1.23e7	7028	1750.6	bd	bb
35	37Cl-2378-TCDD	2.21e5		2.21e5	30.40	1.025			9.703	0.0196	1.126	1.161	-3.0	2.27e6	1871	1211.7				bb	

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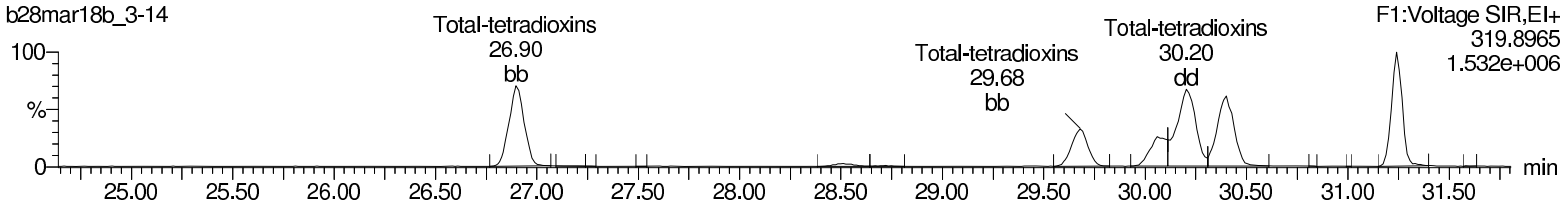
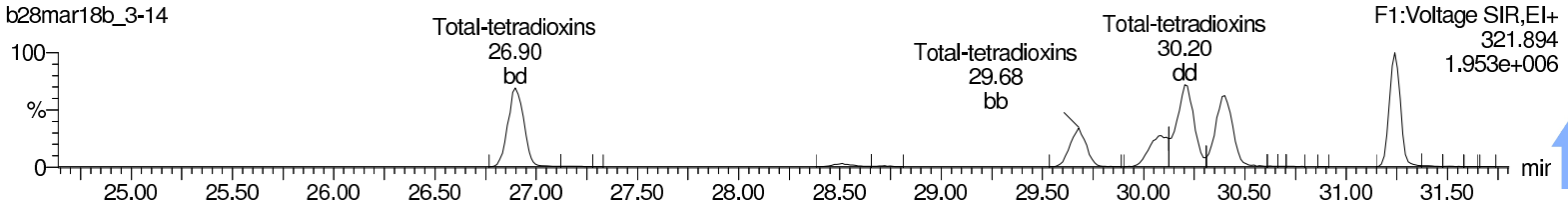
Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

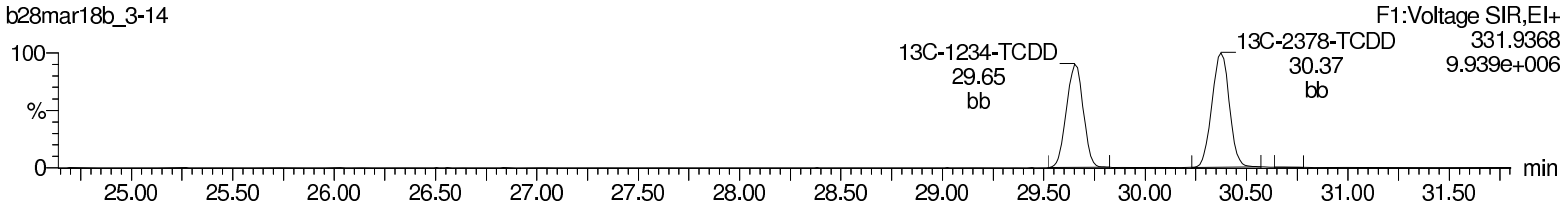
Total-tetradioxins



Total-tetradioxins



13C-2378-TCDD



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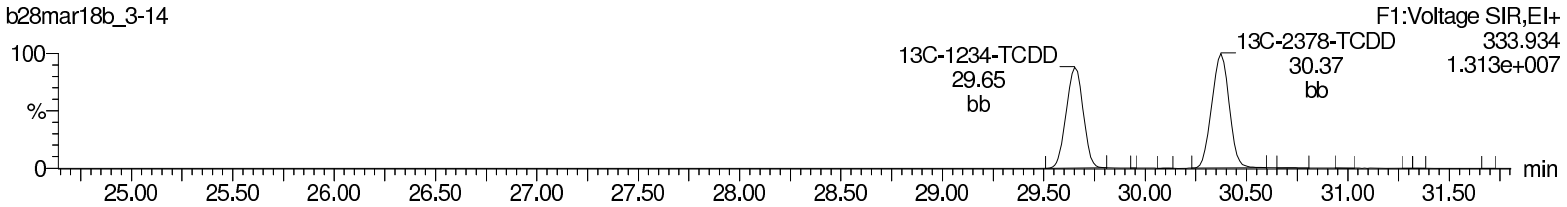

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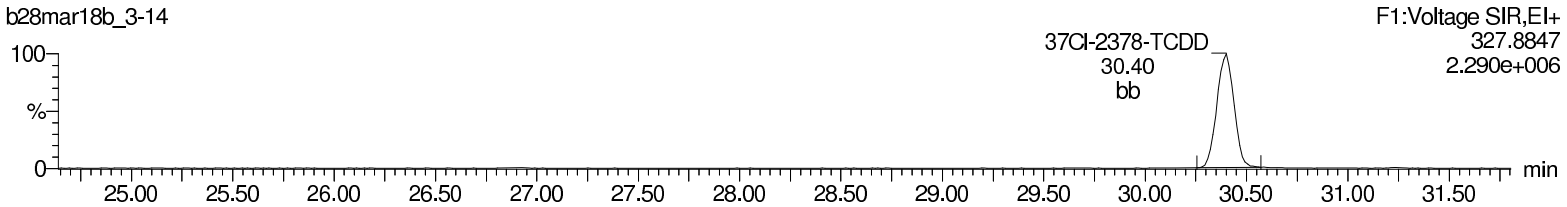
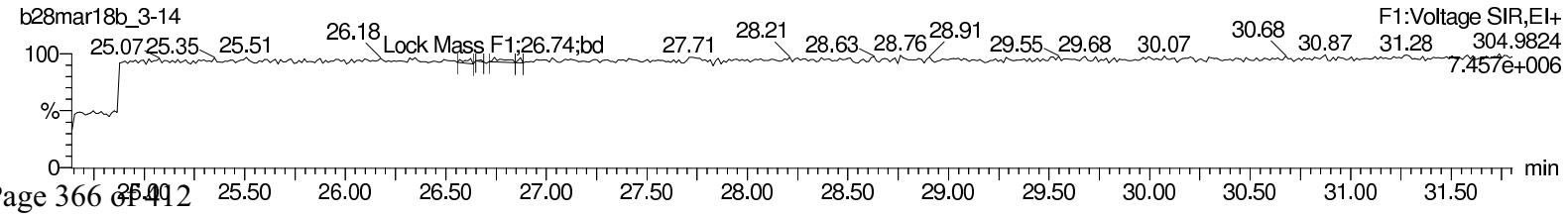


Lock Mass F1



Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
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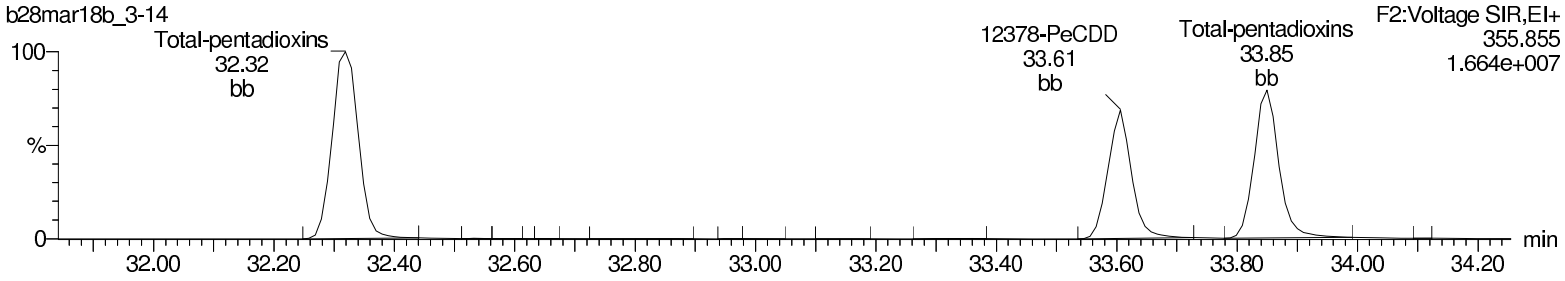
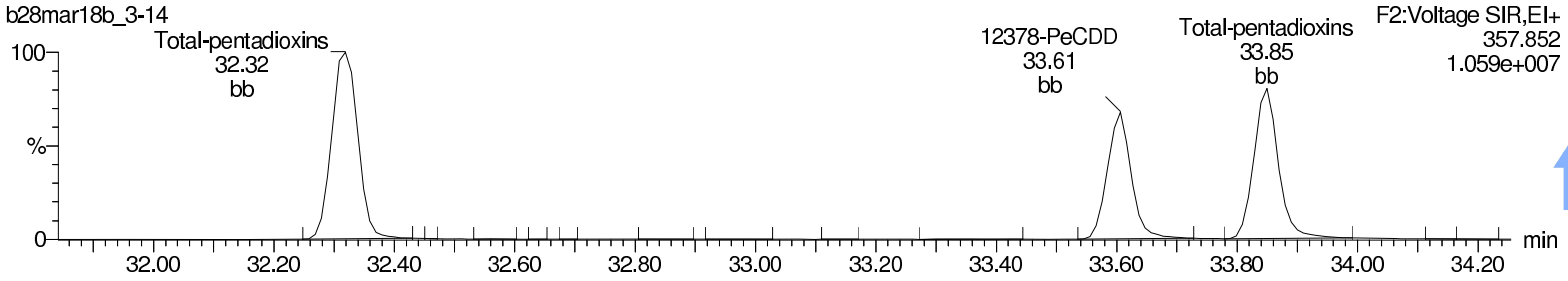
Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

Total-pentadioxins



Total-pentadioxins



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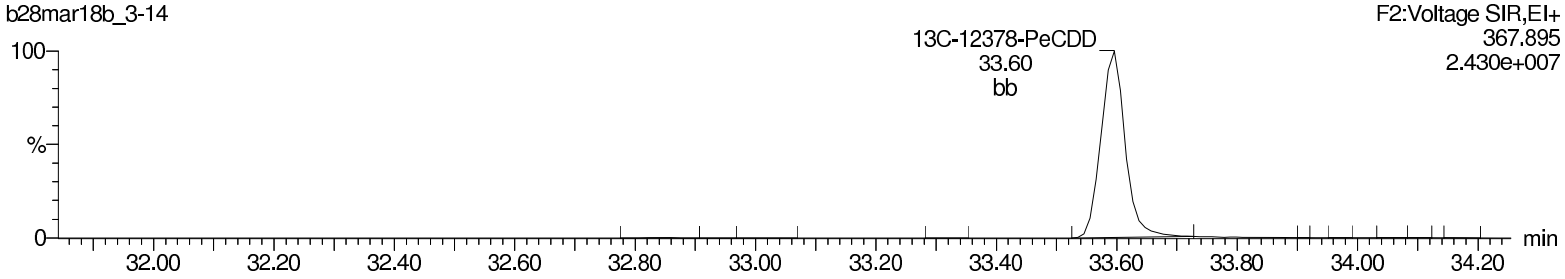

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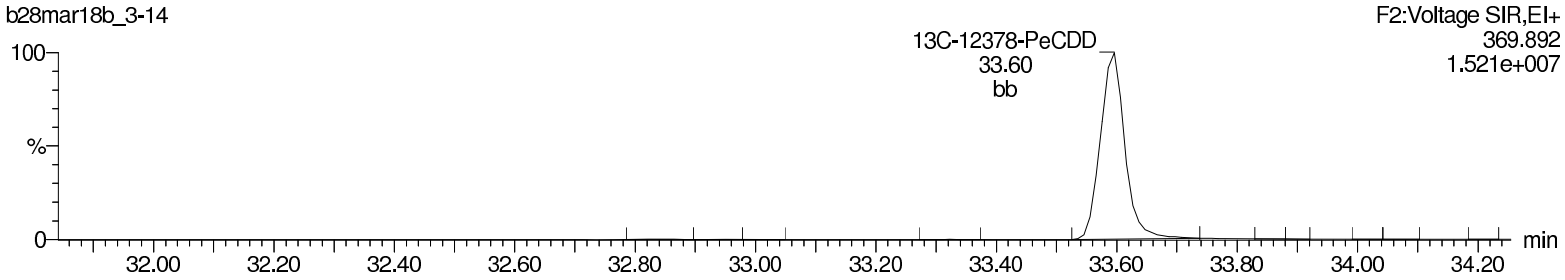

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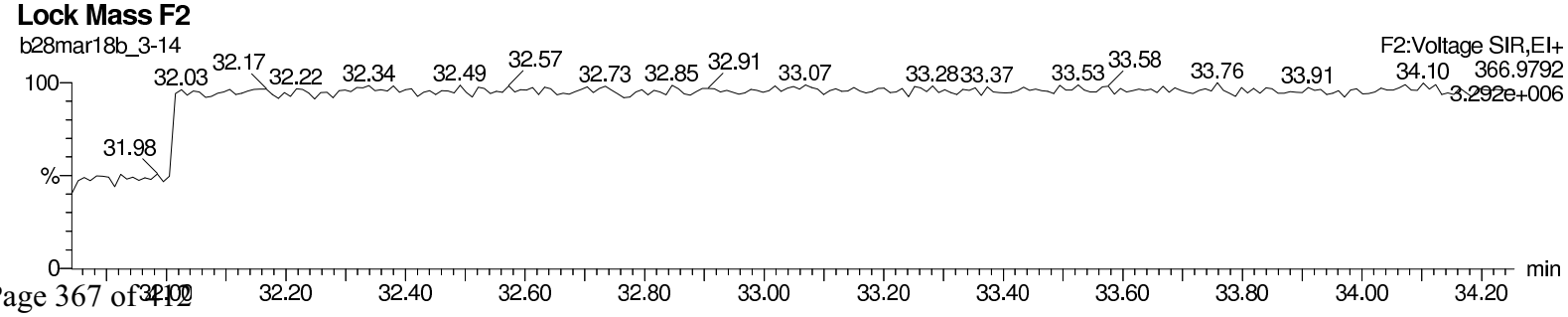

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Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
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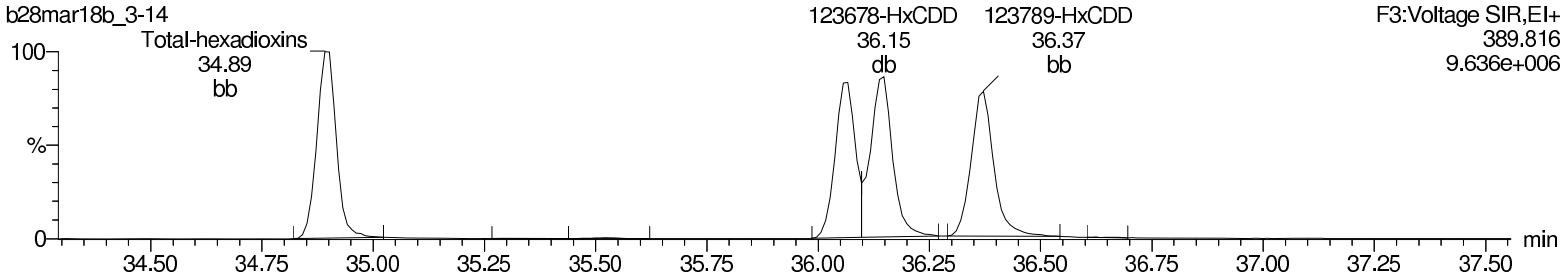
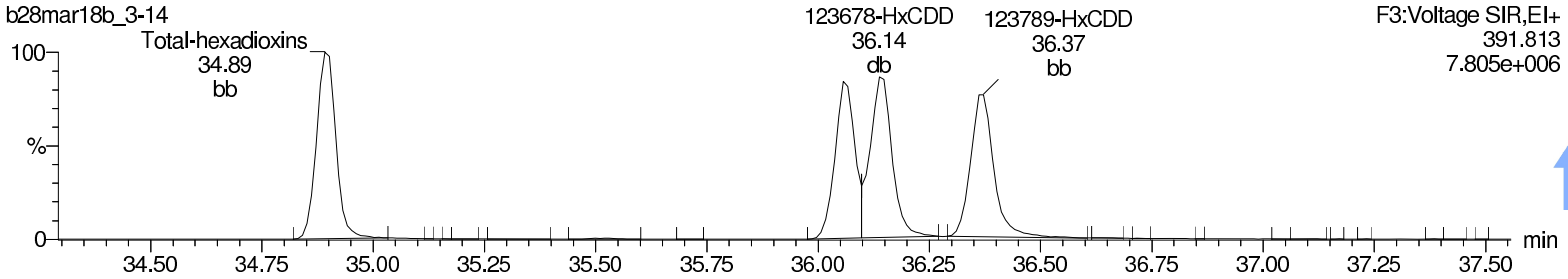
Total-hexadioxins



Total-hexadioxins



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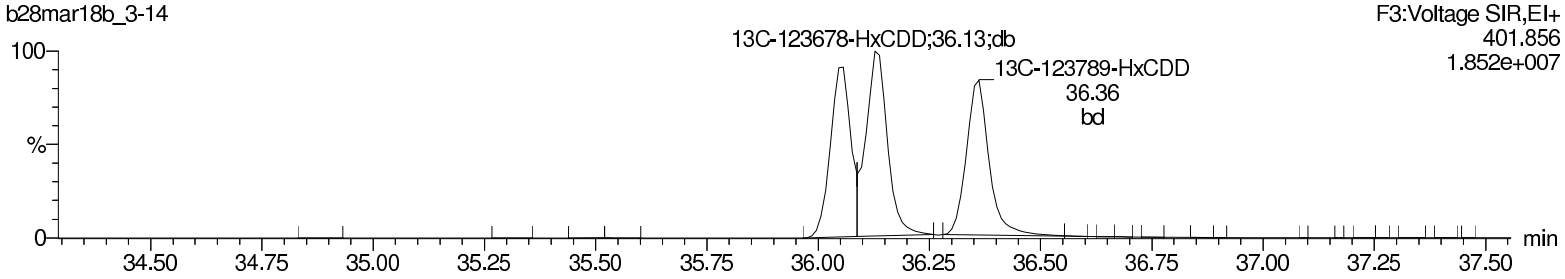

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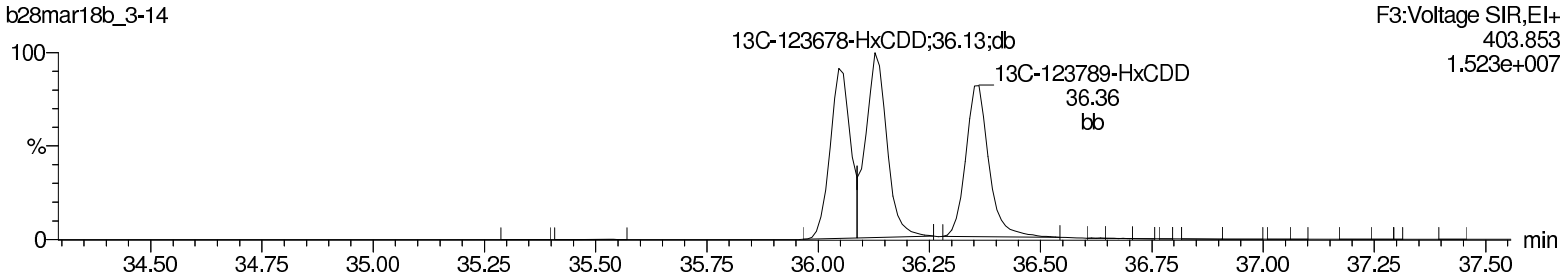

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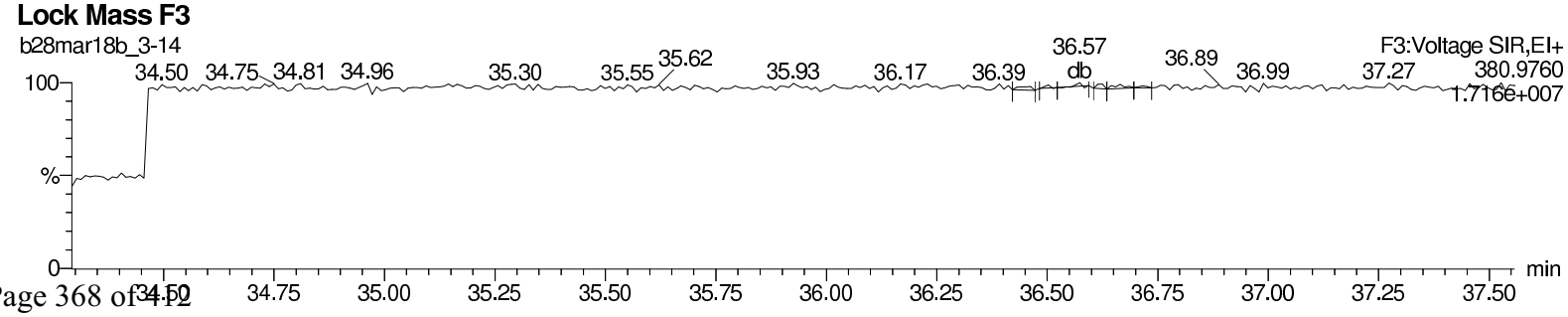

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Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

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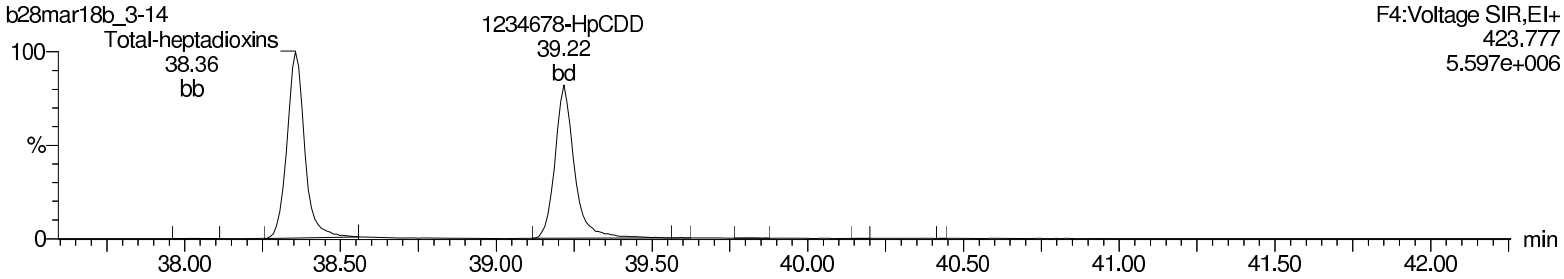
Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

Total-heptadioxins



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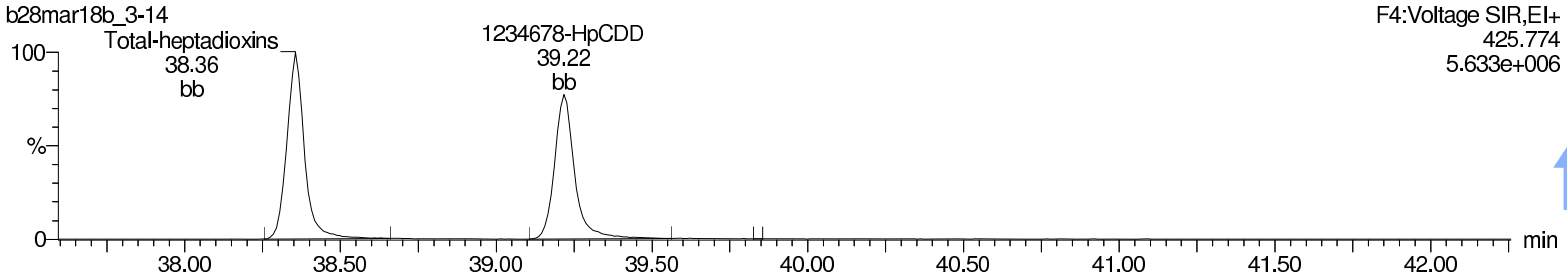

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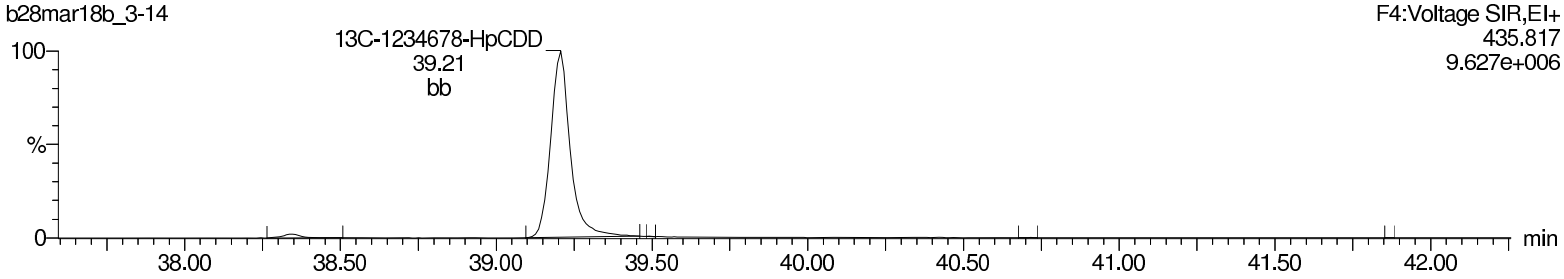

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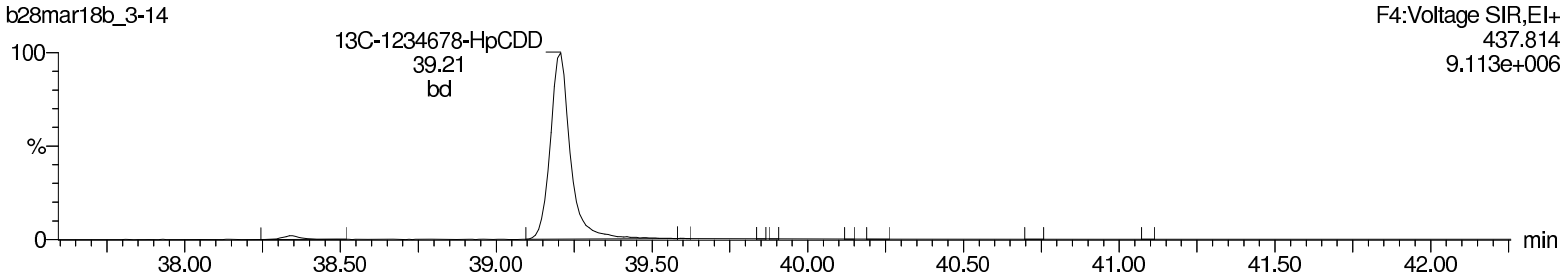

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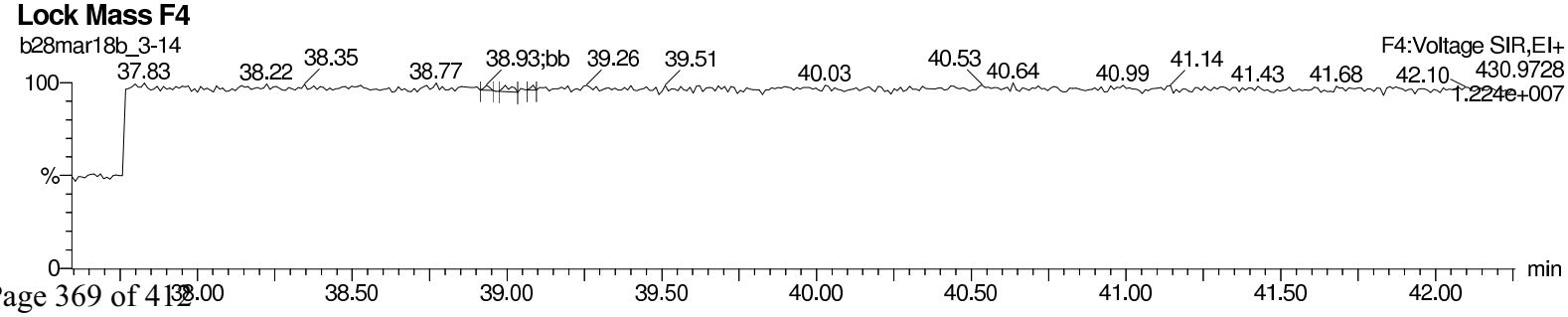

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Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
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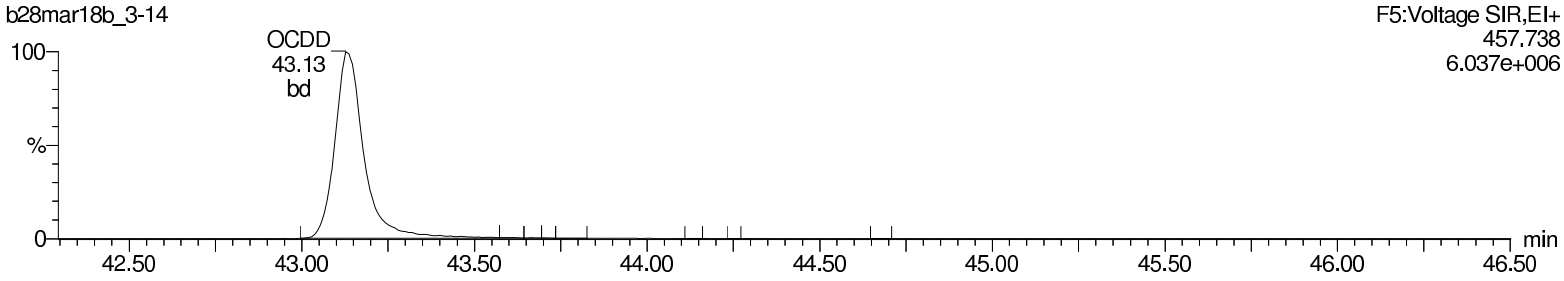
Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

OCDD



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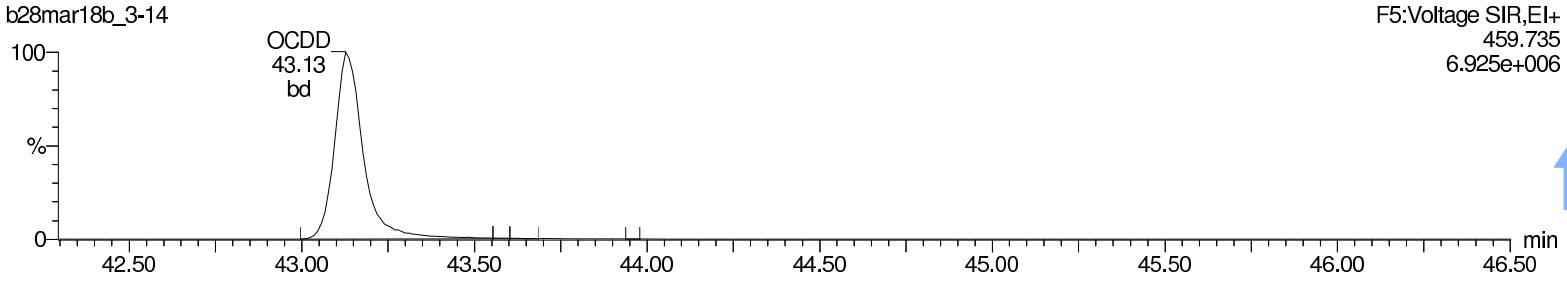

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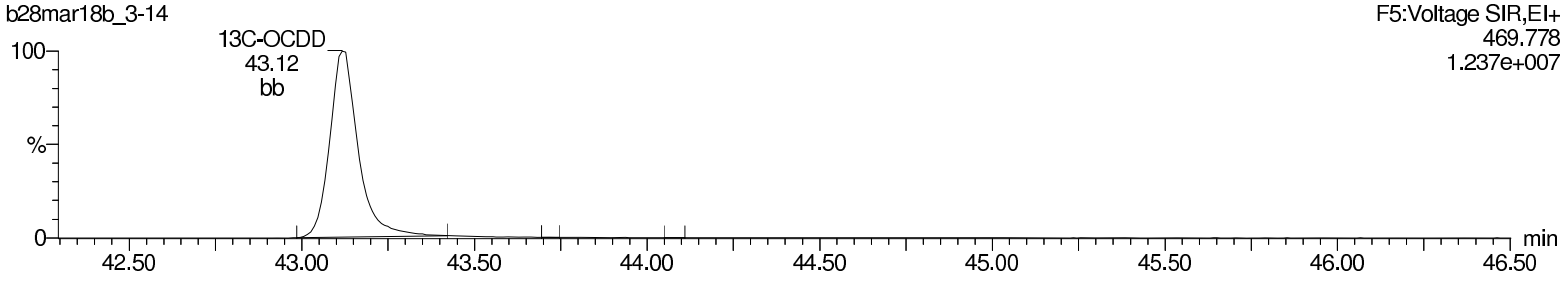

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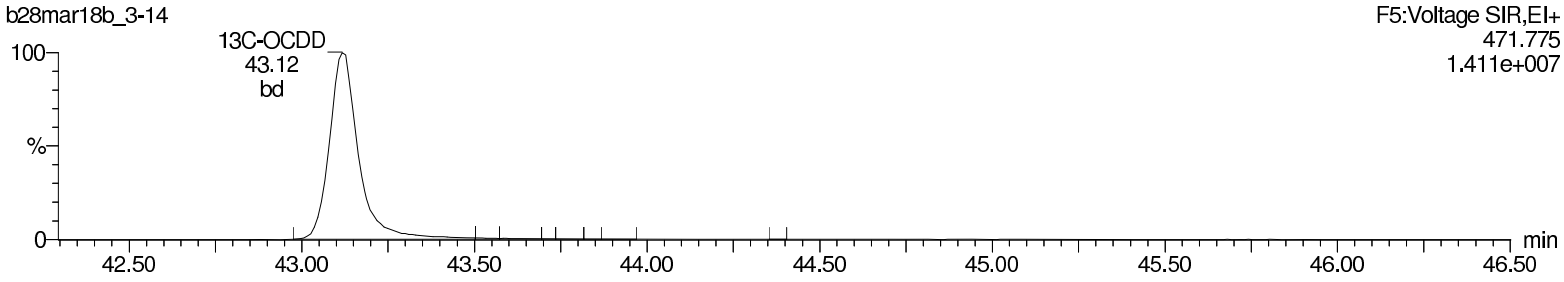

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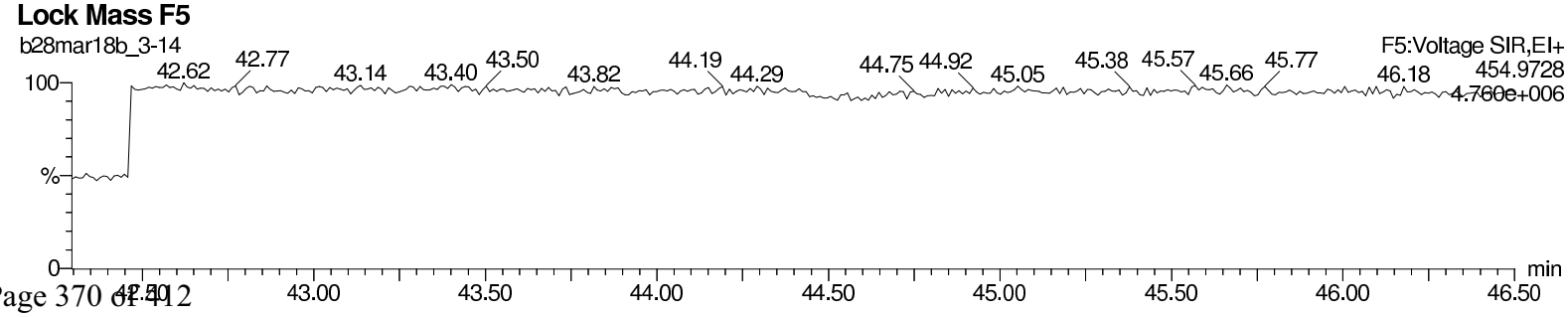

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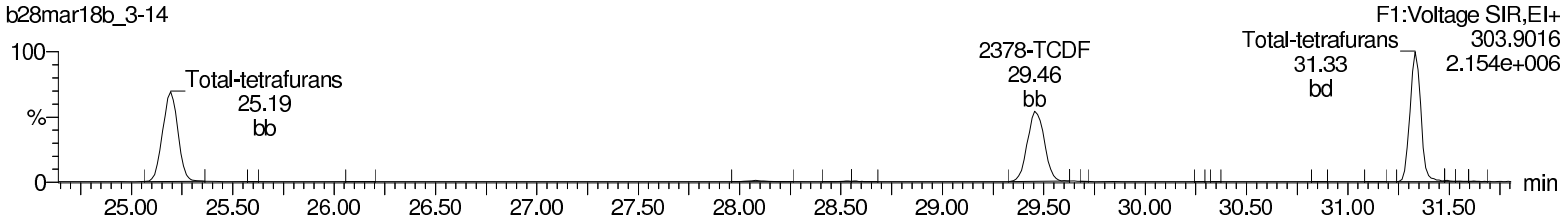
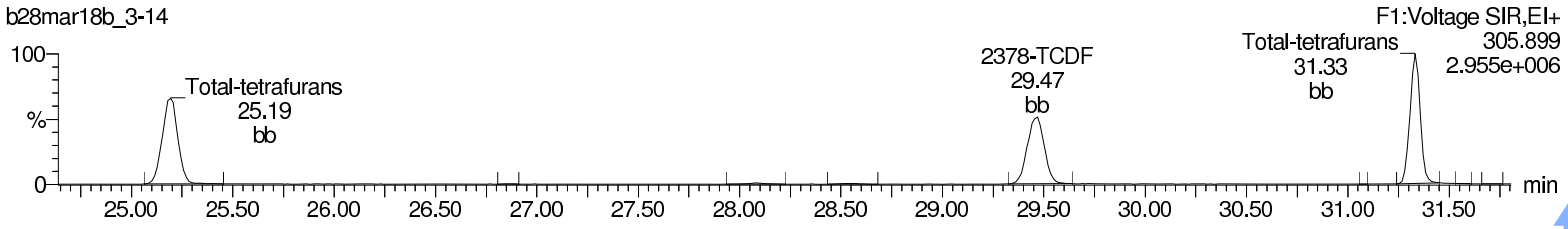
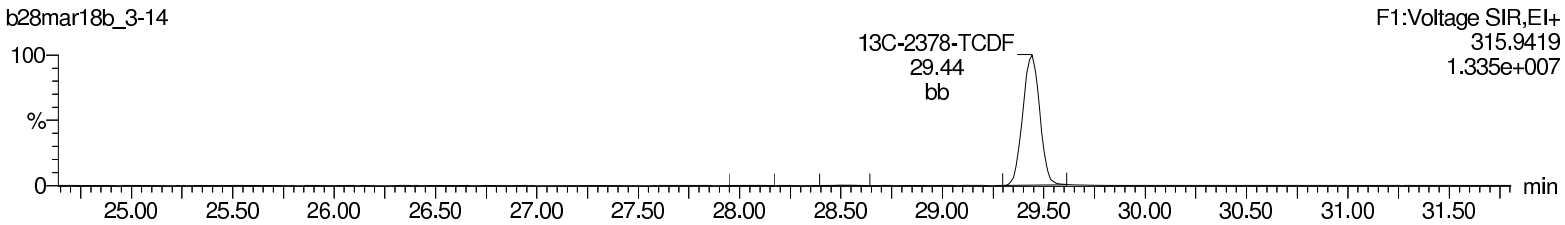
Total-tetrafurans



Total-tetrafurans



13C-2378-TCDF



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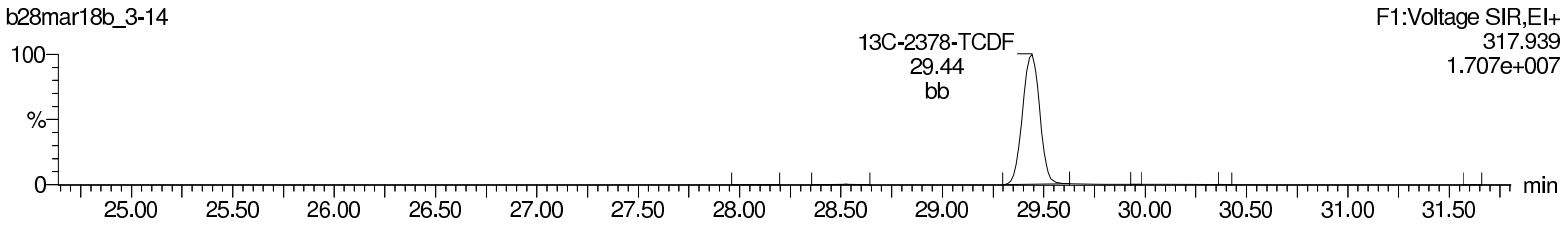

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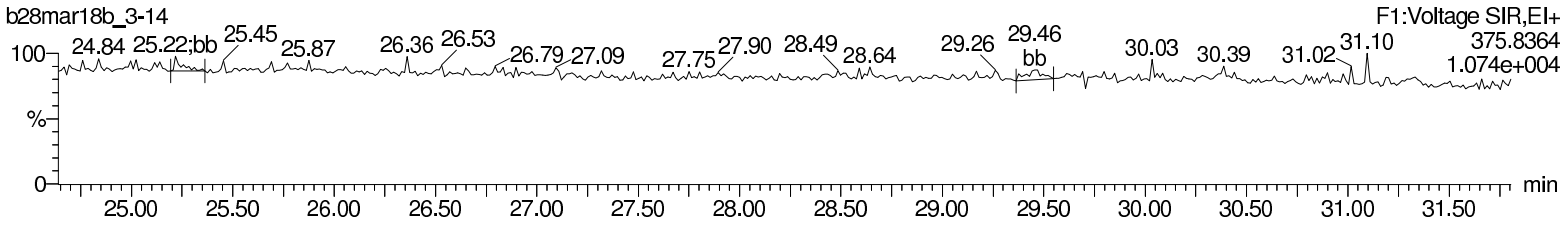
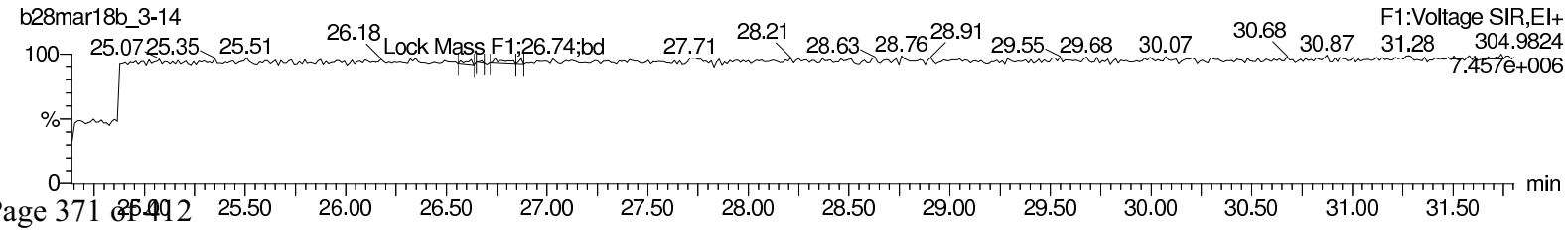


Lock Mass F1



Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b28mar18b_3-14.qld

Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
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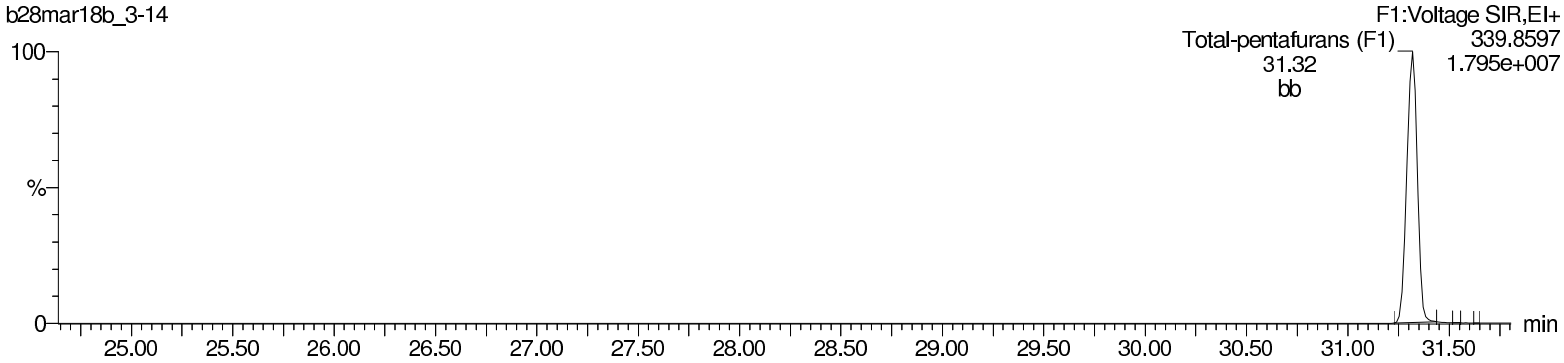
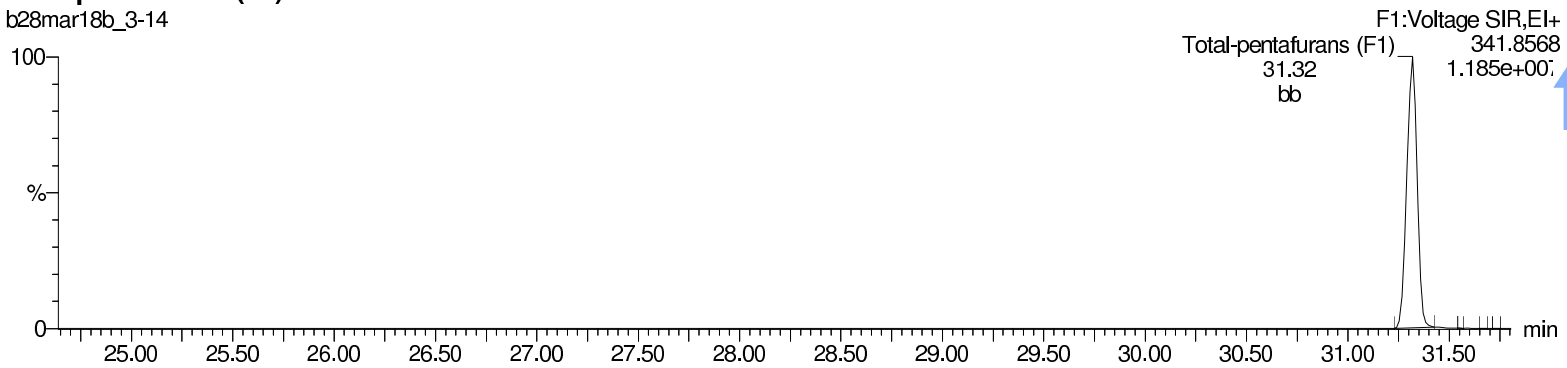
Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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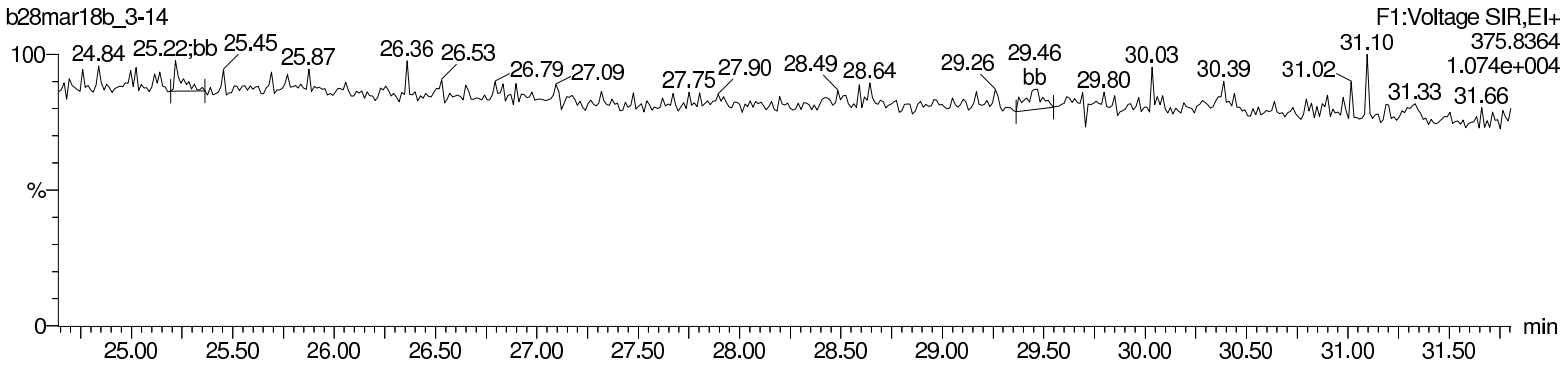

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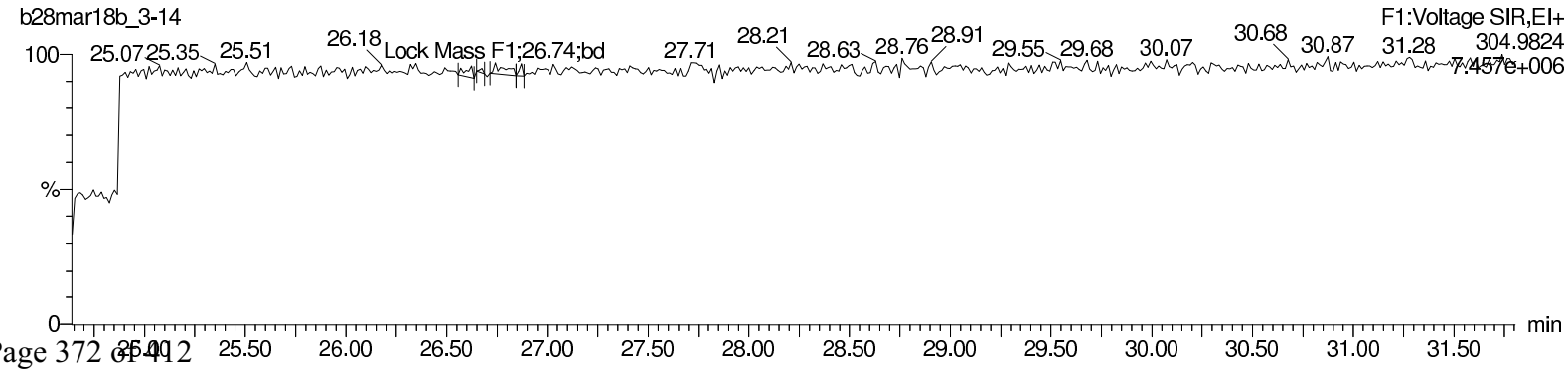

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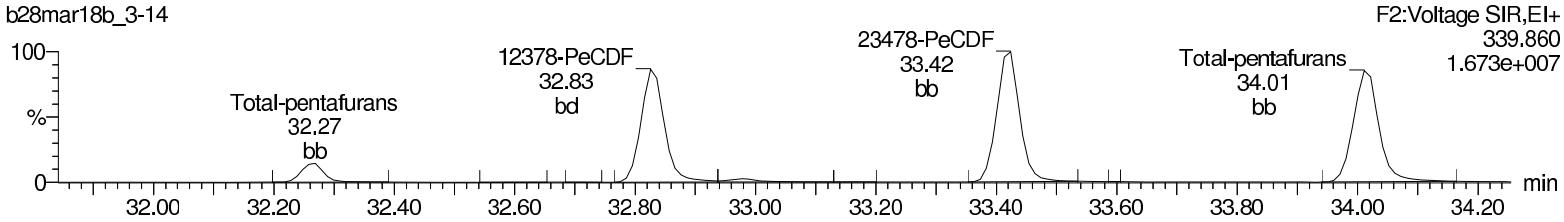
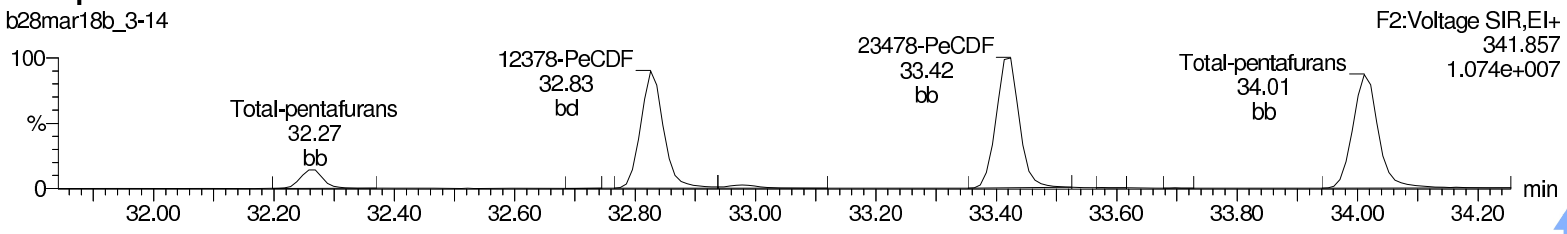
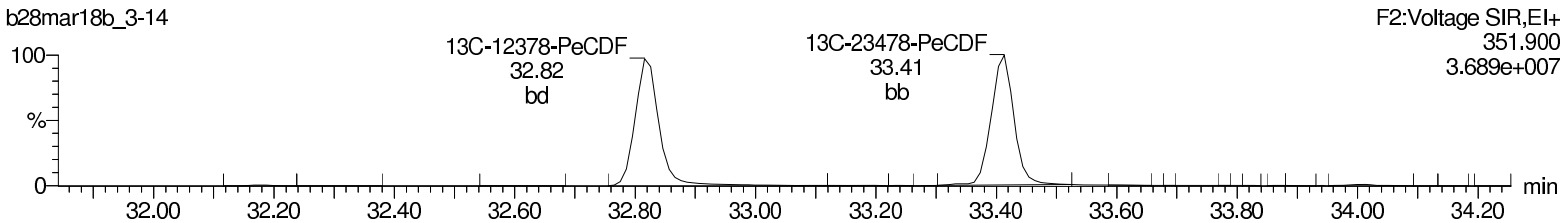
Total-pentafurans



Total-pentafurans



13C-12378-PeCDF



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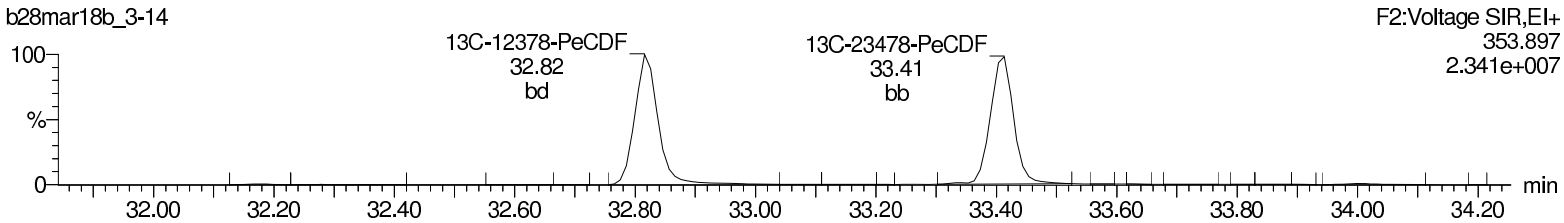

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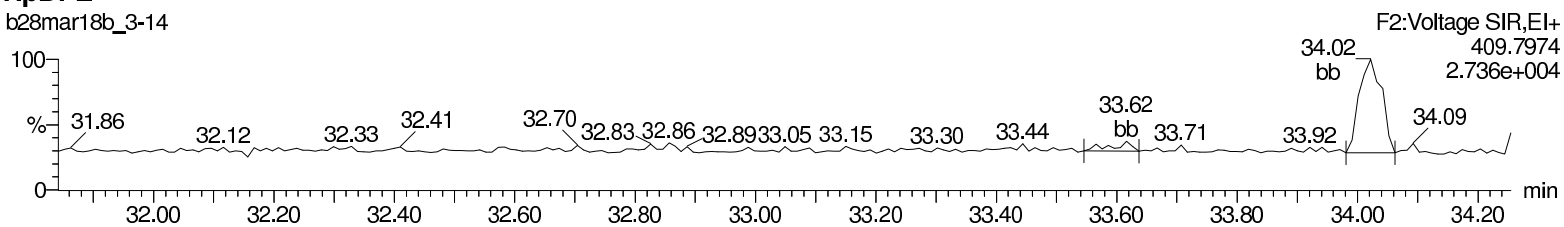
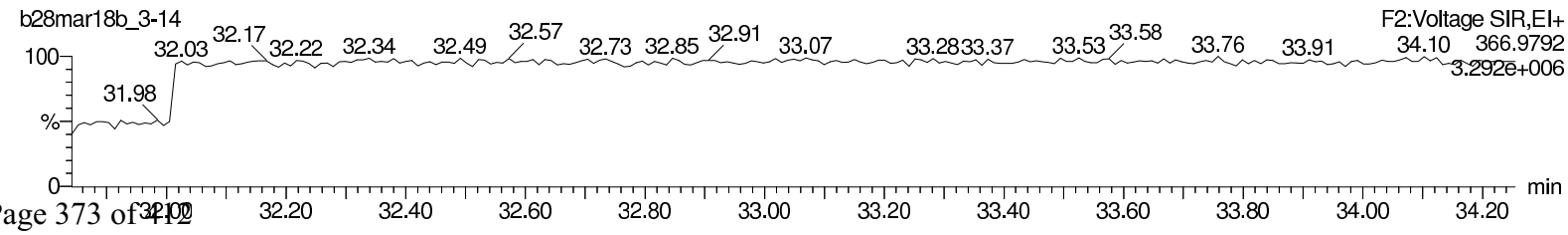


Lock Mass F2



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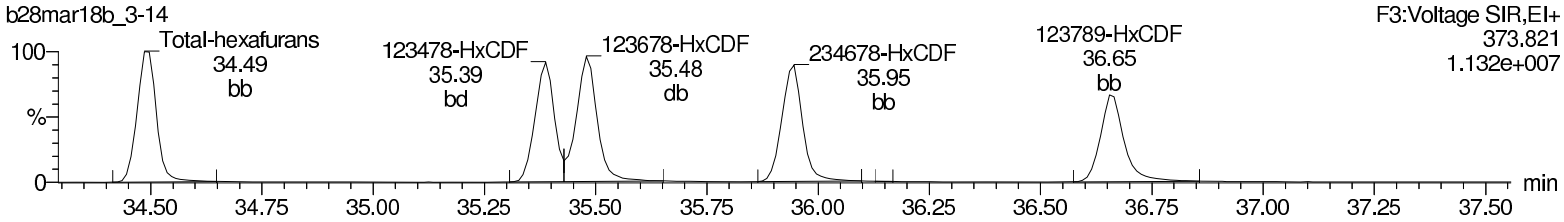
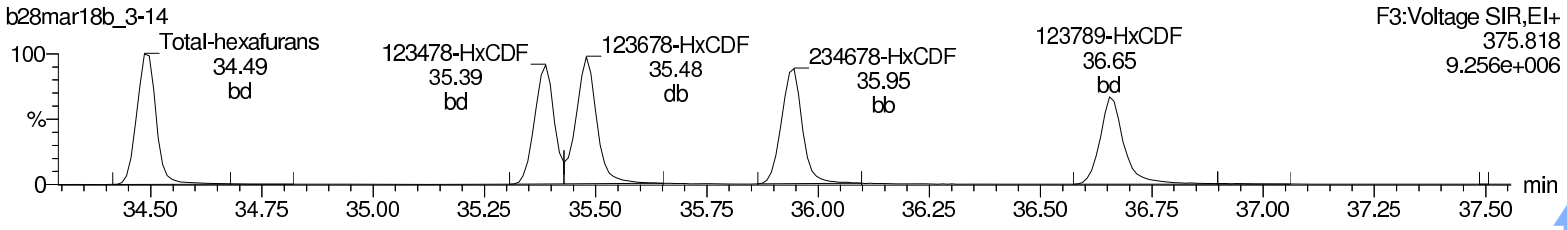
Total-hexafurans



Total-hexafurans



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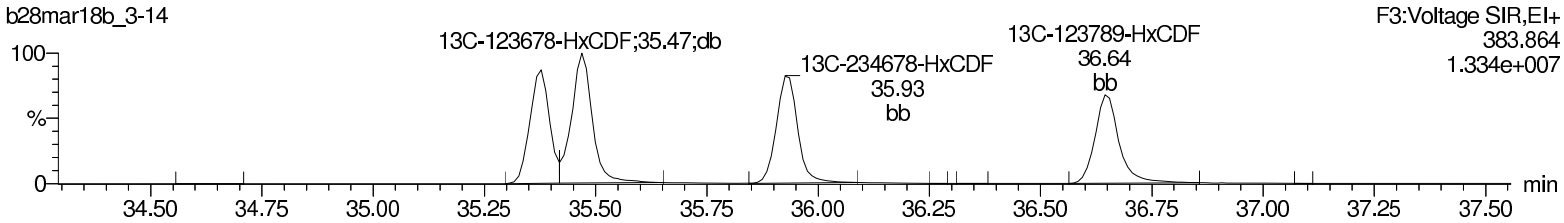

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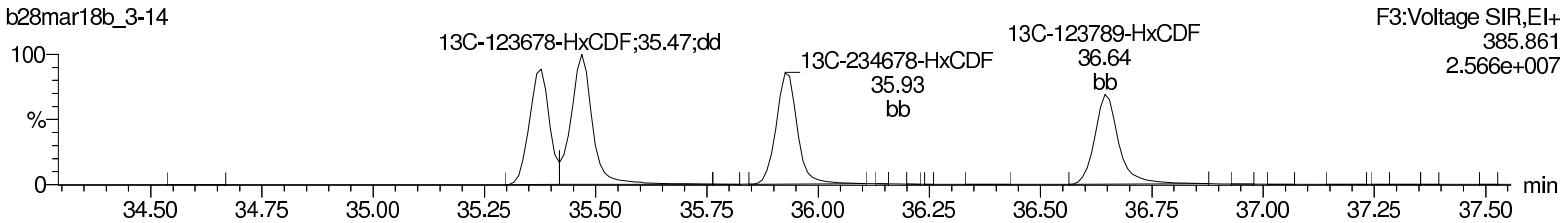

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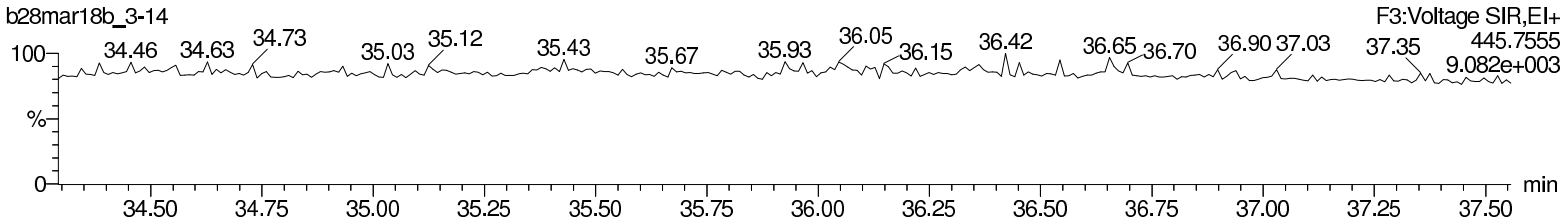

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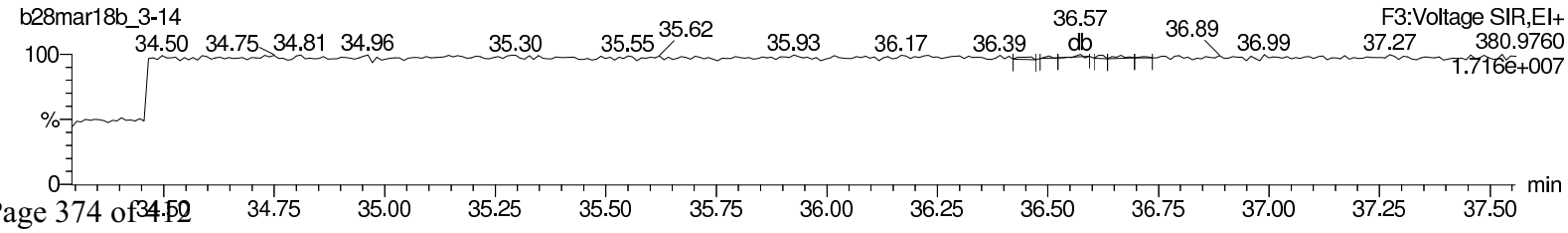

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Last Altered: Friday, March 30, 2018 10:04:04 Eastern Standard Time
Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

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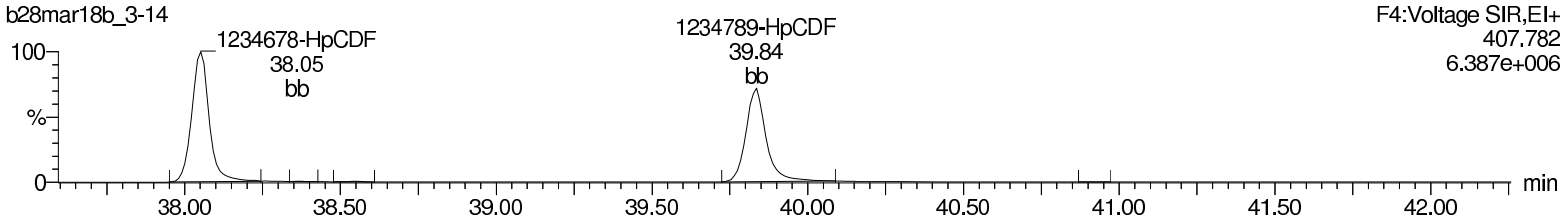

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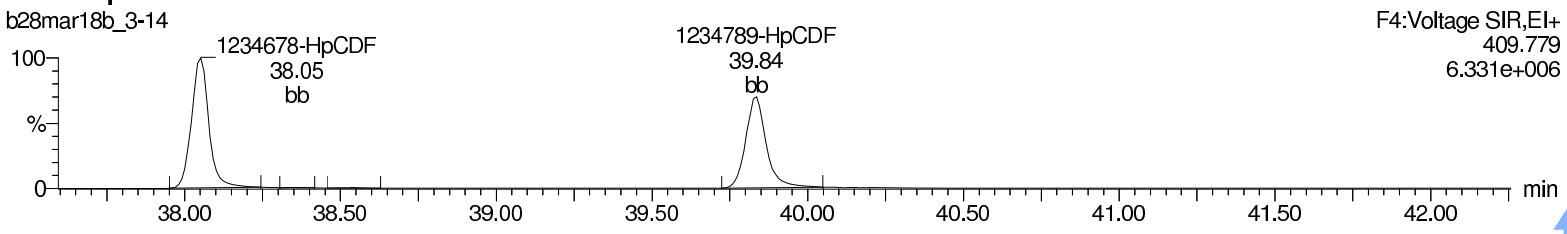

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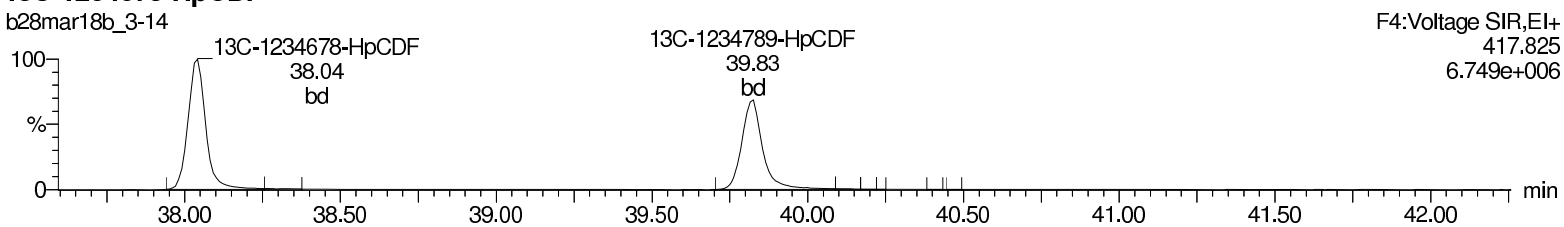

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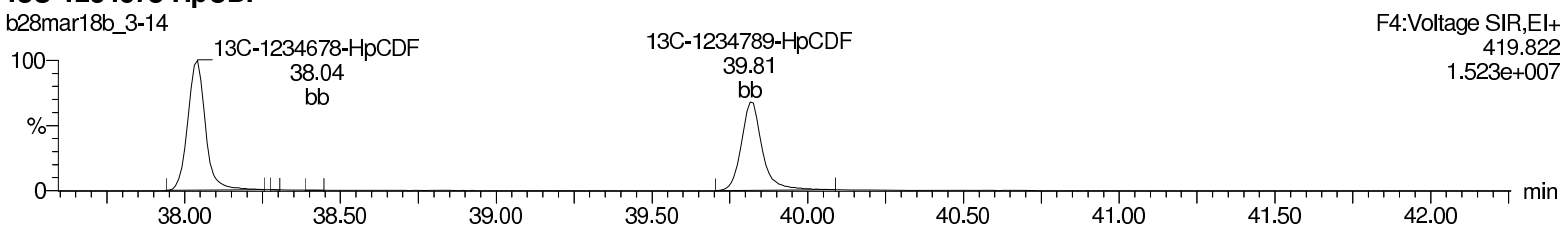

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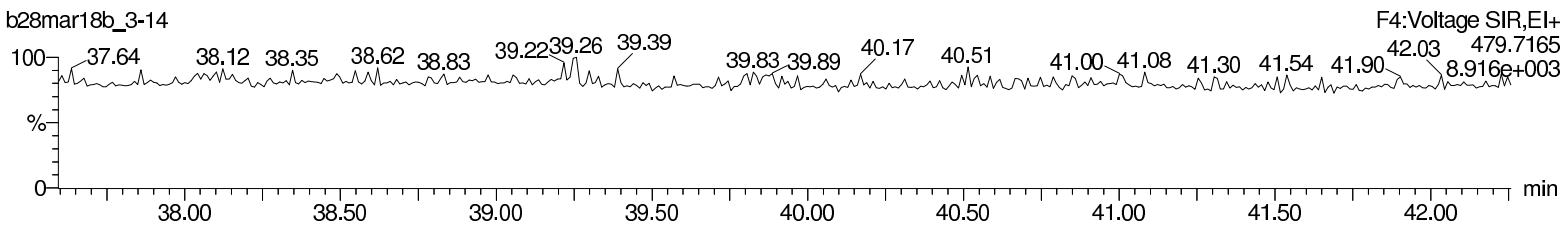

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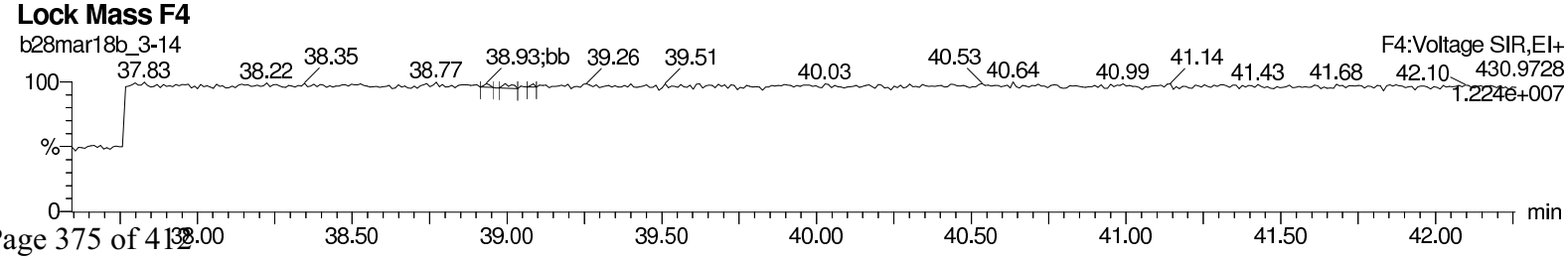

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Printed: Friday, March 30, 2018 10:06:03 Eastern Standard Time

Name: b28mar18b_3-14, Date: 29-Mar-2018, Time: 20:19:03, ID: CS3WT UD180115-01.2, Description: , Job: b28mar18b_3, Task: HRP763_1, User: CLP

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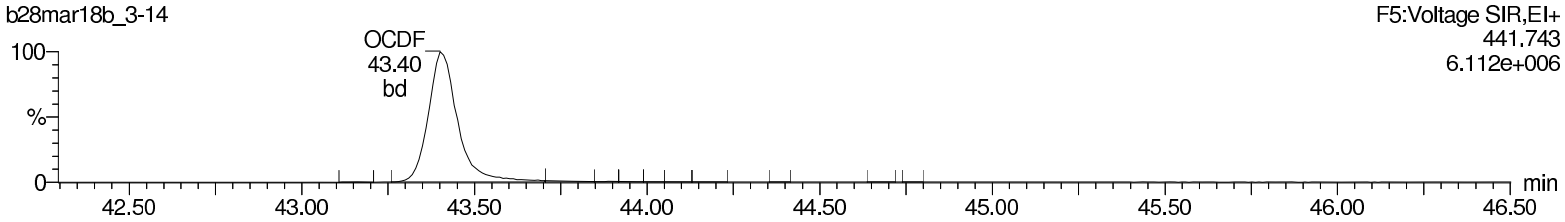

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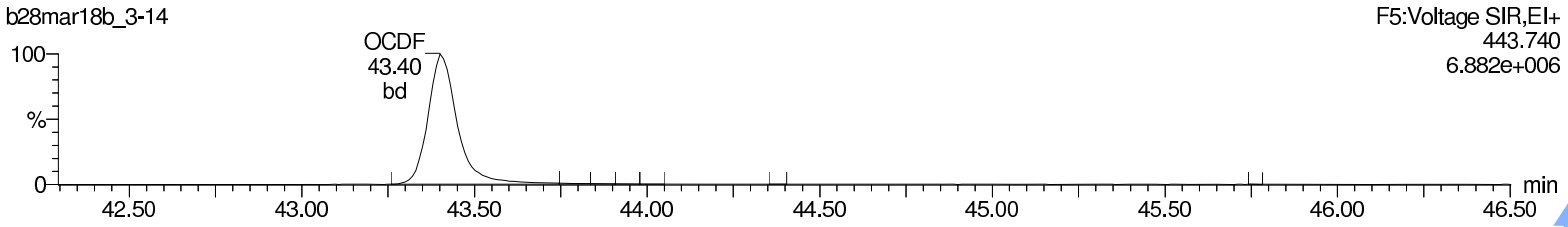

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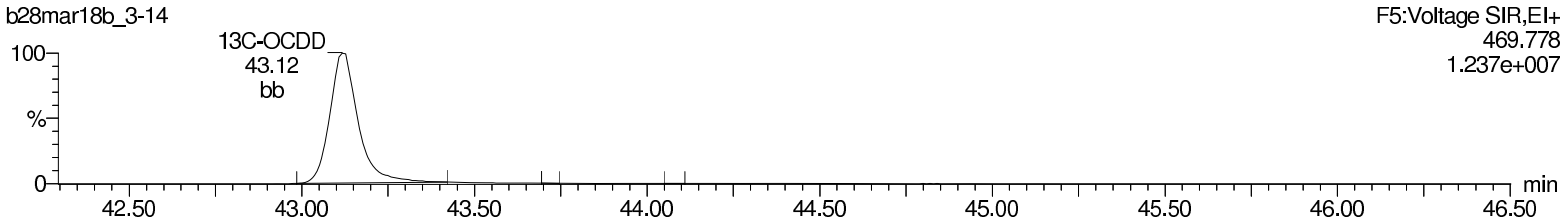

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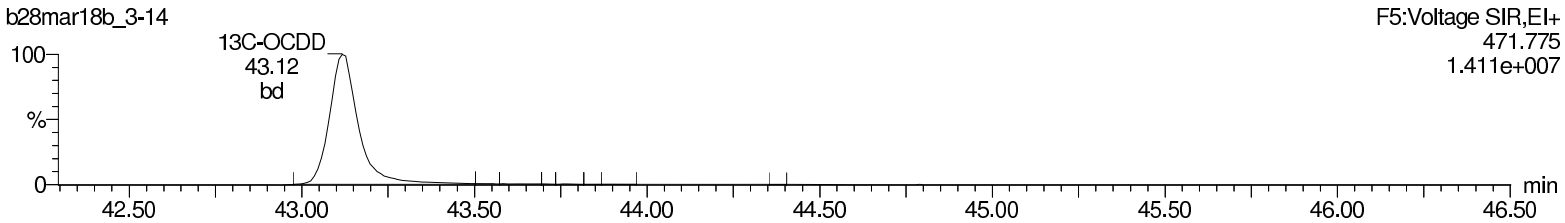

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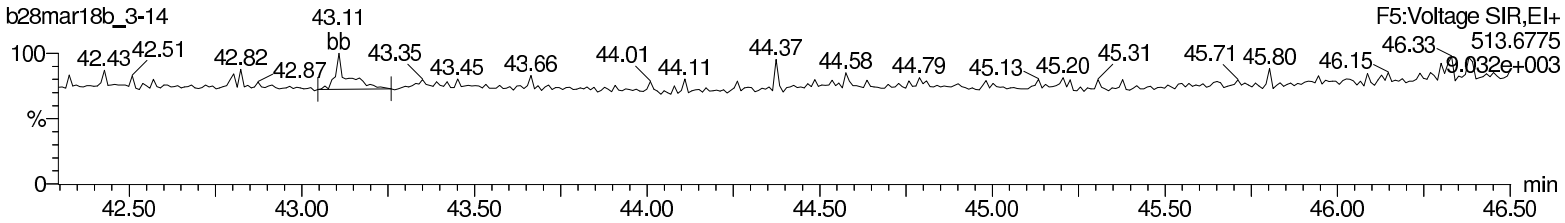

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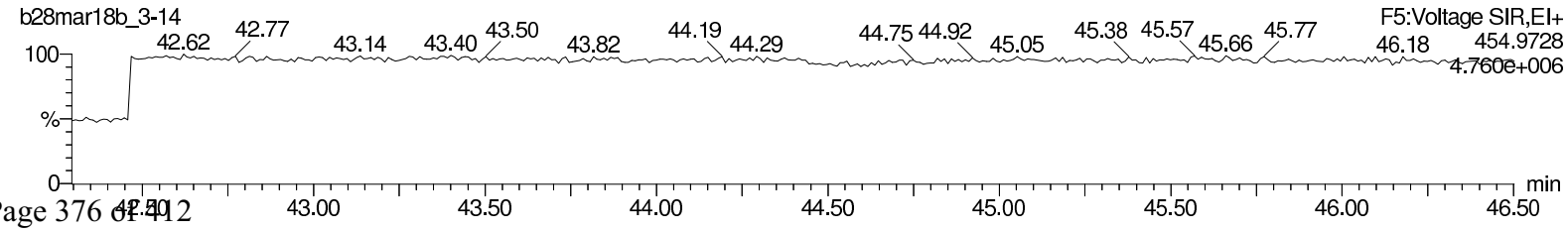

Instrument: HRP763_1

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b28mar18b_4-3	29-MAR-2018 22:52:09	Chris Presnell	12020981-1 MB		1 uL	dioxin_db5ms	10K
b28mar18b_4-4	29-MAR-2018 23:40:43	Chris Presnell	13112001-1	37287	1 uL	dioxin_db5ms	10K
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b28mar18b_4-6	30-MAR-2018 01:17:51	Chris Presnell	13112003-1	37287	1 uL	dioxin_db5ms	10K
b28mar18b_4-7	30-MAR-2018 02:06:25	Chris Presnell	13112004-1	37287	1 uL	dioxin_db5ms	10K
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b28mar18b_4-14	30-MAR-2018 07:46:22	Chris Presnell	CS3WT UD180115-01.2		1 uL	dioxin_db5ms	10K

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Resolution Check Report **MassLynx 4.1**

Printed: Friday, March 30, 2018 08:43:00 Eastern Standard Time

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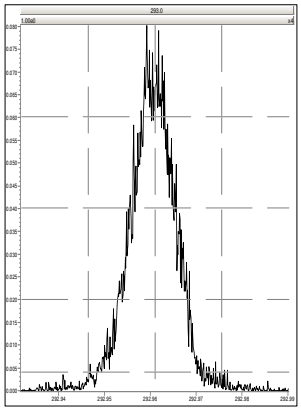

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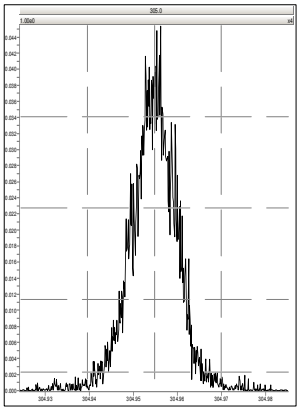

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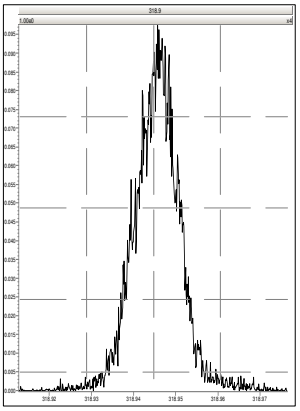

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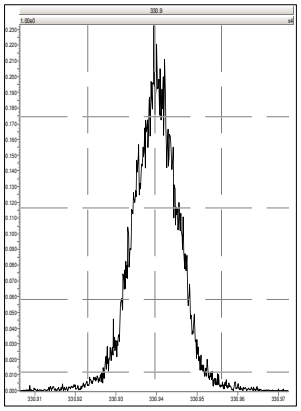

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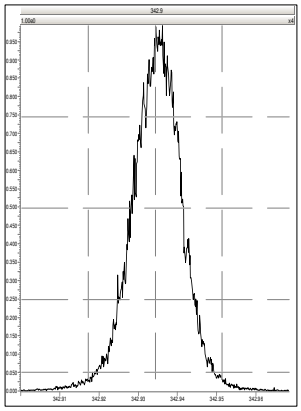

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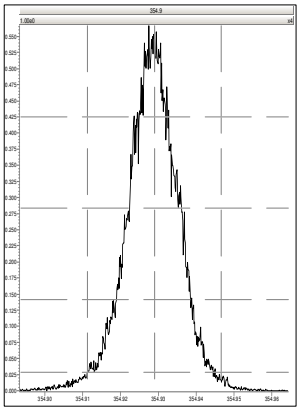

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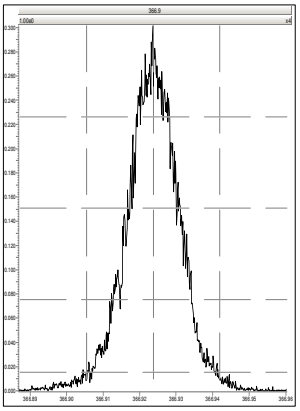

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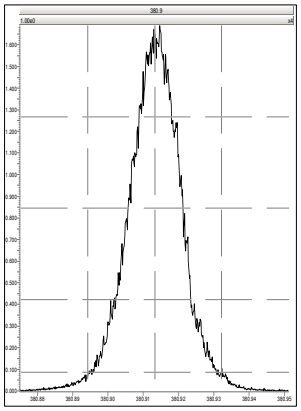

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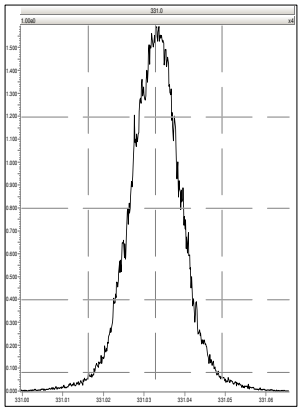

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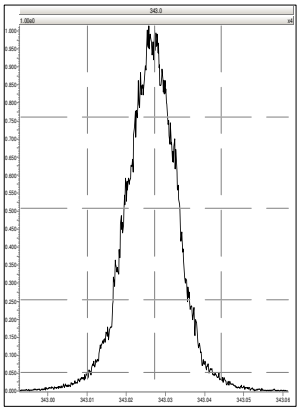

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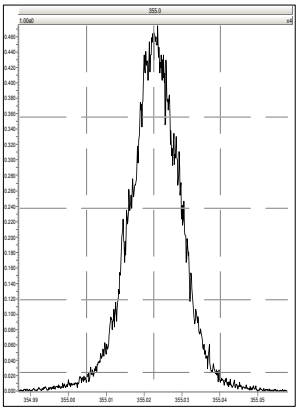

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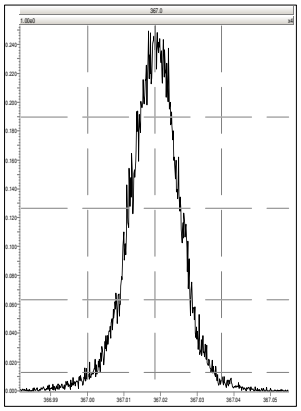

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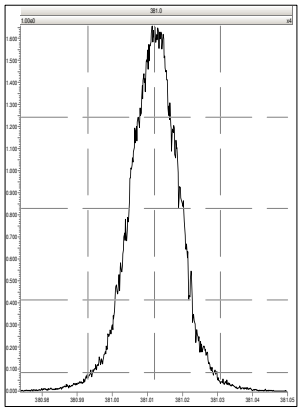

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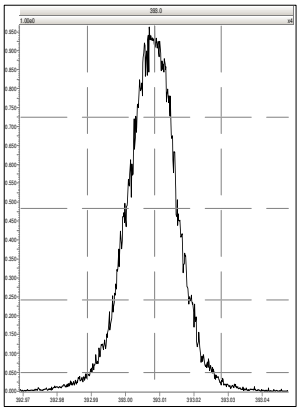

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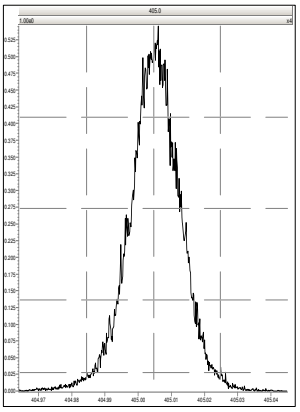

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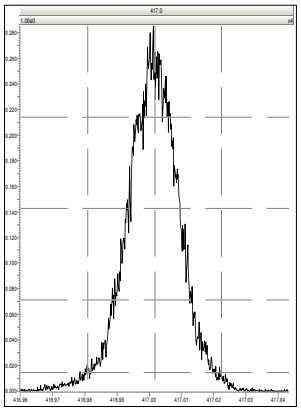

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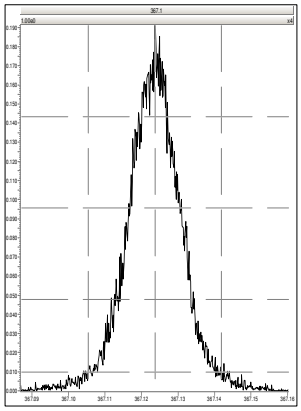

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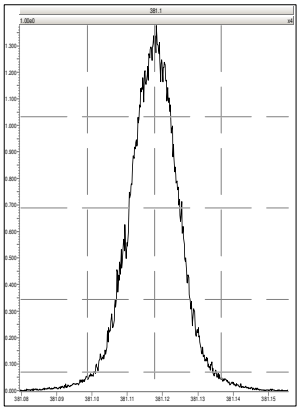

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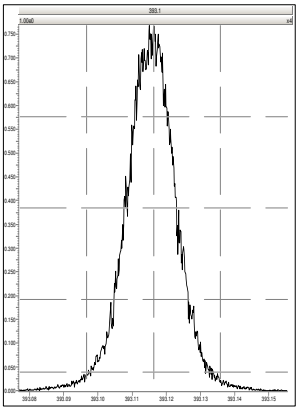

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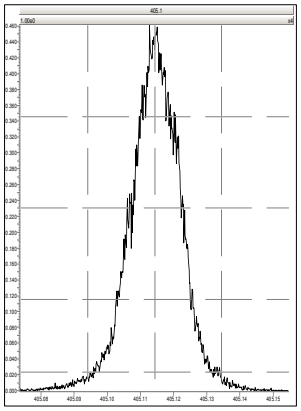

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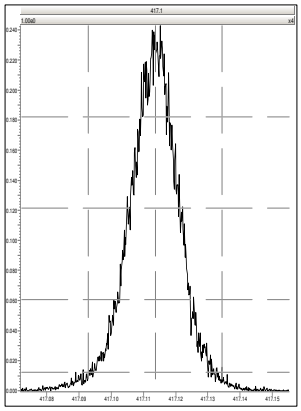

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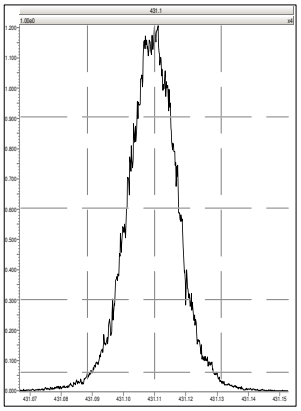

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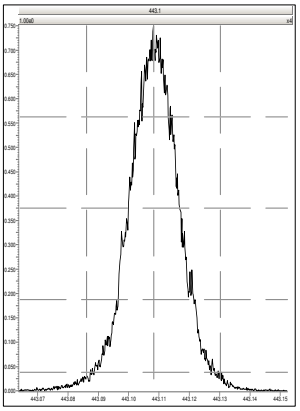

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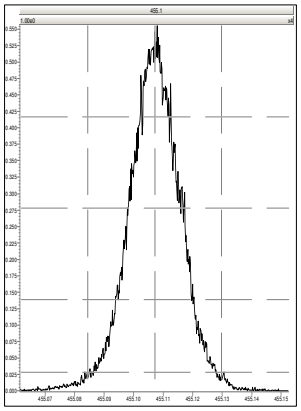

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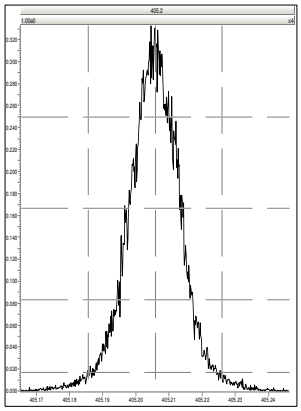

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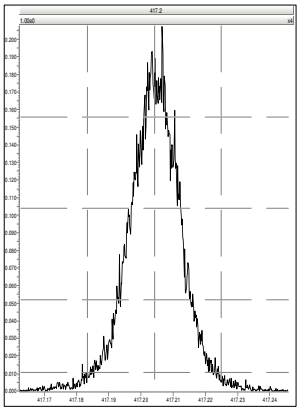

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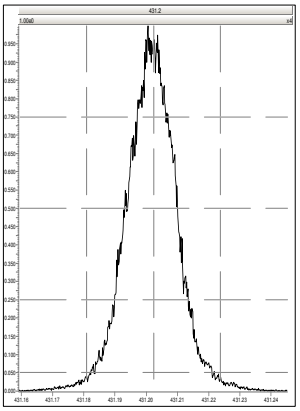

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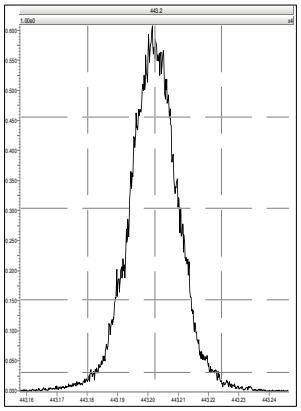

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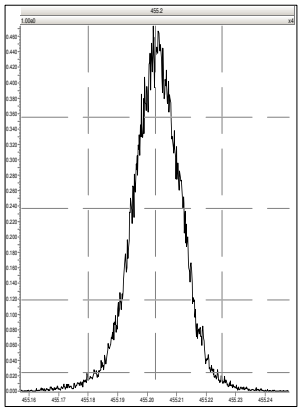

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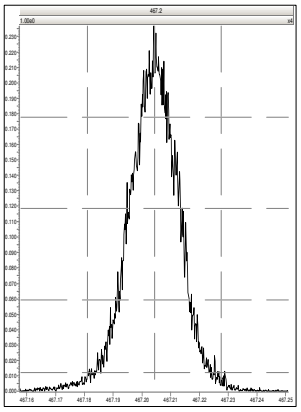

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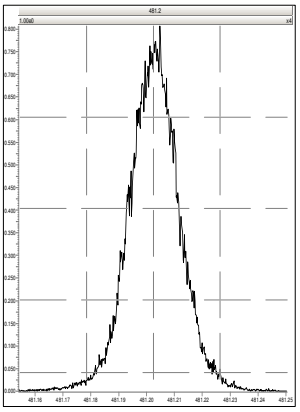

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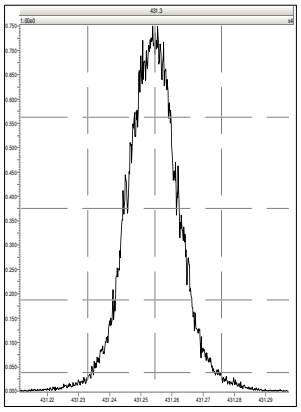

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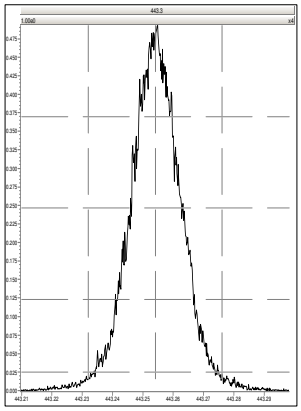

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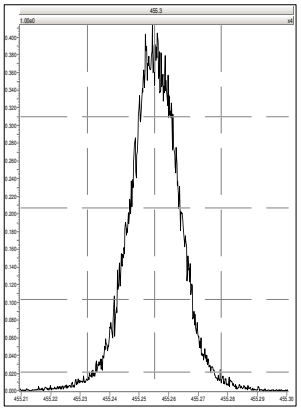
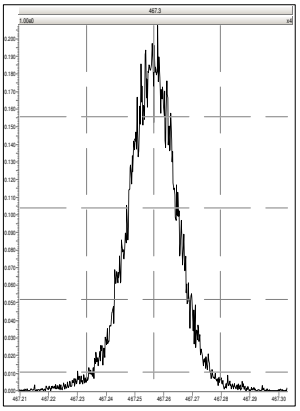
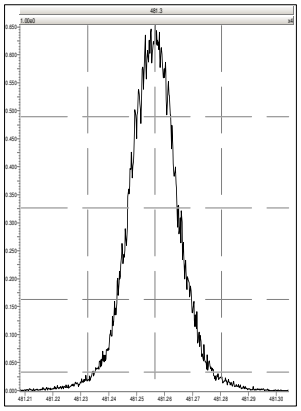


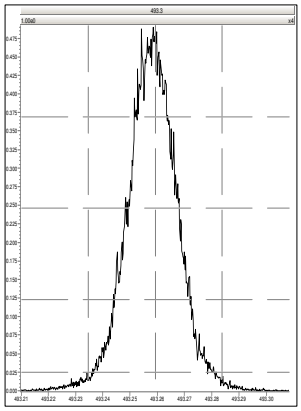
M 466.9728 R 11628



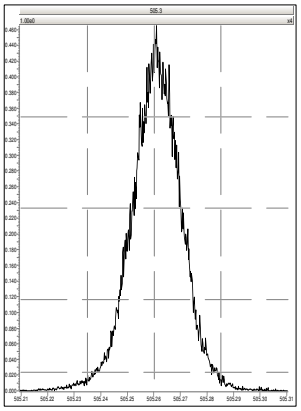
M 480.9696 R 11471



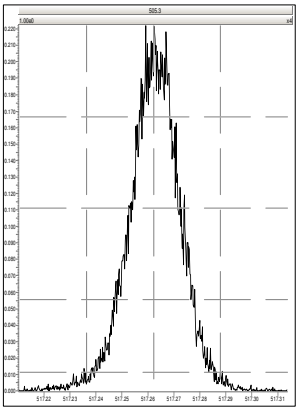
M 492.9696 R 11682



M 504.9696 R 11295



M 516.9697 R 11186



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Instrument: HRP763_1

Name	Run Date	Analyst	Sample Information	Batch ID	Injection Volume	Ms Method	Tune Method
b30mar18a-1	30-MAR-2018 09:34:39	Chris Presnell	CS3WT UD180115-01.2 CPSFX		1 uL	dioxin_db5ms	10K
b30mar18a-2	30-MAR-2018 10:22:23	Chris Presnell	SB		1 uL	dioxin_db5ms	10K
b30mar18a-3	30-MAR-2018 11:10:55	Chris Presnell	12020927-1 MB	37210	1 uL	dioxin_db5ms	10K
b30mar18a-4	30-MAR-2018 11:59:27	Chris Presnell	12020928-1 MB	37210	1 uL	dioxin_db5ms	10K
b30mar18a-5	30-MAR-2018 12:48:02	Chris Presnell	12019729-1 MB	35857	1 uL	dioxin_db5ms	10K
b30mar18a-6	30-MAR-2018 13:36:35	Chris Presnell	12020844-1 MB	37102	1 uL	dioxin_db5ms	10K
b30mar18a-7	30-MAR-2018 14:25:09	Chris Presnell	11440001-1	37210	1 uL	dioxin_db5ms	10K
b30mar18a-8	30-MAR-2018 15:13:43	Chris Presnell	11440002-1	37210	1 uL	dioxin_db5ms	10K
b30mar18a-9	30-MAR-2018 16:02:16	Chris Presnell	11441001-4	37102	1 uL	dioxin_db5ms	10K
b30mar18a-10	30-MAR-2018 16:50:50	Chris Presnell	11443001-3	35857	1 uL	dioxin_db5ms	10K
b30mar18a-11	30-MAR-2018 17:39:25	Chris Presnell	CS3WT UD180115-01.2 CPSFY		1 uL	dioxin_db5ms	10K

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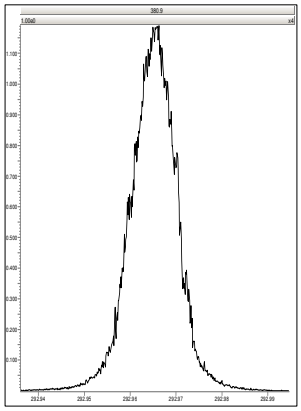
Experiment Calibration Report **MassLynx 4.1**

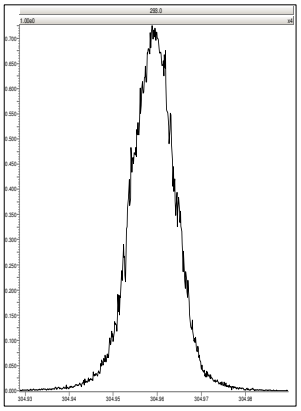
File: Experiment: dioxin_db5ms.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Friday, March 30, 2018 09:32:30 Eastern Standard Time

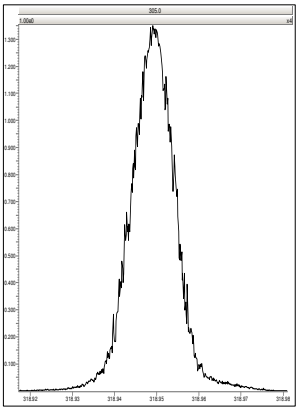
M 292.9824 R 12562



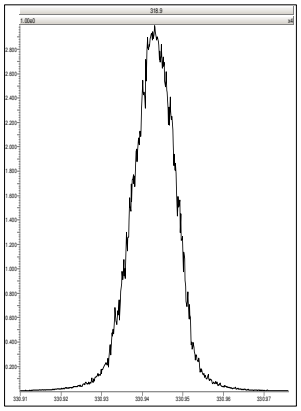
M 304.9824 R 12817



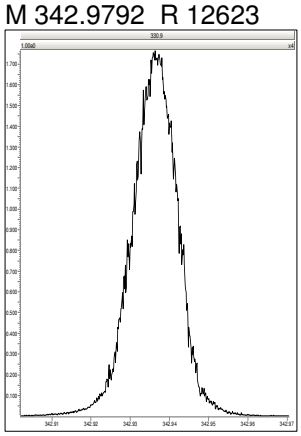
M 318.9792 R 13515



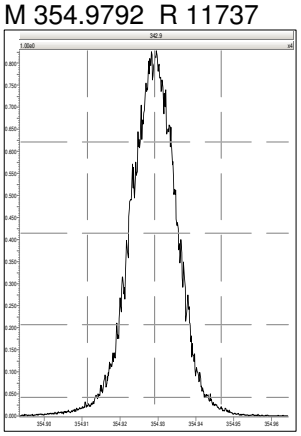
M 330.9792 R 13297



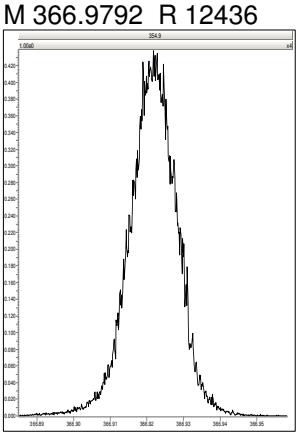
M 342.9792 R 12623



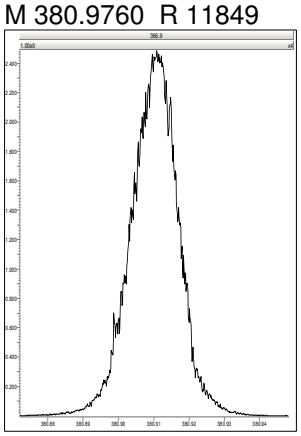
M 354.9792 R 11737



M 366.9792 R 12436



M 380.9760 R 11849



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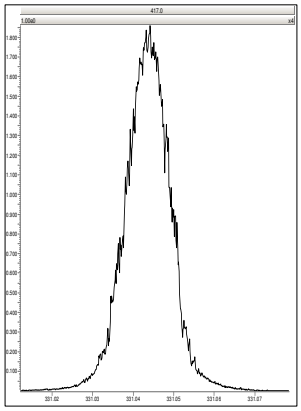
Experiment Calibration Report **MassLynx 4.1**

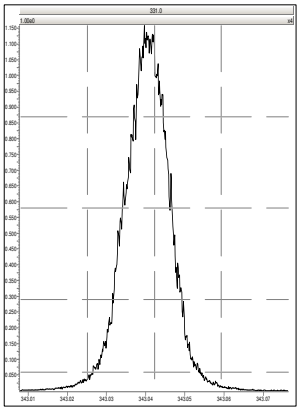
File: Experiment: dioxin_db5ms.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

Printed: Friday, March 30, 2018 09:32:48 Eastern Standard Time

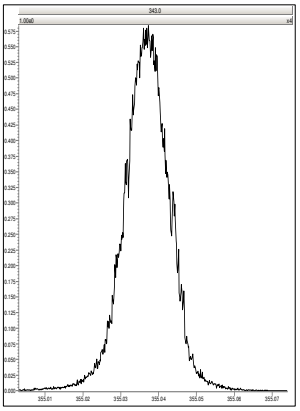
M 330.9792 R 12560



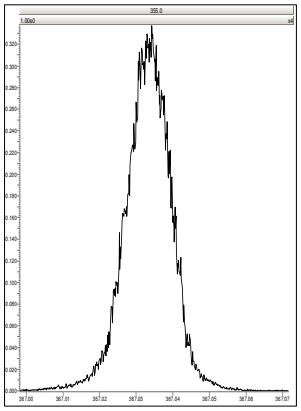
M 342.9792 R 12500



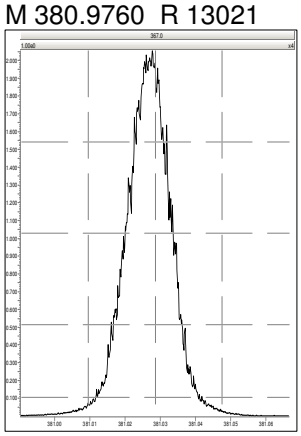
M 354.9792 R 12689



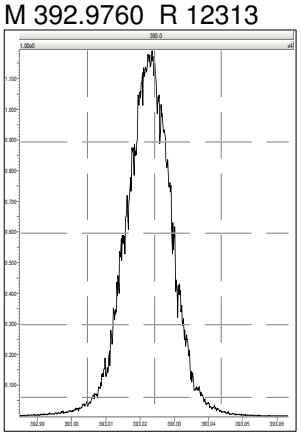
M 366.9792 R 12757



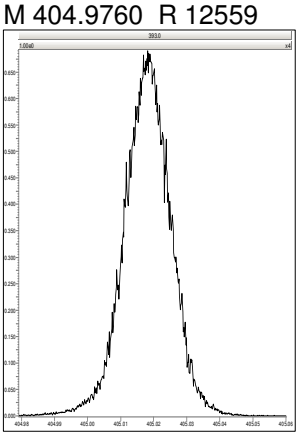
M 380.9760 R 13021



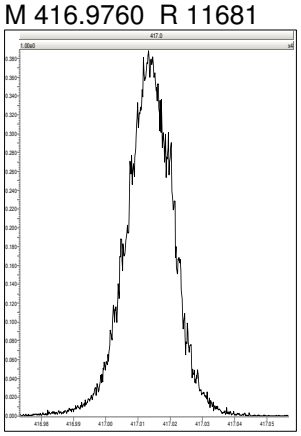
M 392.9760 R 12313



M 404.9760 R 12559



M 416.9760 R 11681



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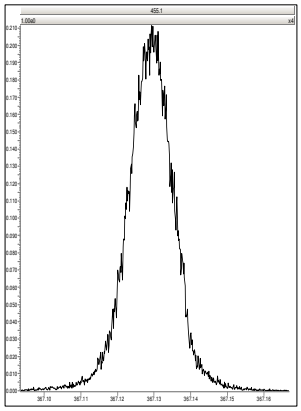
Experiment Calibration Report **MassLynx 4.1**

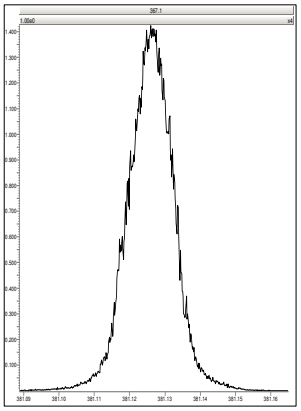
File: Experiment: dioxin_db5ms.exp Reference: Pfk.ref Function: 3 @ 200 (ppm)

Printed: Friday, March 30, 2018 09:33:15 Eastern Standard Time

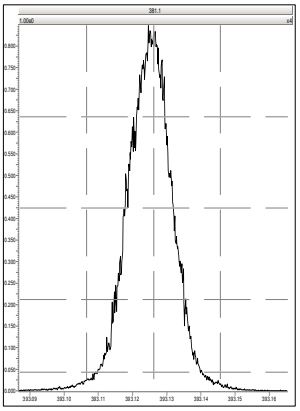
M 366.9792 R 12195



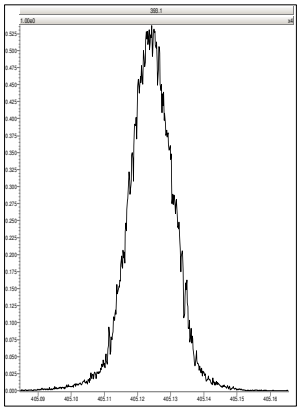
M 380.9760 R 12566



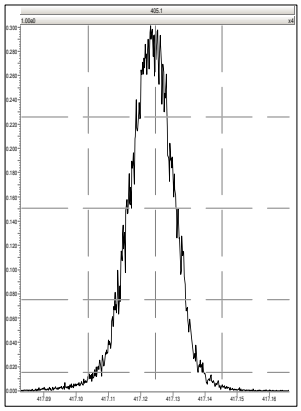
M 392.9760 R 12757



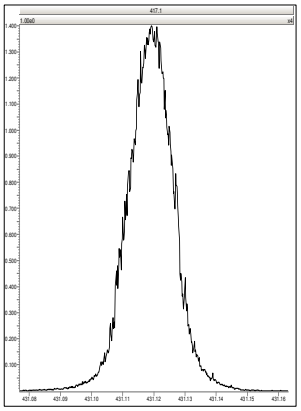
M 404.9760 R 13020



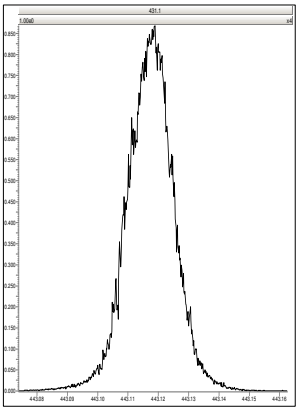
M 416.9760 R 13087



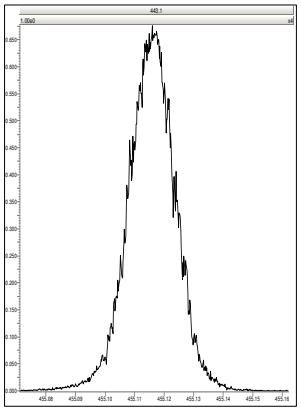
M 430.9728 R 12435



M 442.9728 R 12500



M 454.9728 R 11846



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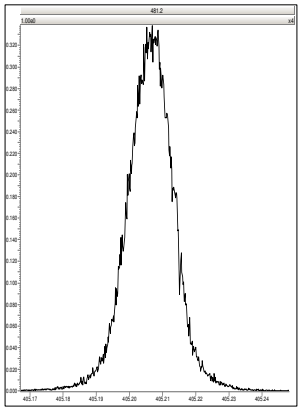
Experiment Calibration Report **MassLynx 4.1**

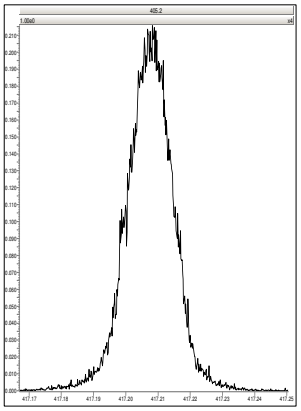
File: Experiment: dioxin_db5ms.exp Reference: Pfk.ref Function: 4 @ 200 (ppm)

Printed: Friday, March 30, 2018 09:33:36 Eastern Standard Time

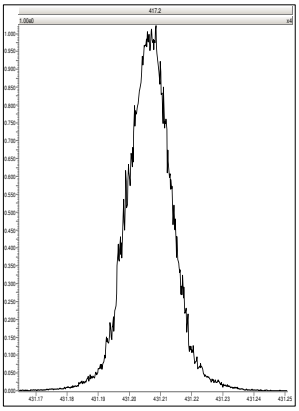
M 404.9760 R 12075



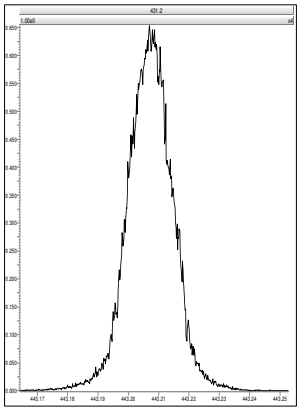
M 416.9760 R 12316



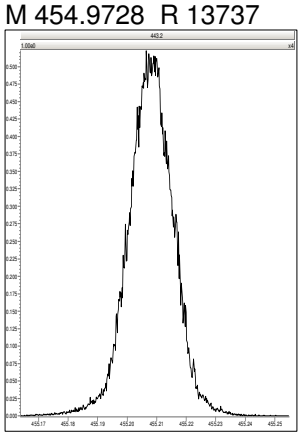
M 430.9728 R 12690



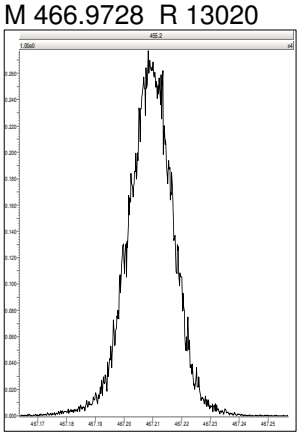
M 442.9728 R 12823



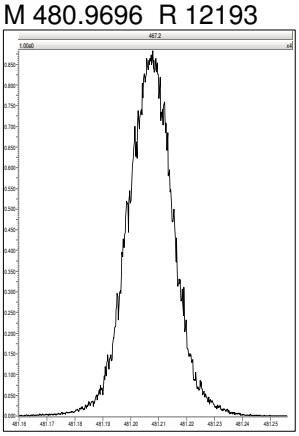
M 454.9728 R 13737



M 466.9728 R 13020



M 480.9696 R 12193



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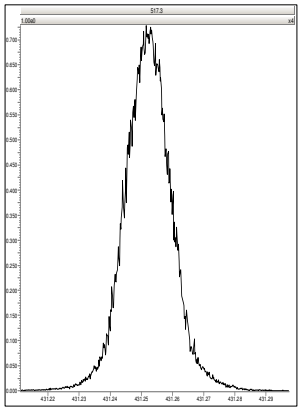
Experiment Calibration Report **MassLynx 4.1**

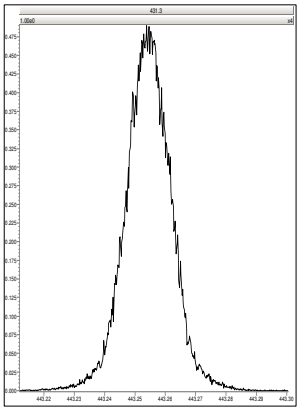
File: Experiment: dioxin_db5ms.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

Printed: Friday, March 30, 2018 09:33:57 Eastern Standard Time

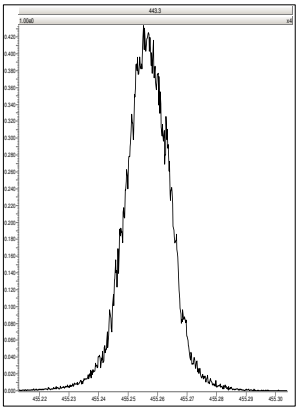
M 430.9728 R 11628



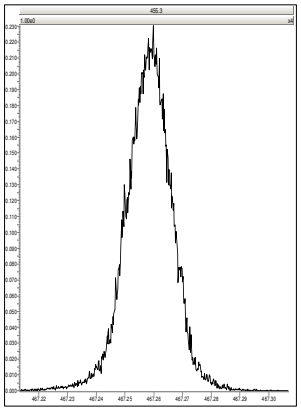
M 442.9728 R 12198



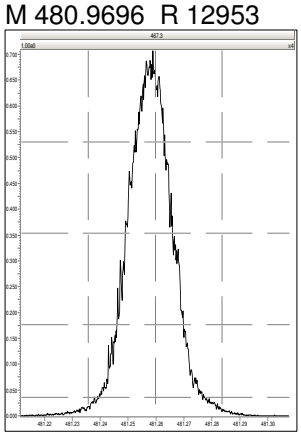
M 454.9728 R 12436



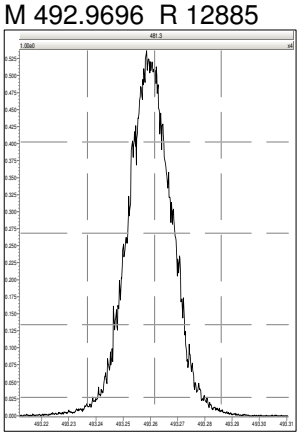
M 466.9728 R 12496



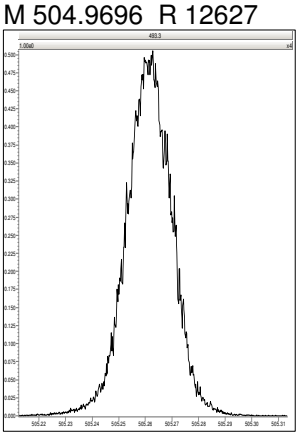
M 480.9696 R 12953



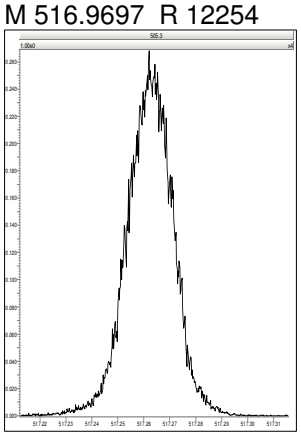
M 492.9696 R 12885



M 504.9696 R 12627



M 516.9697 R 12254



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Resolution Check Report **MassLynx 4.1**

Printed: Friday, March 30, 2018 18:36:05 Eastern Standard Time

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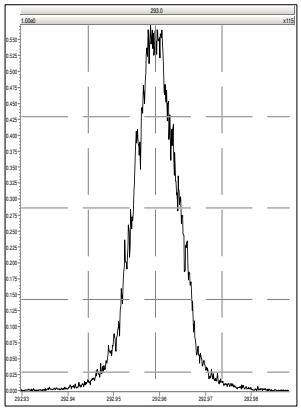
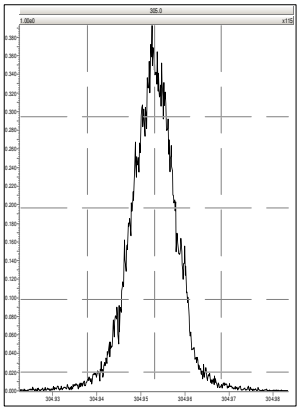
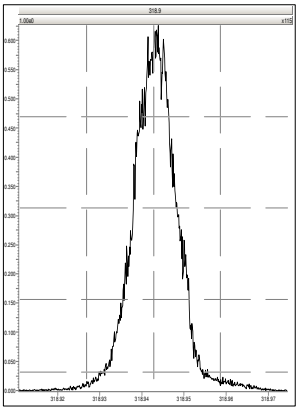


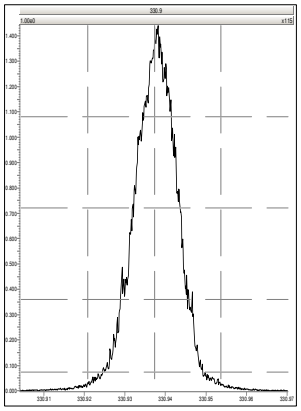
M 304.9824 R 13278



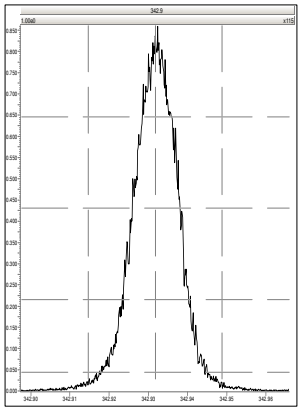
M 318.9792 R 13382



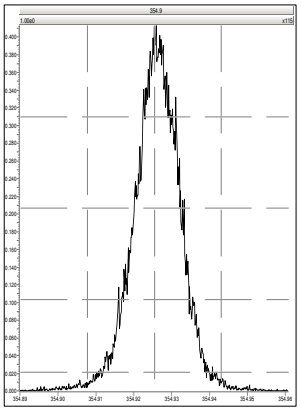
M 330.9792 R 13405



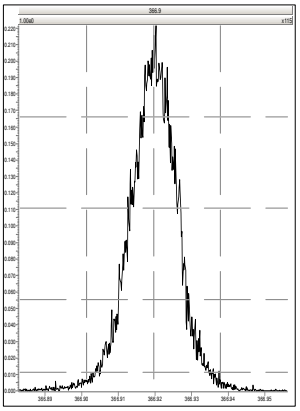
M 342.9792 R 13163



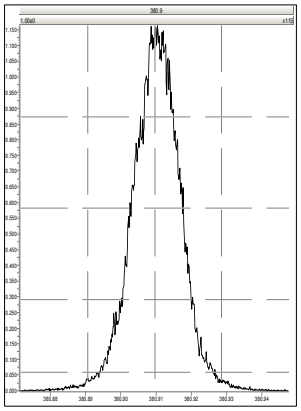
M 354.9792 R 12757



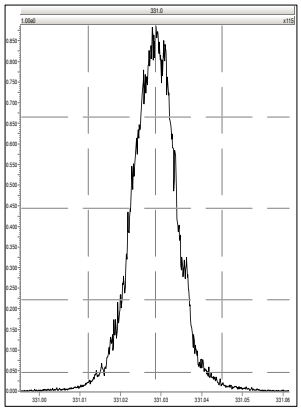
M 366.9792 R 12315



M 380.9760 R 11879



M 330.9792 R 12728



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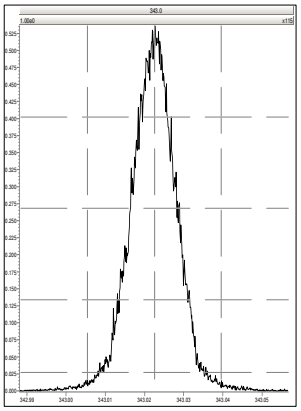
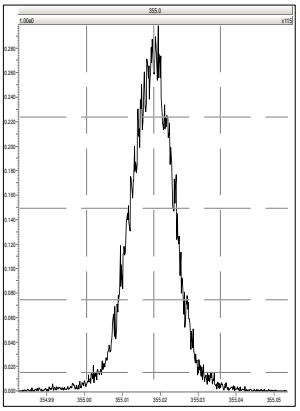


M 354.9792 R 13566



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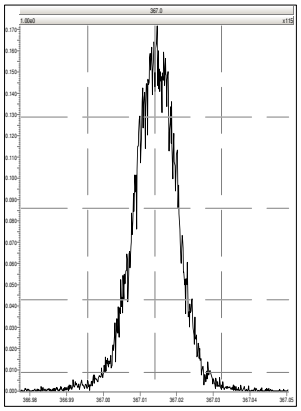
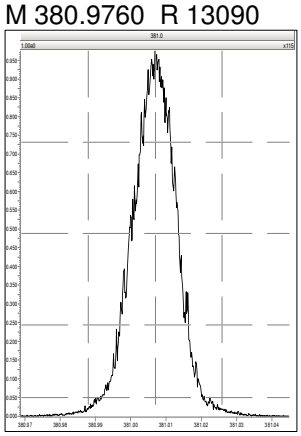
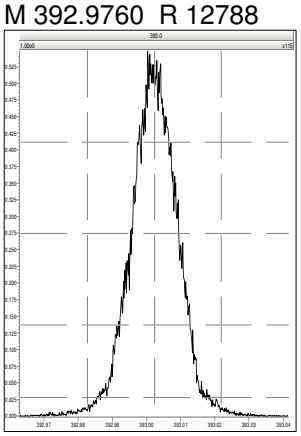


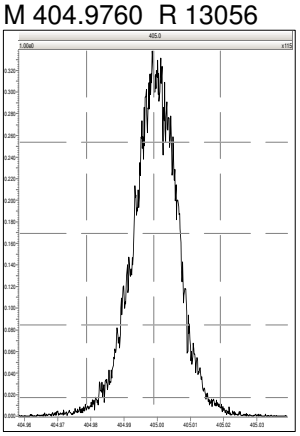
M 380.9760 R 13090



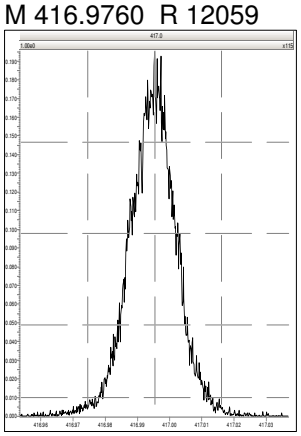
M 392.9760 R 12788



M 404.9760 R 13056



M 416.9760 R 12059



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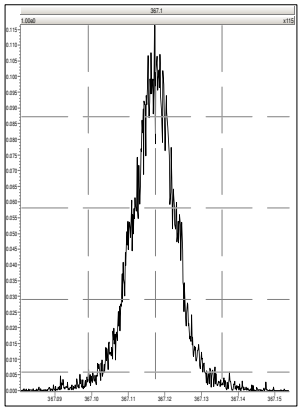
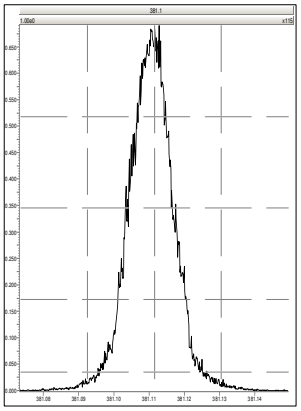
M 366.9792 R 12887



M 380.9760 R 13090



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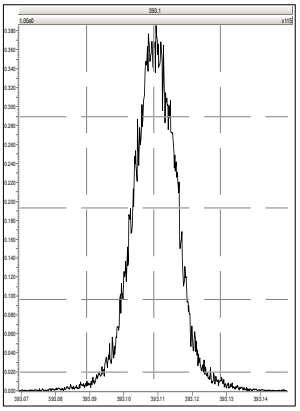
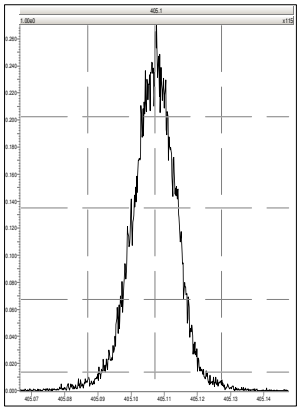
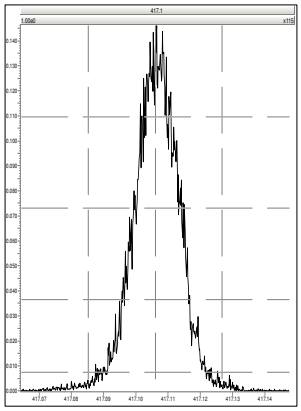


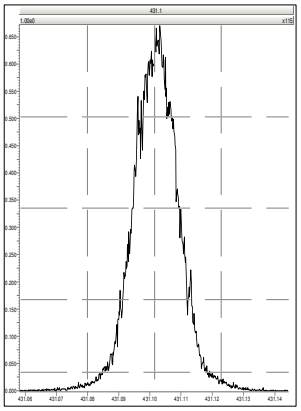
M 404.9760 R 13735



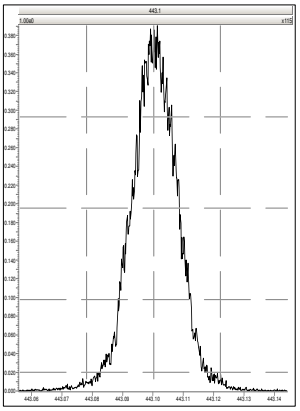
M 416.9760 R 13855



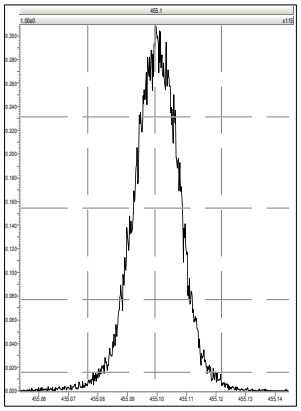
M 430.9728 R 12954



M 442.9728 R 12760



M 454.9728 R 12794



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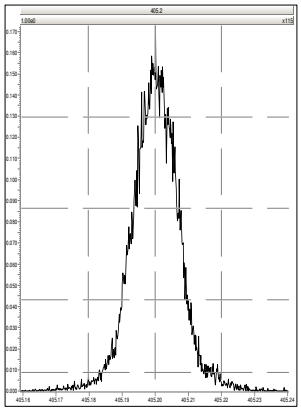
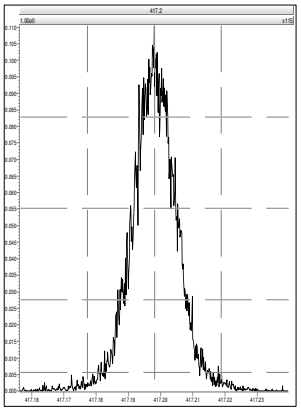
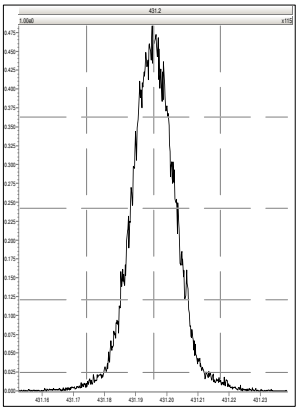


M 416.9760 R 14327



M 430.9728 R 13058



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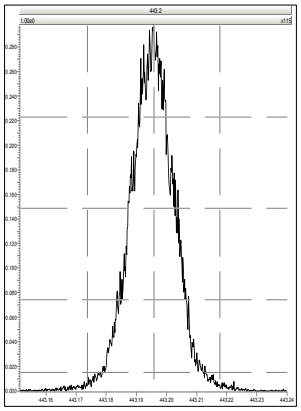
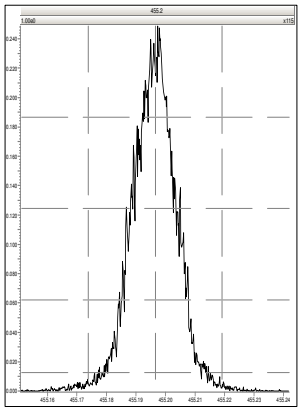
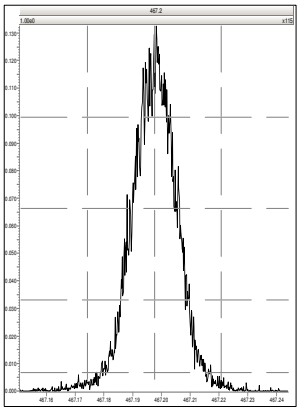


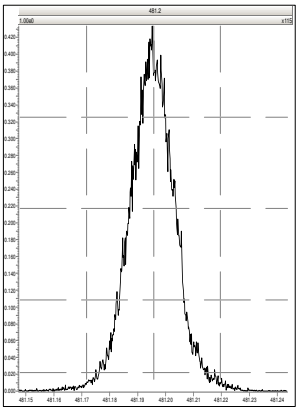
M 454.9728 R 14166



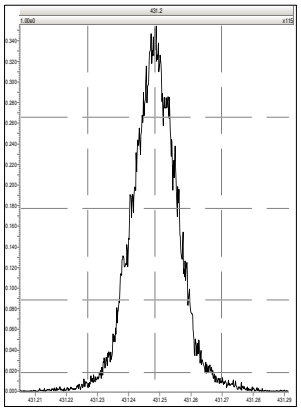
M 466.9728 R 13264



M 480.9696 R 12756



M 430.9728 R 12284



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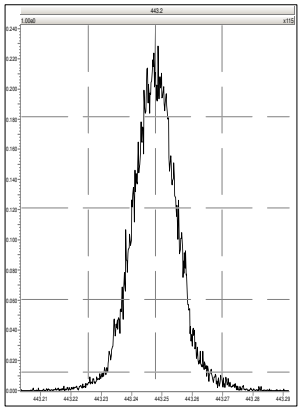
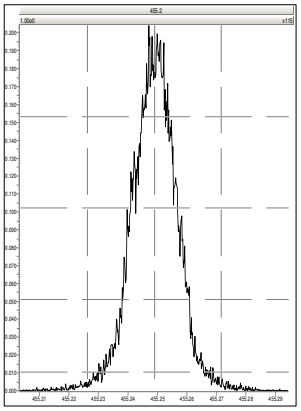
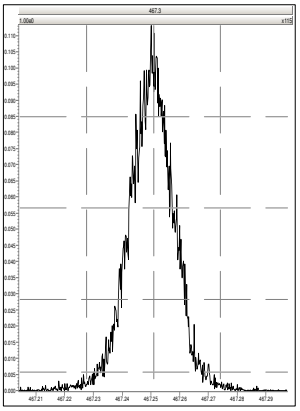
M 442.9728 R 13061



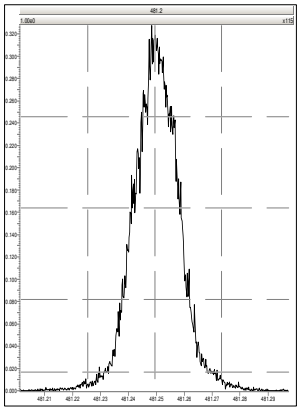
M 454.9728 R 13624



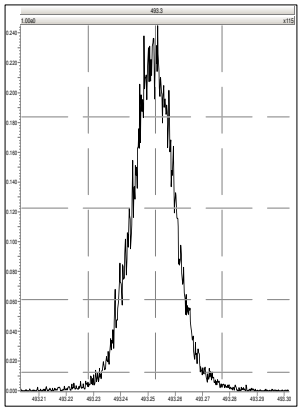
M 466.9728 R 13892



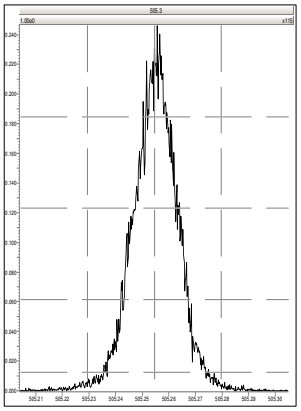
M 480.9696 R 12928



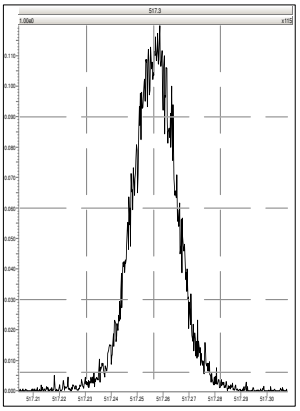
M 492.9696 R 13026



M 504.9696 R 13736



M 516.9697 R 13130



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Quantify Sample Summary Report **MassLynx 4.1**
Method Window Defining Report

Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 08:32:18 Eastern Standard Time
Printed: Monday, April 02, 2018 08:32:58 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\WDM_b22mar18.mdb 23 Mar 2018 09:35:02
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

	Name	RT
1	First TCDF	25.19
2	Last TCDF	31.35
3	First PeCDF	31.33
4	Last PeCDF	34.02
5	First HxCDF	34.51
6	Last HxCDF	36.68
7	First HpCDF	38.06
8	Last HpCDF	39.85
9	OCDF	43.42
10	First TCDD	26.90
11	2378-TCDD	30.40
12	Last TCDD	31.25
13	First PeCDD	32.33
14	Last PeCDD	33.86
15	First HxCDD	34.90
16	Last HxCDD	36.38
17	First HpCDD	38.37
18	Last HpCDD	39.23
19	OCDD	43.15

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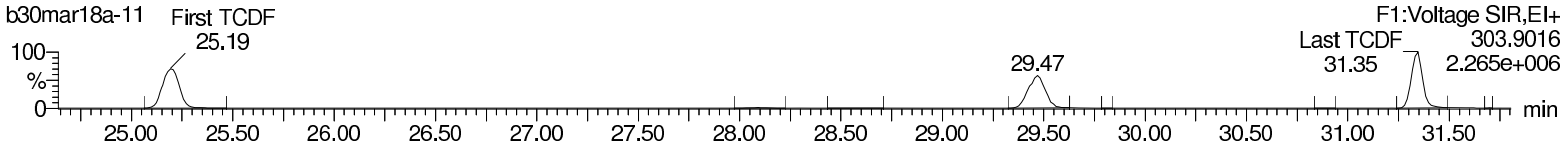
Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 08:32:18 Eastern Standard Time
Printed: Monday, April 02, 2018 08:32:58 Eastern Standard Time

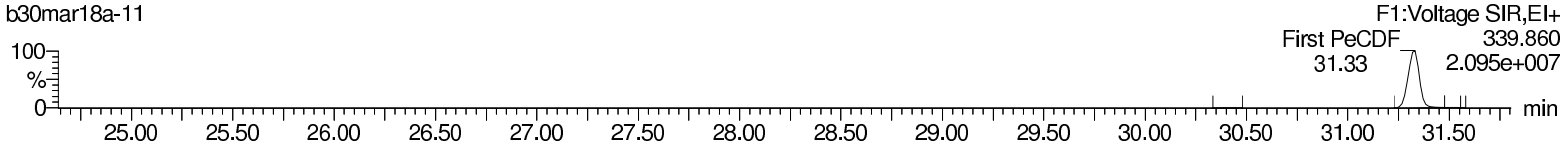
Method: C:\MassLynxBackUp\Default.pro\Methdb\WDM_b22mar18.mdb 23 Mar 2018 09:35:02
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

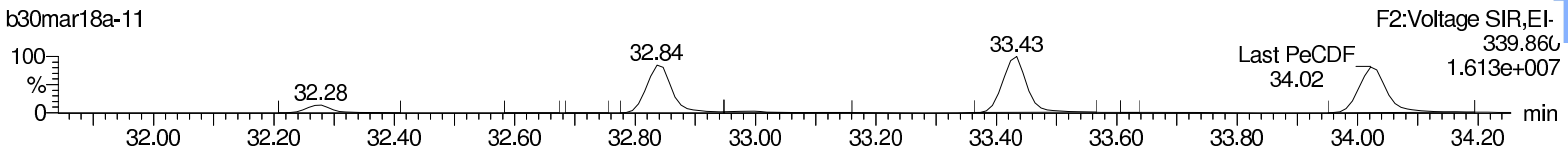
First TCDF



First PeCDF



Last PeCDF



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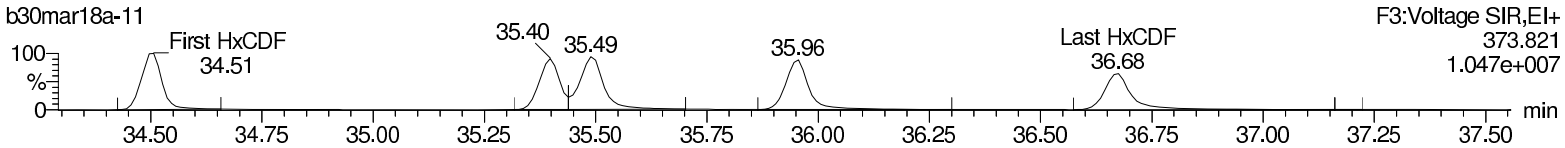
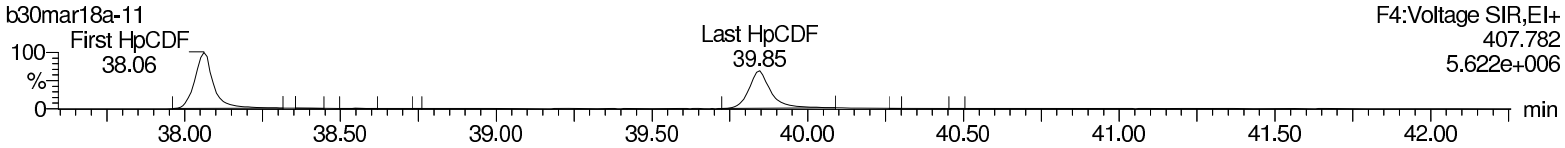
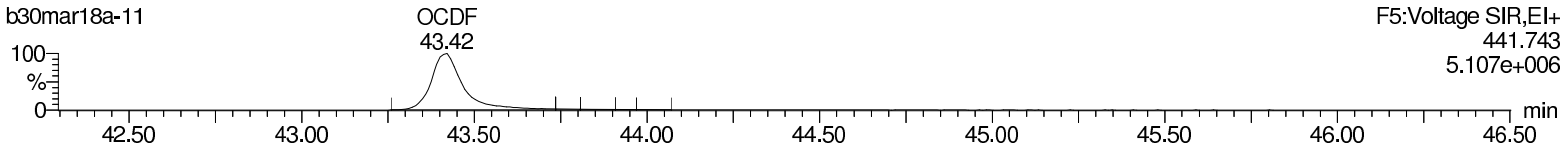


First HpCDF



OCDF



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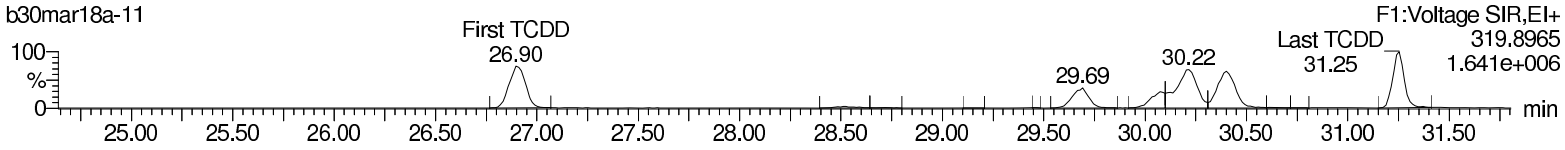
Dataset: C:\MassLynx\Default.pro\WDM Results\wdm-b30mar18a-11.qld

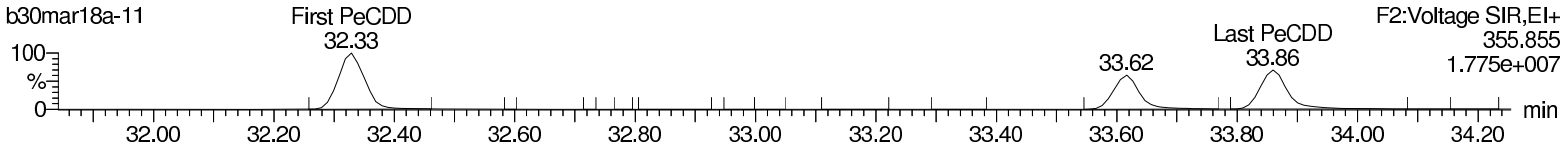
Last Altered: Monday, April 02, 2018 08:32:18 Eastern Standard Time
Printed: Monday, April 02, 2018 08:32:58 Eastern Standard Time

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

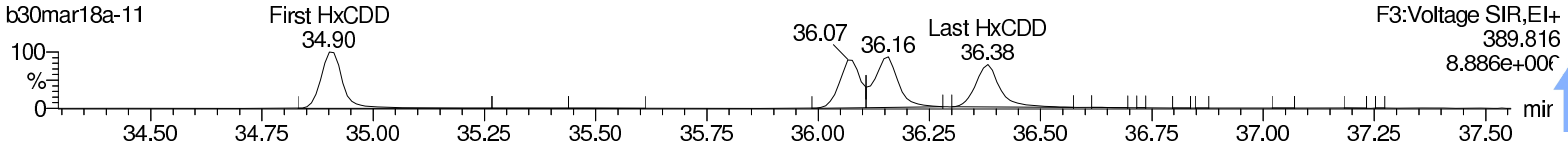
First TCDD



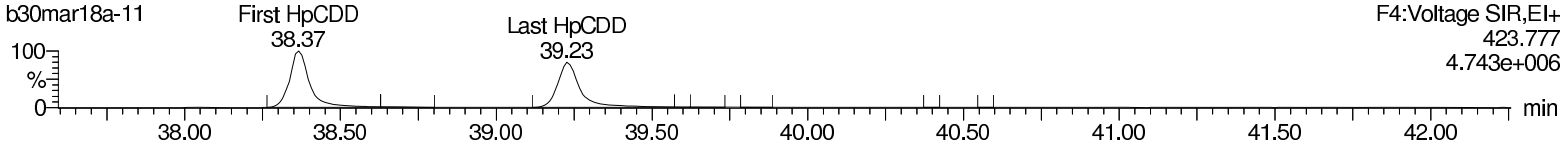
First PeCDD



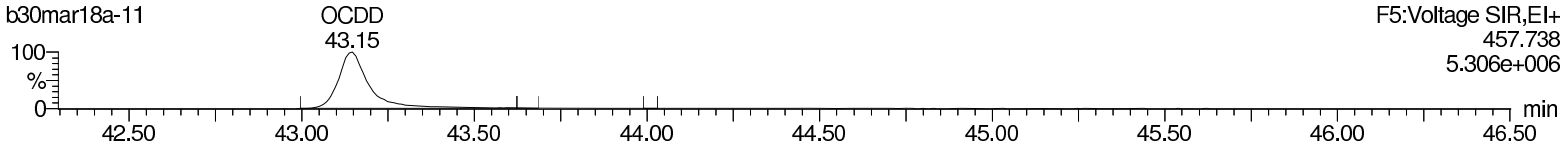
First HxCDD



First HpCDD



OCDD



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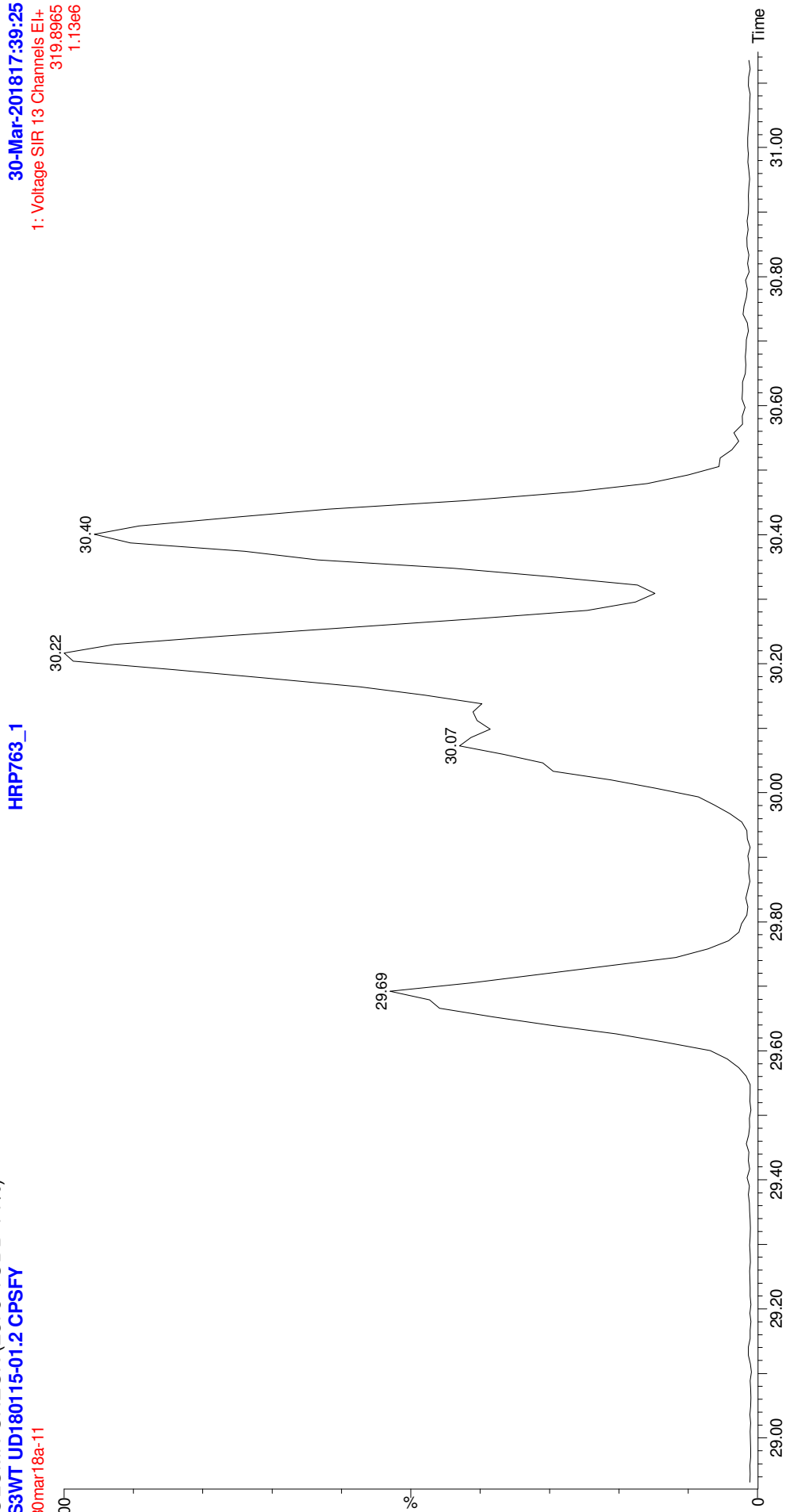

COLUMN CHECK (2378-TCDD 14%)
CS3WT UD180115-01.2 CPSFY
b30mar18a-11

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
Printed: Monday, April 02, 2018 09:06:41 Eastern Standard Time

Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
1	2378-TCDD	1.10e5	1.41e5	2.51e5	30.40	1.001	0.78	NO	10.397	0.0560	0.926	0.891	4.0	1.07e6	3032	352.6	1.32e6	2155	611.6	dd	dd
2	12378-PeCDD	5.32e5	3.43e5	8.75e5	33.62	1.000	1.55	NO	54.950	0.122	0.867	0.789	9.9	1.08e7	9349	1152.0	6.84e6	5884	1163.0	bb	bb
3	123478-HxCDD	4.04e5	3.32e5	7.36e5	36.07	1.000	1.22	NO	53.892	0.134	0.903	0.838	7.8	7.54e6	6150	1226.4	6.20e6	7327	846.0	bd	bd
4	123678-HxCDD	4.88e5	4.13e5	9.01e5	36.16	1.000	1.18	NO	53.010	0.130	0.891	0.840	6.0	7.98e6	6150	1297.2	6.40e6	7327	874.2	db	dd
5	123789-HxCDD	4.25e5	3.91e5	8.16e5	36.38	1.006	1.09	NO	54.893	0.136	0.894	0.814	9.8	6.71e6	6150	1090.9	5.50e6	7327	750.1	bb	dd
6	1234678-HpCDD	3.14e5	2.99e5	6.12e5	39.23	1.000	1.05	NO	45.574	0.172	0.914	1.003	-8.9	3.77e6	5941	633.8	3.69e6	5328	691.7	bd	bb
7	OCDD	5.58e5	6.23e5	1.18e6	43.15	1.000	0.90	NO	101.170	0.222	0.921	0.910	1.2	5.28e6	4877	1083.4	6.06e6	4839	1251.5	bd	bd
8	2378-TCDF	1.27e5	1.68e5	2.95e5	29.47	1.000	0.76	NO	9.205	0.0489	0.848	0.921	-7.9	1.31e6	2729	479.5	1.69e6	3180	531.1	bb	bb
9	12378-PeCDF	6.65e5	4.35e5	1.10e6	32.84	1.000	1.53	NO	46.991	0.0856	0.773	0.822	-6.0	1.36e7	6517	2092.1	9.12e6	8950	1018.8	bd	bd
10	23478-PeCDF	7.42e5	4.88e5	1.23e6	33.43	1.000	1.52	NO	47.475	0.0709	0.880	0.926	-5.0	1.60e7	6517	2461.3	1.03e7	8950	1150.0	bb	bb
11	123478-HxCDF	4.94e5	4.11e5	9.05e5	35.40	1.000	1.20	NO	51.874	0.151	1.036	0.998	3.7	9.45e6	10624	889.7	7.93e6	9384	844.6	bd	bd
12	123678-HxCDF	6.05e5	5.11e5	1.12e6	35.49	1.000	1.18	NO	51.521	0.147	0.962	0.934	3.0	9.80e6	10624	922.7	8.19e6	9384	873.2	db	db
13	234678-HxCDF	5.52e5	4.41e5	9.94e5	35.96	1.000	1.25	NO	51.287	0.160	1.059	1.033	2.6	9.21e6	10624	866.5	7.53e6	9384	802.3	bb	bb
14	123789-HxCDF	4.75e5	3.84e5	8.59e5	36.68	1.000	1.24	NO	53.298	0.220	1.016	0.953	6.6	6.71e6	10624	631.7	5.46e6	9384	582.2	bd	bb
15	1234678-HpCDF	3.85e5	3.92e5	7.77e5	38.06	1.000	0.98	NO	51.315	0.135	1.125	1.097	2.6	5.59e6	5683	983.7	5.57e6	5666	983.9	bb	bd
16	1234789-HpCDF	3.07e5	3.23e5	6.30e5	39.85	1.000	0.95	NO	51.702	0.204	1.147	1.109	3.4	3.76e6	5683	662.5	3.80e6	5666	670.0	bb	bd
17	OCDF	5.49e5	6.41e5	1.19e6	43.42	1.007	0.86	NO	100.594	0.206	0.928	0.922	0.6	5.09e6	4667	1090.0	5.82e6	4472	1301.9	bd	bd
18	13C-2378-TCDD	1.17e6	1.54e6	2.71e6	30.37	1.024	0.76	NO	100.793	0.0922	1.151	1.142	0.8	1.12e7	5871	1913.0	1.47e7	3902	3775.6	bb	bb
19	13C-12378-PeCDD	1.24e6	7.74e5	2.02e6	33.61	1.133	1.61	NO	89.138	0.123	0.857	0.962	-10.9	2.43e7	4183	5816.1	1.55e7	6815	2271.4	bd	bb
20	13C-123478-HxCDD	9.07e5	7.23e5	1.63e6	36.07	0.992	1.25	NO	90.239	0.118	0.927	1.027	-9.8	1.67e7	6674	2503.1	1.32e7	5120	2577.1	bd	bd
21	13C-123678-HxCDD	1.15e6	8.76e5	2.02e6	36.15	0.994	1.31	NO	102.426	0.108	1.151	1.123	2.4	1.75e7	6674	2623.2	1.41e7	5120	2754.4	dd	db
22	13C-1234678-HpCDD	6.77e5	6.63e5	1.34e6	39.22	1.078	1.02	NO	101.158	0.178	0.762	0.753	1.2	8.23e6	6267	1313.6	7.93e6	6822	1161.8	bd	bd
23	13C-OCDD	1.20e6	1.37e6	2.56e6	43.13	1.186	0.88	NO	201.046	0.187	0.729	0.726	0.5	1.12e7	7790	1440.9	1.27e7	5467	2315.1	bd	bd
24	13C-2378-TCDF	1.51e6	1.96e6	3.48e6	29.46	0.993	0.77	NO	110.504	0.126	1.477	1.337	10.5	1.43e7	9985	1428.3	1.87e7	5610	3324.8	bb	bb
25	13C-12378-PeCDF	1.76e6	1.09e6	2.85e6	32.84	1.107	1.62	NO	97.329	0.155	1.209	1.242	-2.7	3.40e7	9481	3581.0	2.17e7	8397	2584.6	bb	bb
26	13C-23478-PeCDF	1.71e6	1.08e6	2.79e6	33.42	1.127	1.58	NO	96.241	0.156	1.187	1.234	-3.8	3.61e7	9481	3805.0	2.28e7	8397	2719.2	bb	bb
27	13C-123478-HxCDF	5.87e5	1.16e6	1.75e6	35.39	0.973	0.51	NO	90.458	0.164	0.994	1.099	-9.5	1.11e7	8923	1248.6	2.18e7	8658	2518.8	bd	bd
28	13C-123678-HxCDF	7.92e5	1.53e6	2.32e6	35.48	0.975	0.52	NO	103.707	0.142	1.319	1.272	3.7	1.25e7	8923	1395.4	2.43e7	8658	2810.6	dd	db
29	13C-234678-HxCDF	6.52e5	1.22e6	1.88e6	35.95	0.988	0.53	NO	98.874	0.167	1.067	1.079	-1.1	1.05e7	8923	1175.8	2.03e7	8658	2350.2	dd	bb
30	13C-123789-HxCDF	5.82e5	1.11e6	1.69e6	36.67	1.008	0.52	NO	97.410	0.182	0.961	0.987	-2.6	8.20e6	8923	919.3	1.62e7	8658	1876.7	bd	bb
31	13C-1234678-HpCDF	4.31e5	9.50e5	1.38e6	38.05	1.046	0.45	NO	92.500	0.129	0.786	0.849	-7.5	5.99e6	5118	1170.5	1.36e7	5591	2437.2	bd	bb

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Quantify Sample Summary Report **MassLynx 4.1**
Method 1613 CCAL Report

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
Printed: Monday, April 02, 2018 09:06:41 Eastern Standard Time

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

#	Name	Ion1Area	Ion2Area	Response	RT	RRT	RA	Fail?	pg/uL	EDL	RRF	ICRRF	%D	Height1	Noise1	S/N1	Height2	Noise2	S/N2	M	M2
32	13C-1234789-HpCDF	3.39e5	7.60e5	1.10e6	39.84	1.095	0.45	NO	92.555	0.163	0.625	0.675	-7.4	3.87e6	5118	755.5	8.87e6	5591	1587.2	bd	bb
33	13C-1234-TCDD	1.03e6	1.33e6	2.35e6	29.67	0.000	0.77	NO	100.000	0.105	1.000	1.000	0.0	1.01e7	5871	1722.6	1.29e7	3902	3309.5	bb	bb
34	13C-123789-HxCDD	1.03e6	7.28e5	1.76e6	36.37	0.000	1.41	NO	100.000	0.121	1.000	1.000	0.0	1.43e7	6674	2142.3	1.10e7	5120	2151.5	dd	bb
35	37Cl-2378-TCDD	2.61e5		2.61e5	30.41	1.025			9.541	0.0217	1.108	1.161	-4.6	2.48e6	2340	1059.4				bb	

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Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
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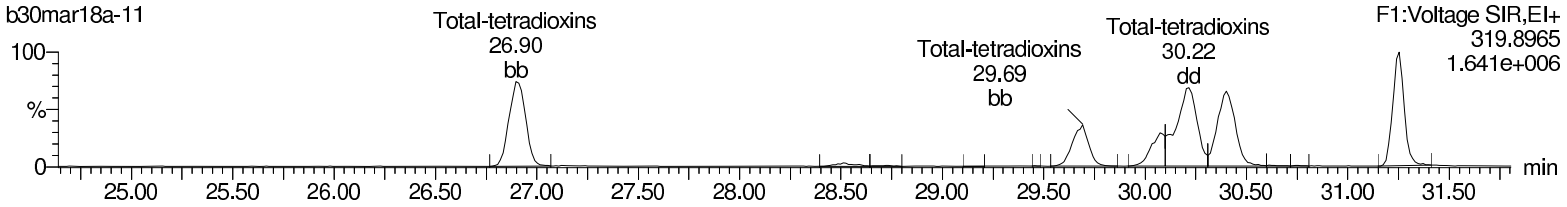
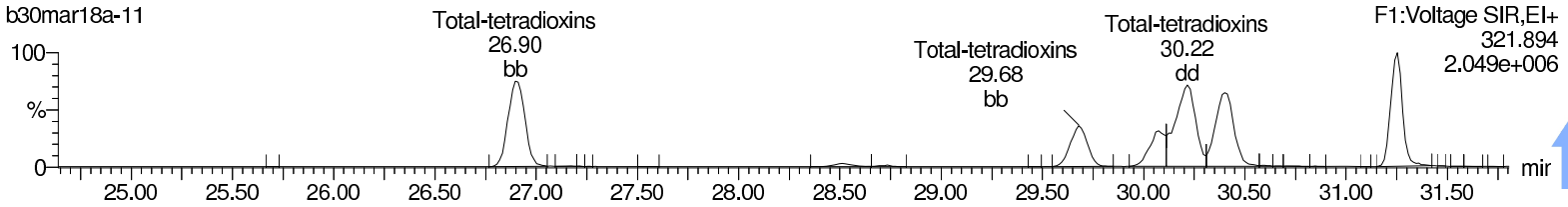
Method: C:\MassLynxBackUp\Default.pro\Methdb\CFA_1613_b22mar18.mdb 23 Mar 2018 09:49:58
Calibration: C:\MassLynxBackUp\Default.pro\Curvedb\1613-b15aug17.cdb 16 Aug 2017 10:15:01

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

Total-tetradioxins



Total-tetradioxins



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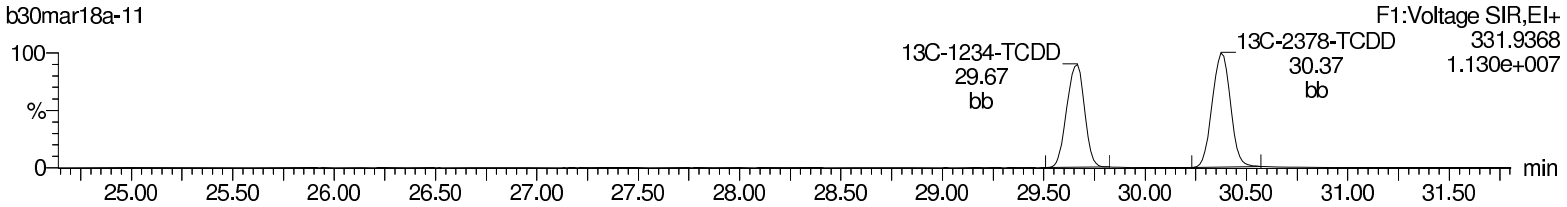

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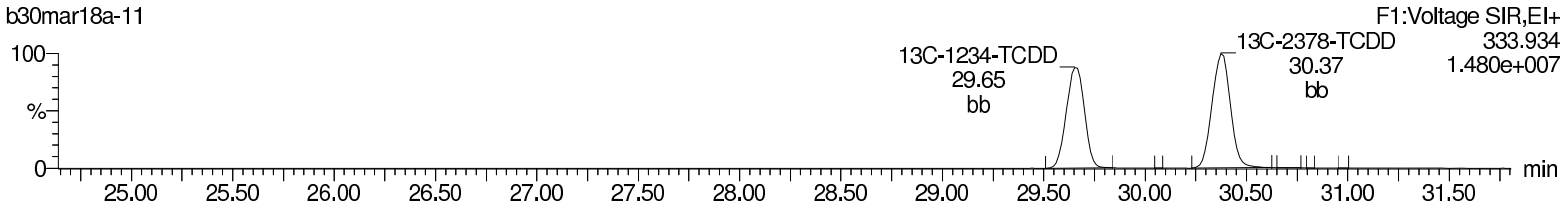

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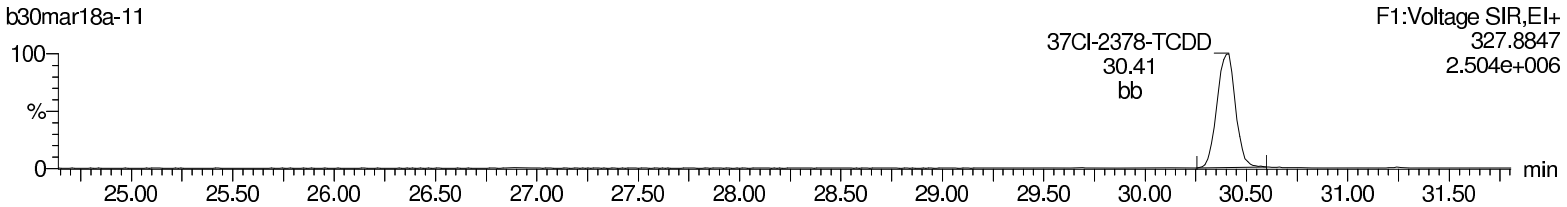

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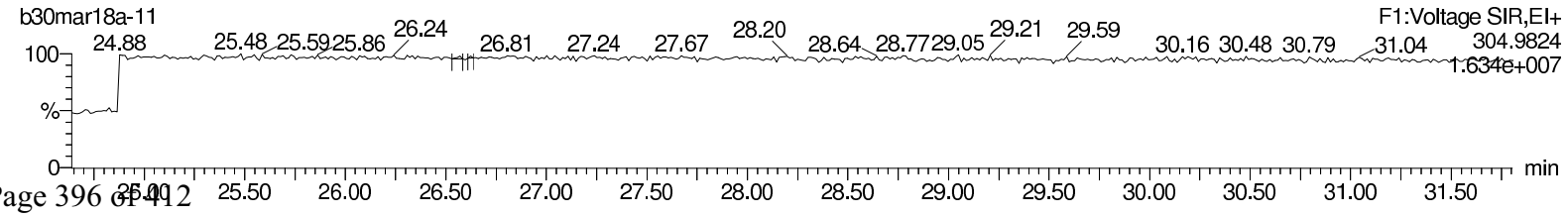

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
Printed: Monday, April 02, 2018 09:06:41 Eastern Standard Time

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

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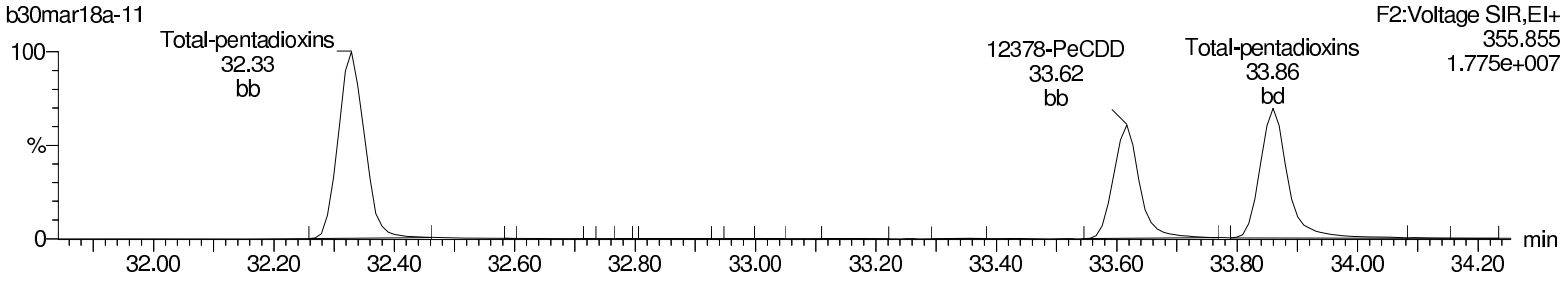

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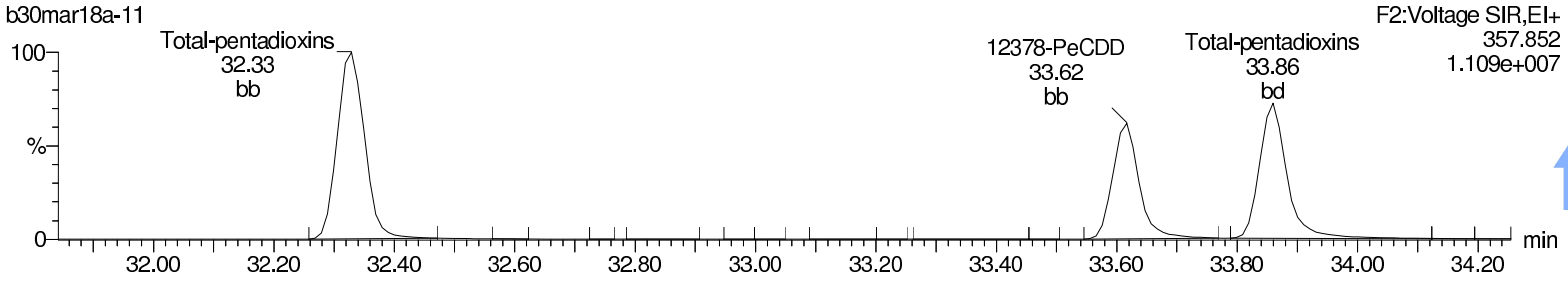

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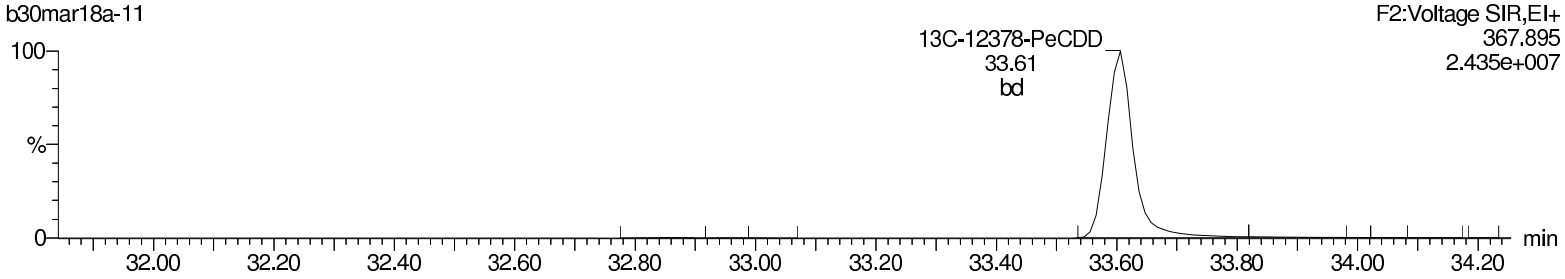
13C-12378-PeCDD



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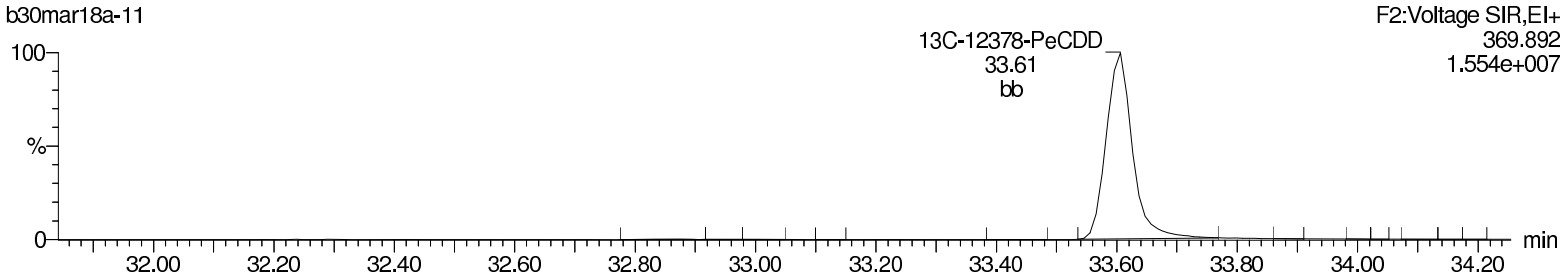

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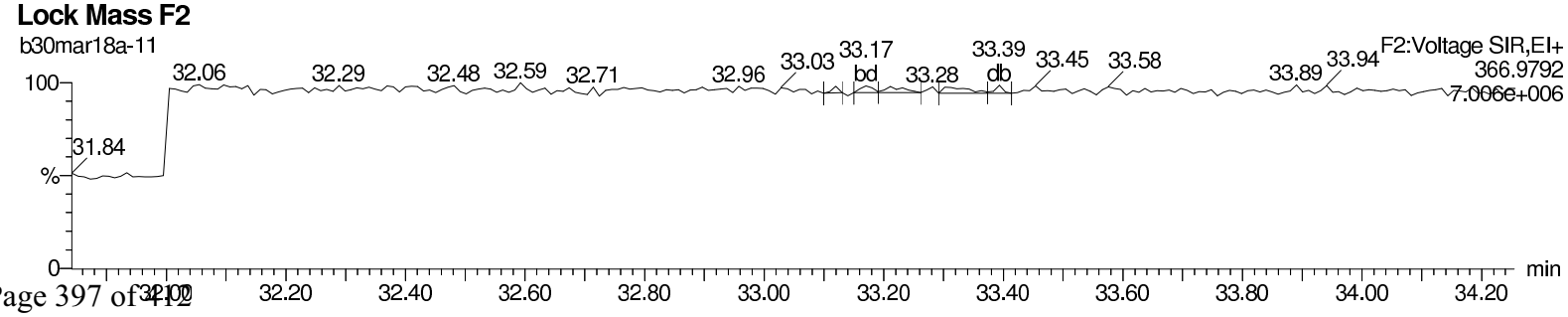

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Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
Printed: Monday, April 02, 2018 09:06:41 Eastern Standard Time

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

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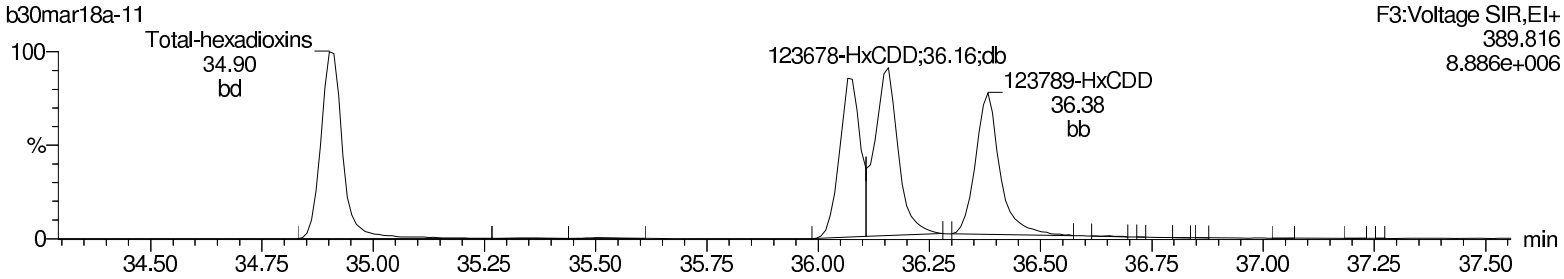
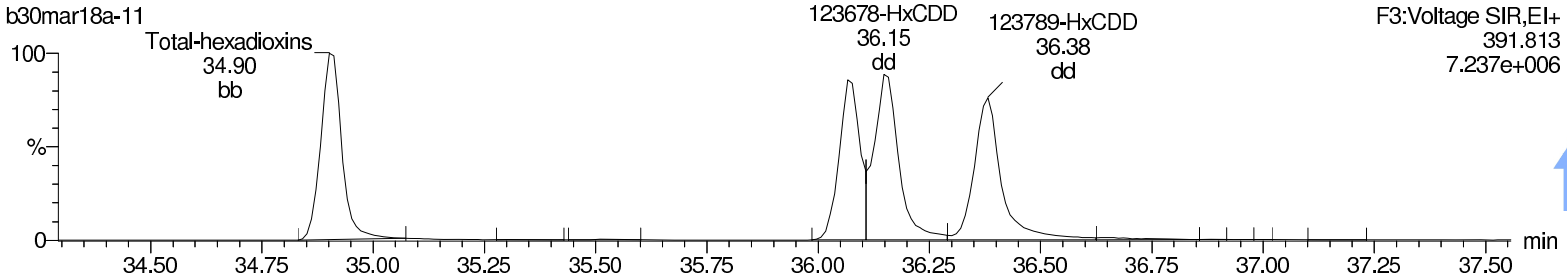


Total-hexadioxins



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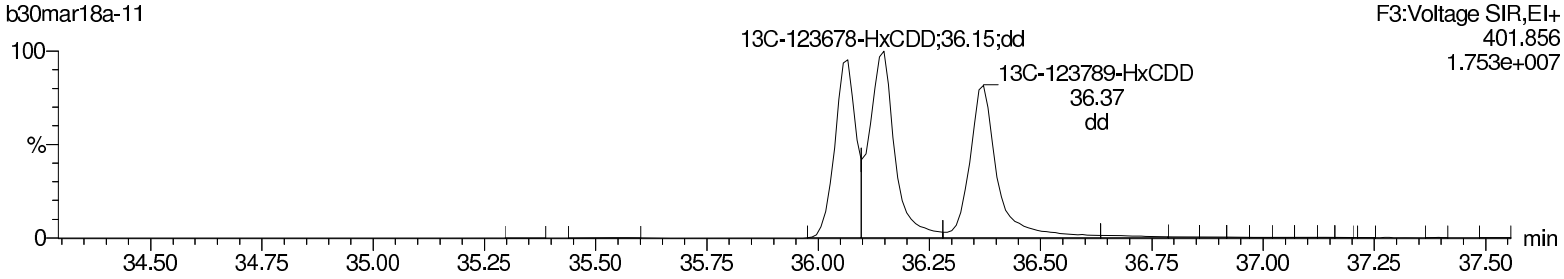

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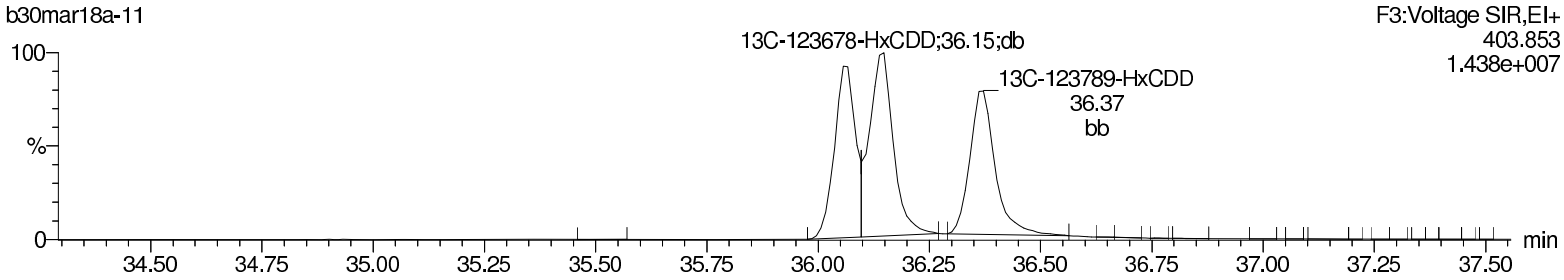

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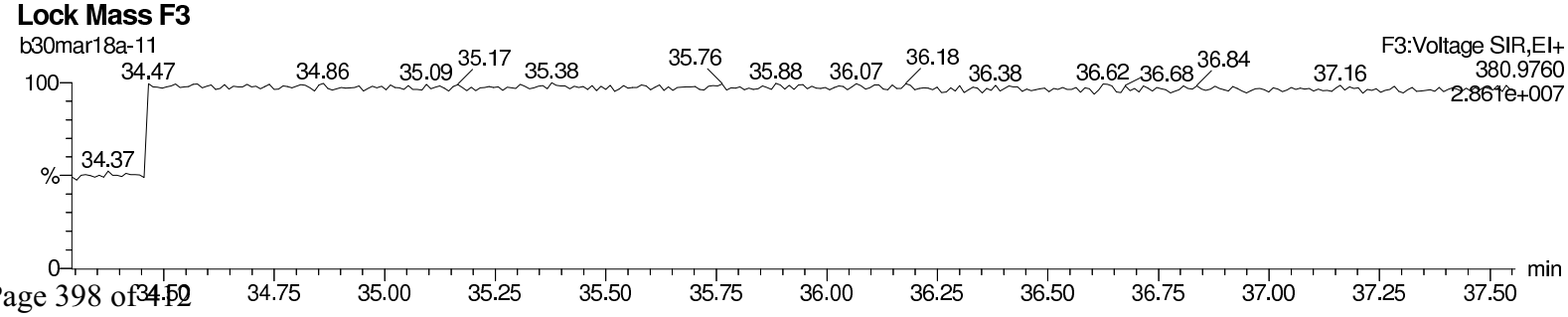

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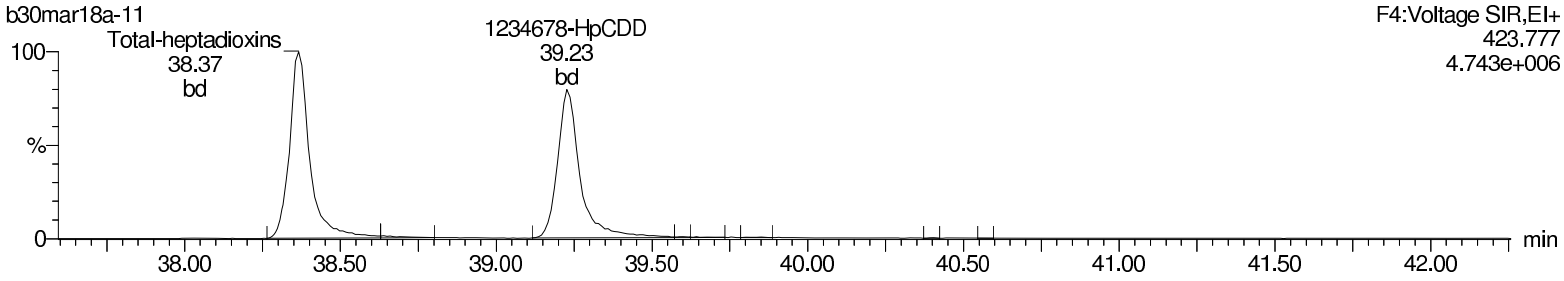
Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

Total-heptadioxins



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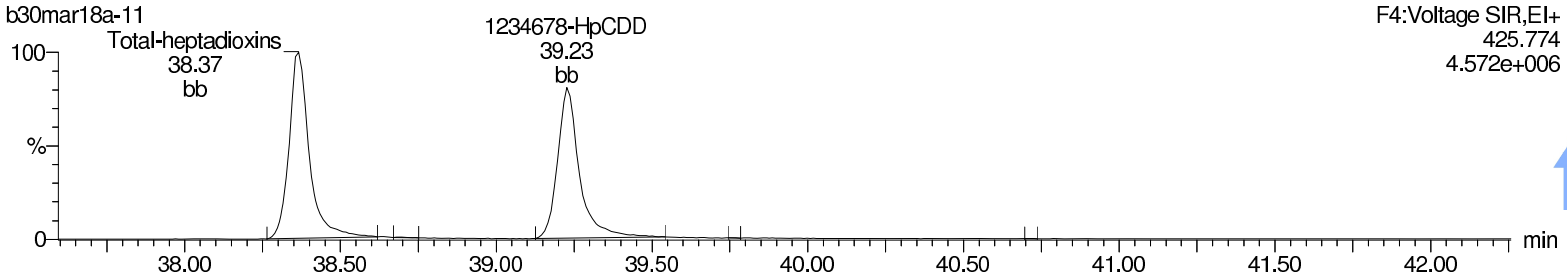

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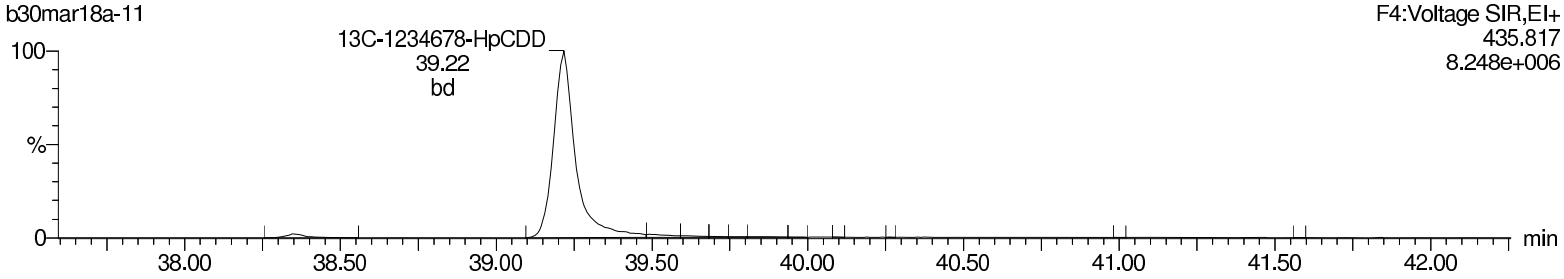

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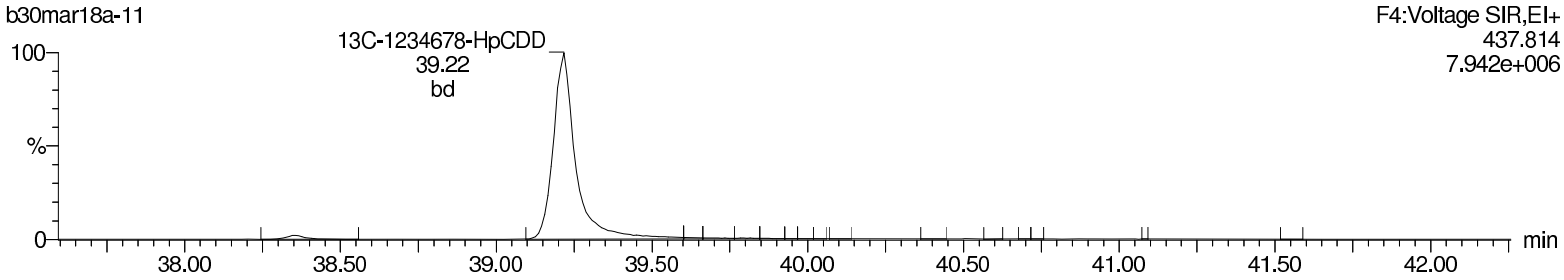

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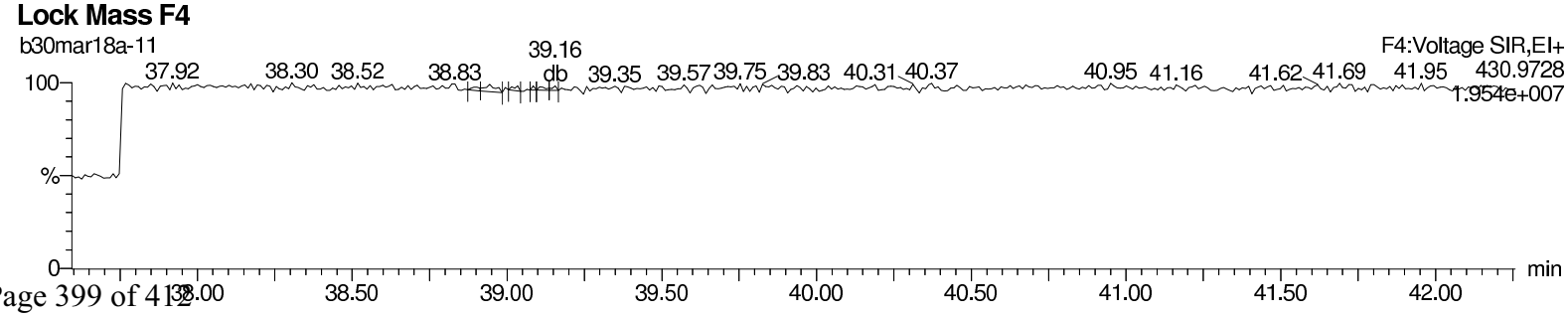

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Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

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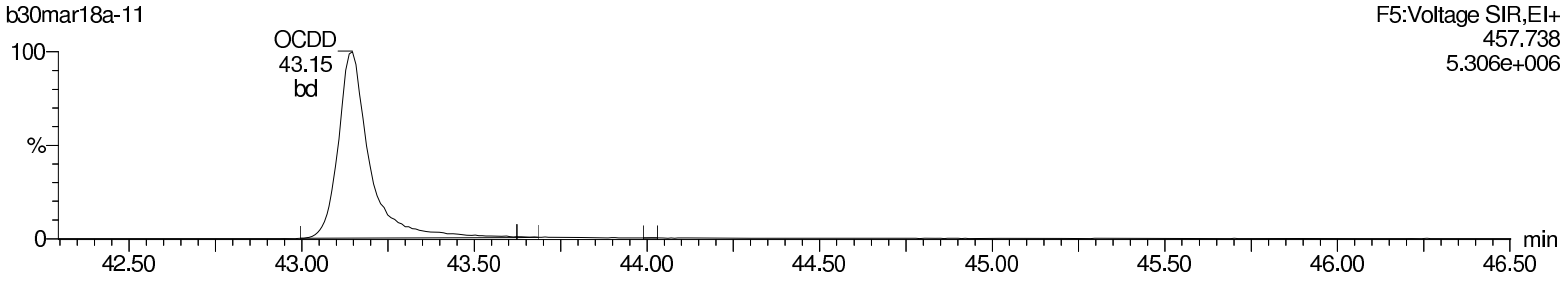

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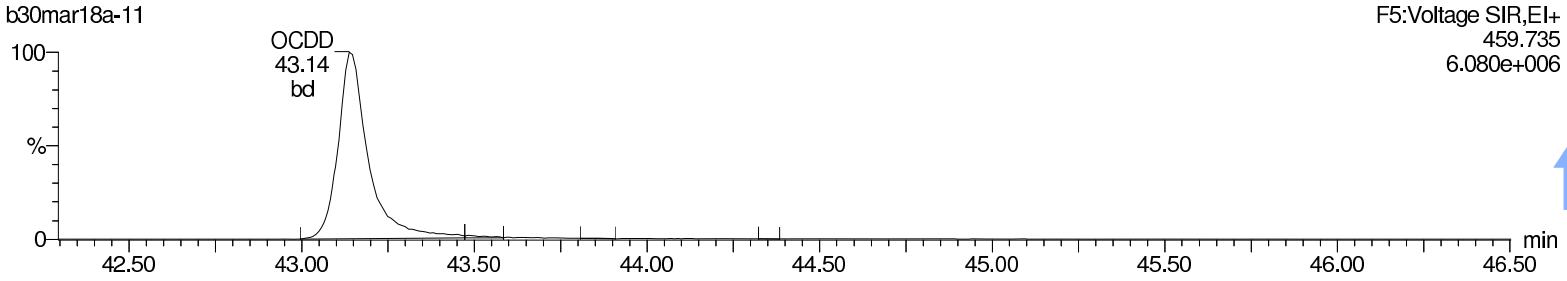

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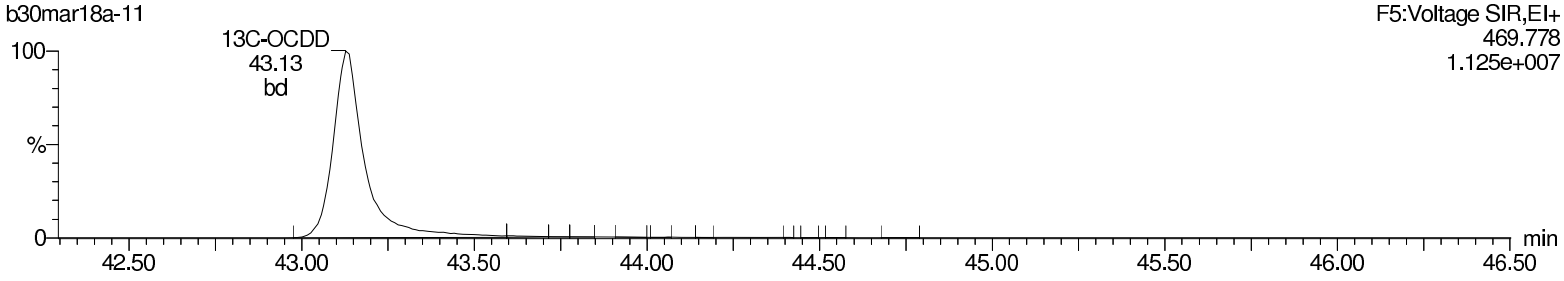

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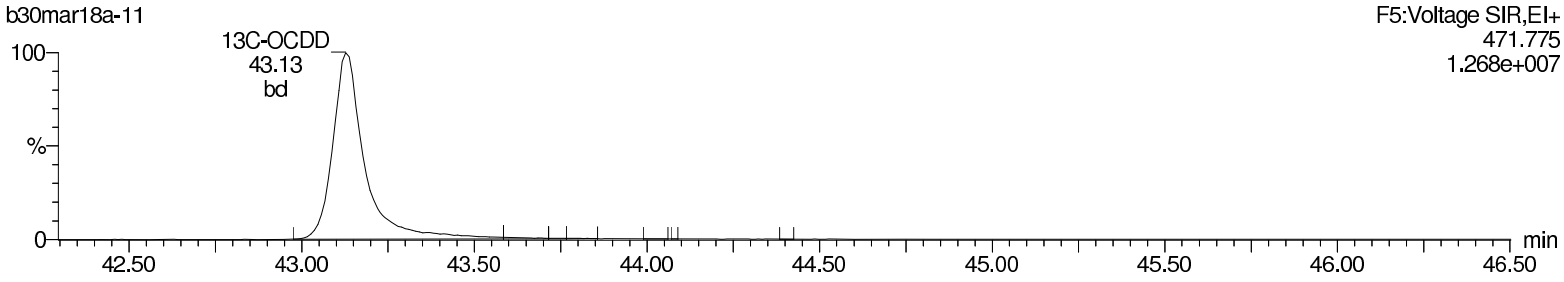

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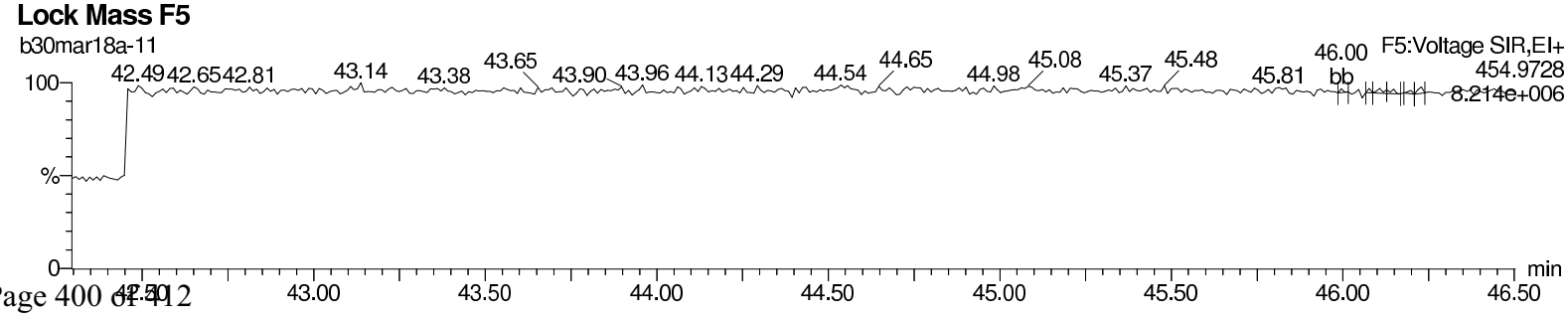

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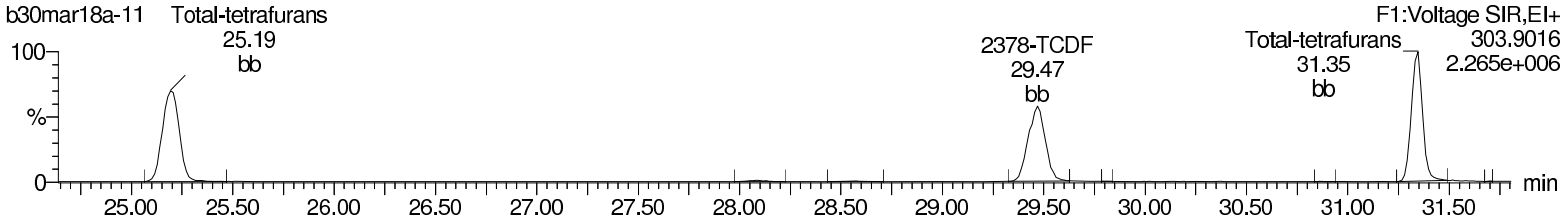
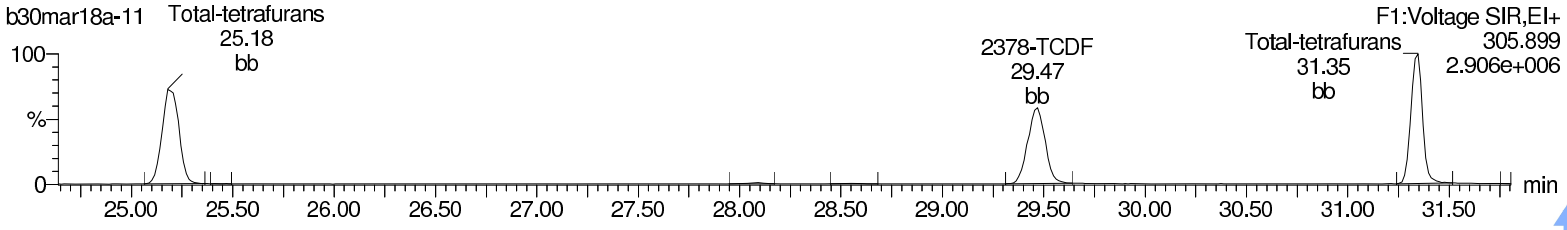
Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

Total-tetrafurans



Total-tetrafurans



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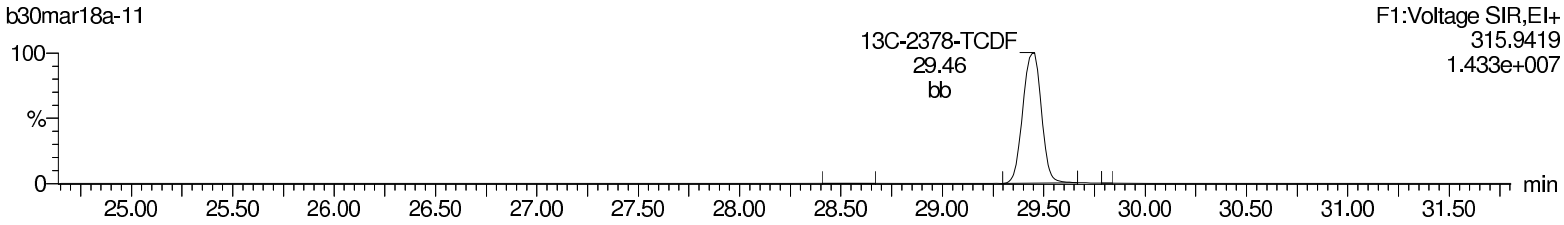

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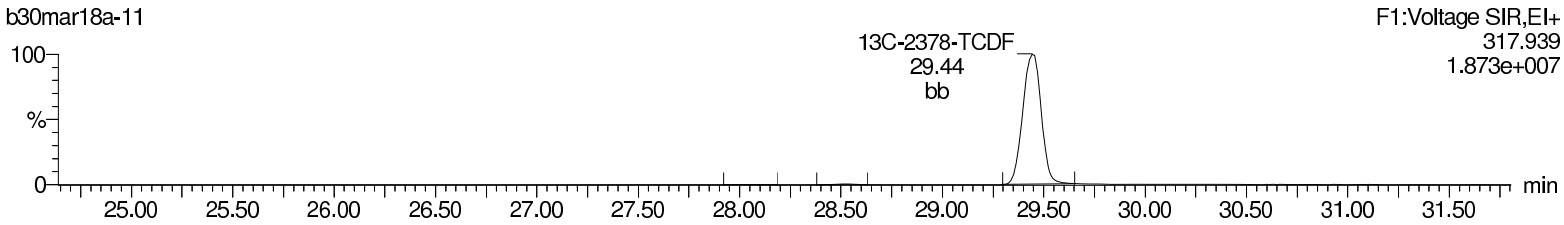

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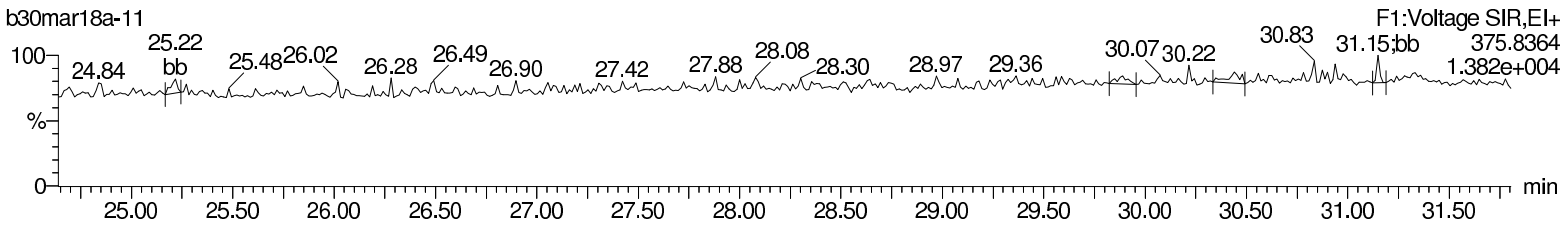
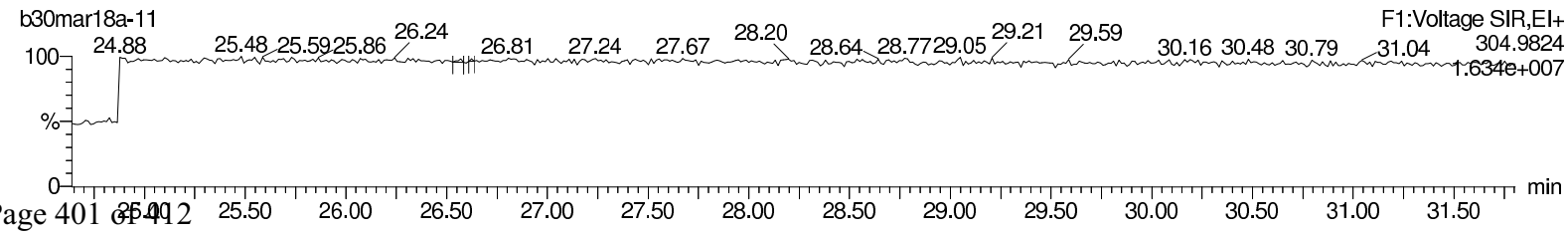


Lock Mass F1

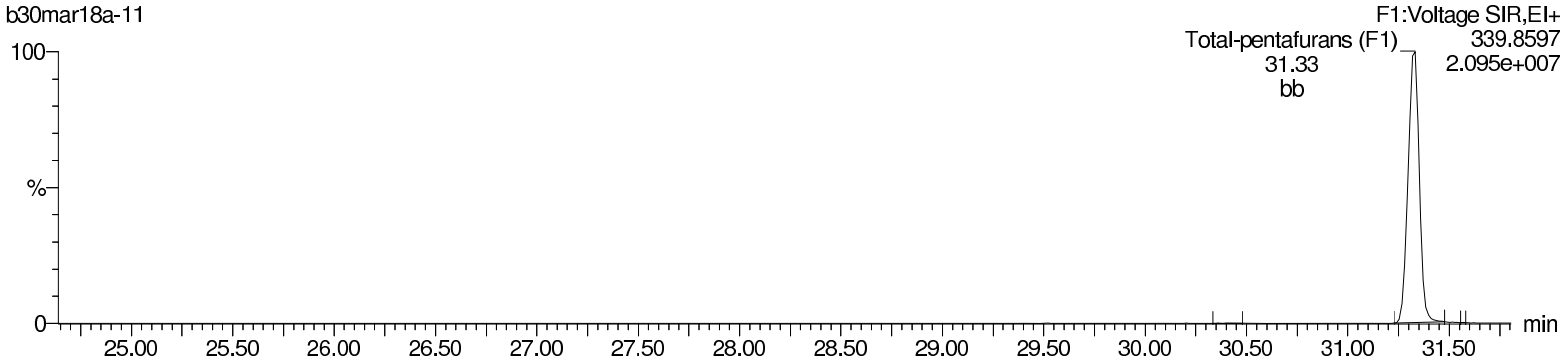


Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

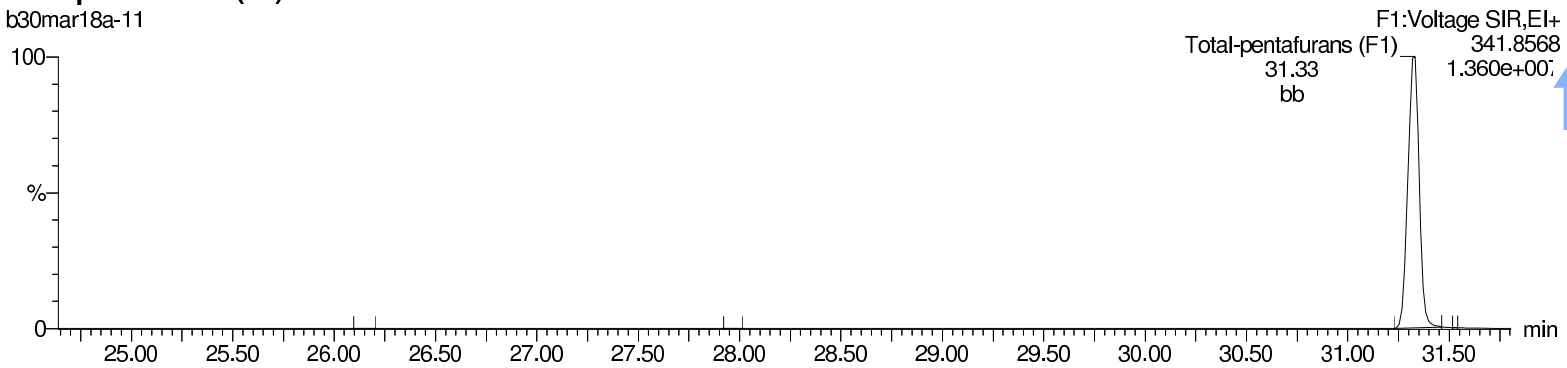
Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
Printed: Monday, April 02, 2018 09:06:41 Eastern Standard Time

Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

Total-pentafurans (F1)



Total-pentafurans (F1)



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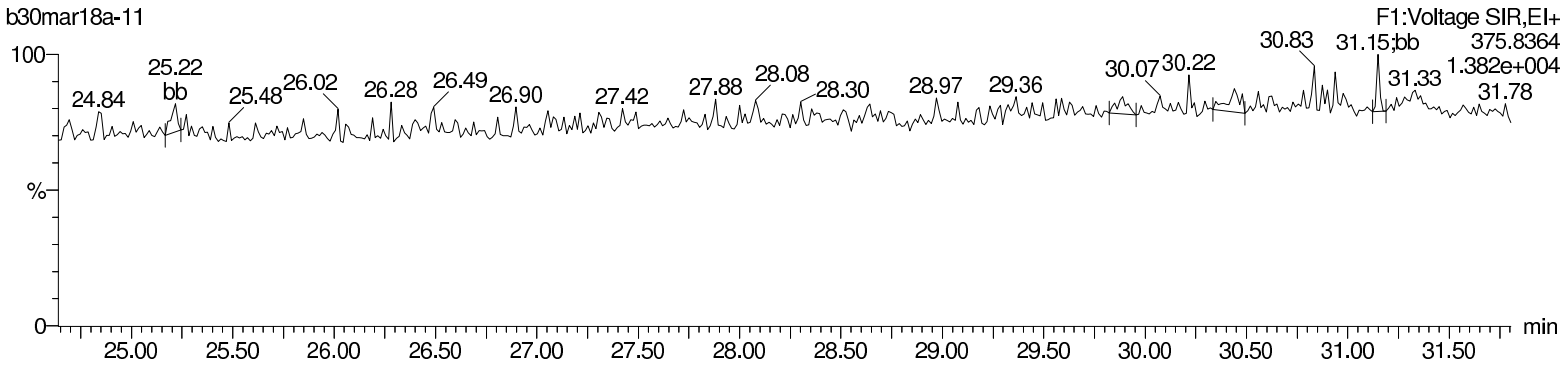

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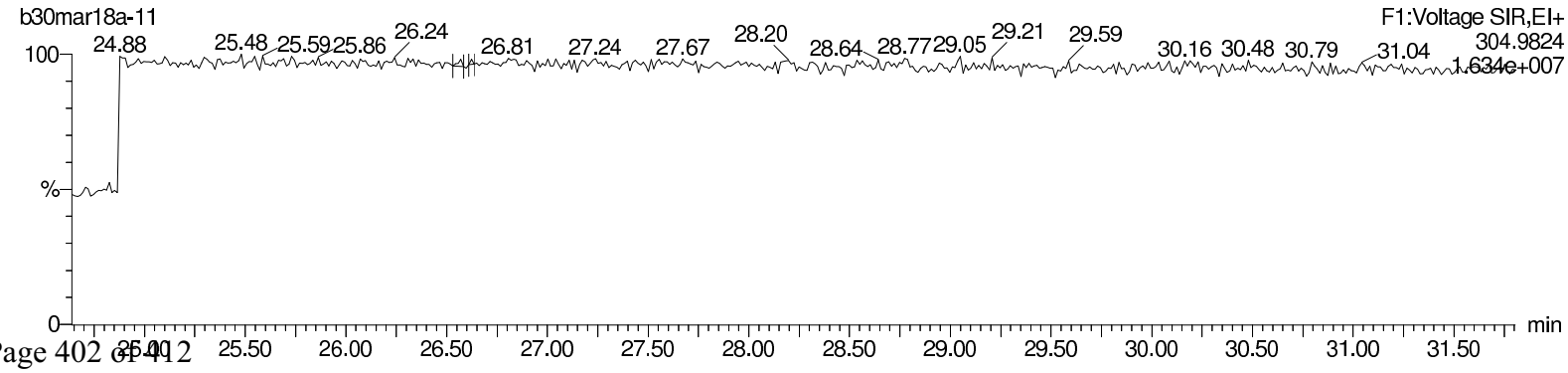

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Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
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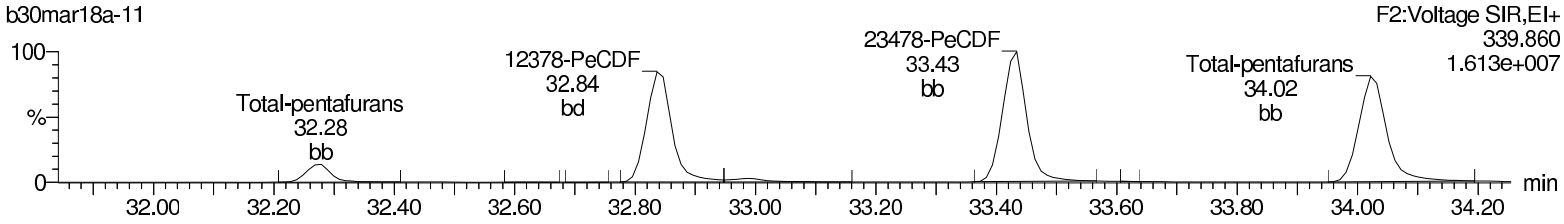
Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

Total-pentafurans



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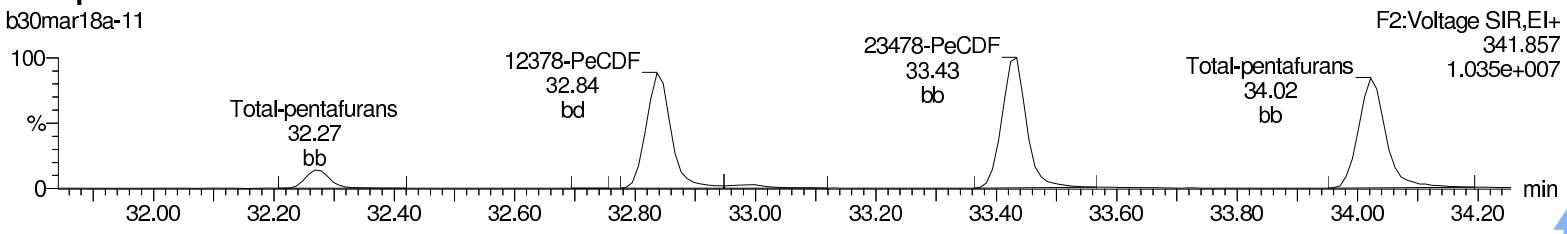

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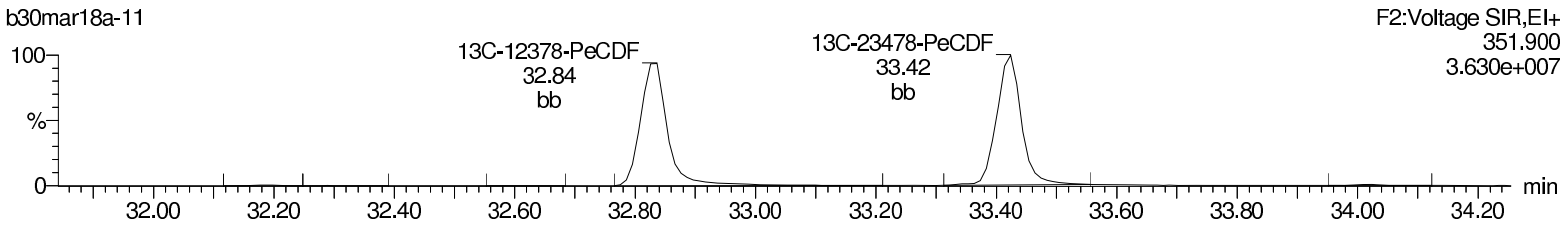

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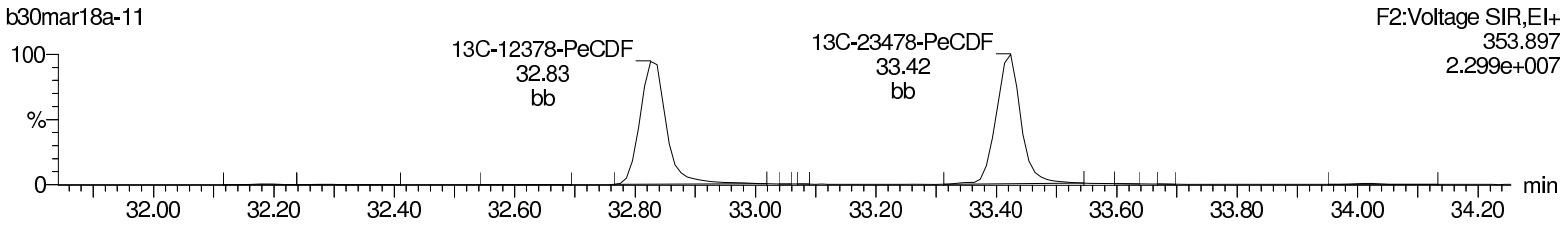

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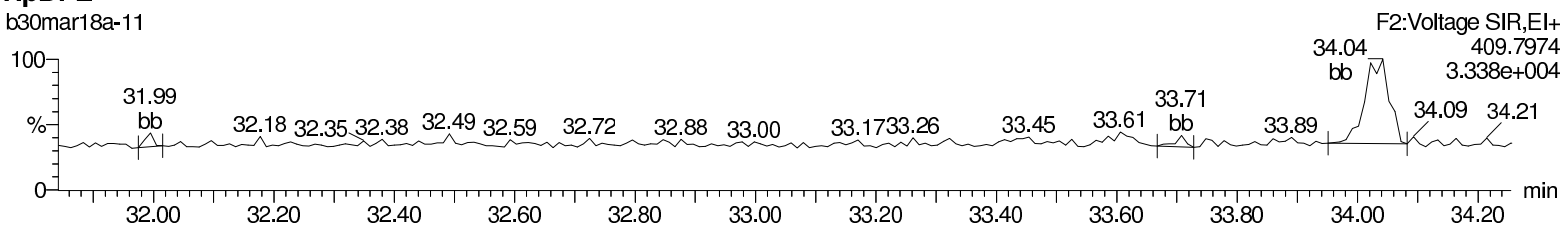

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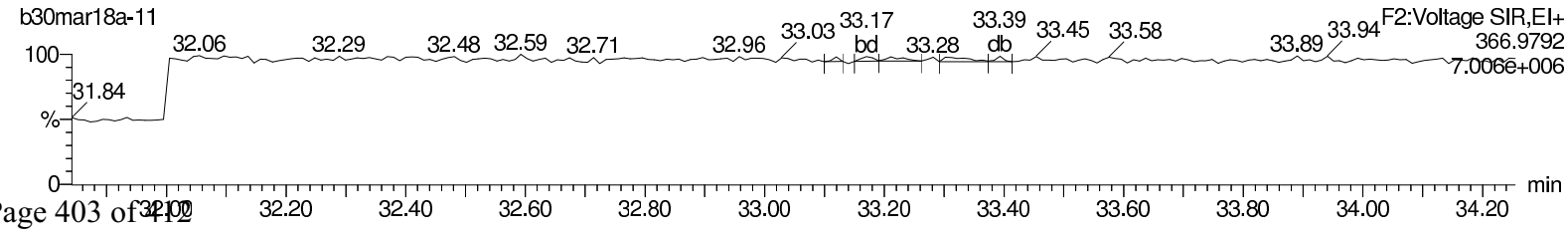

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
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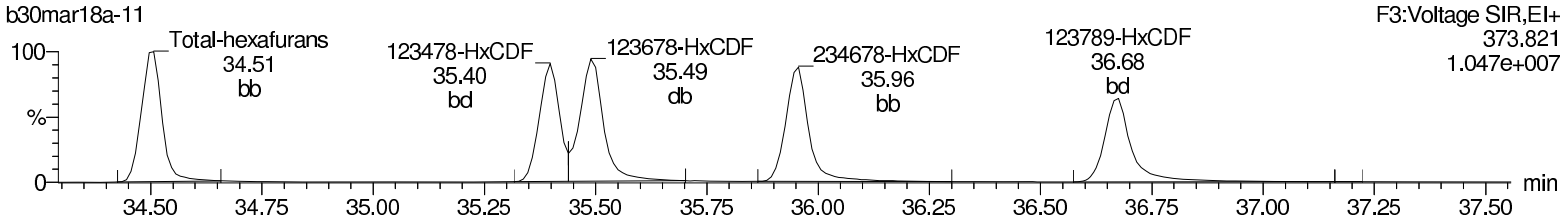
Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

Total-hexafurans



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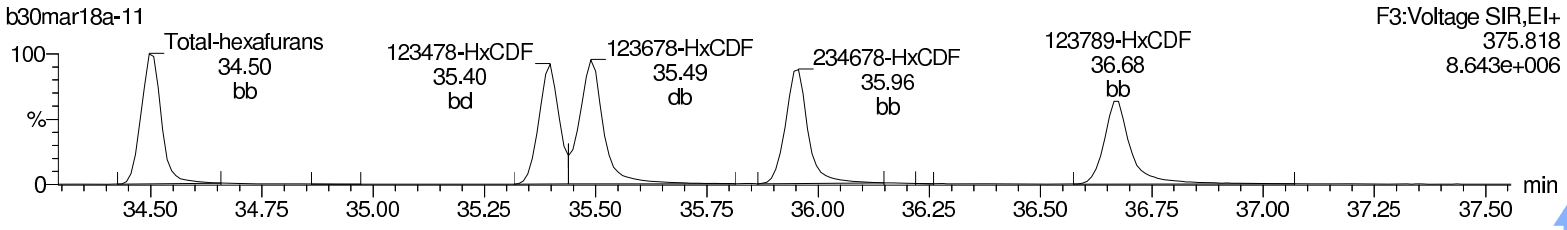

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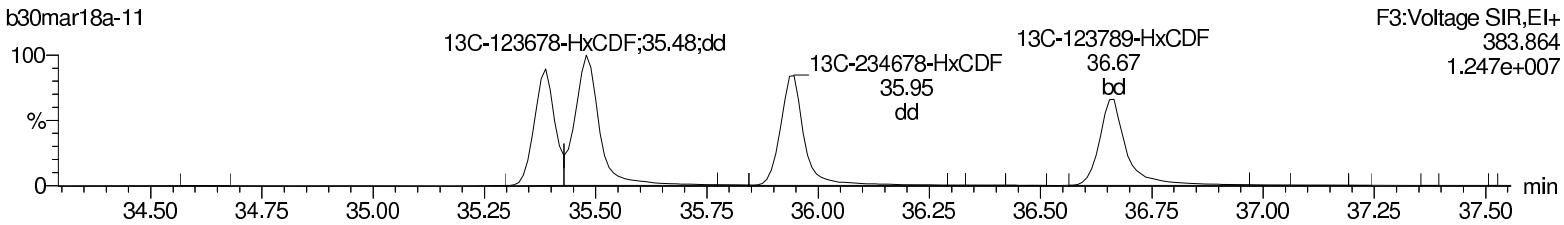

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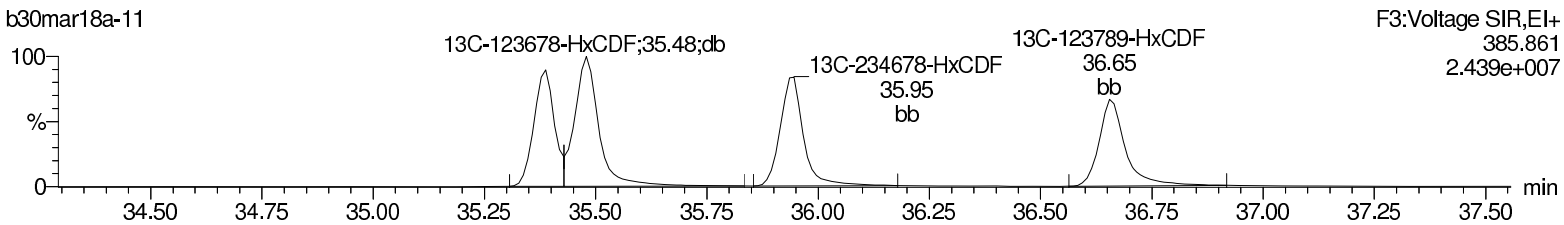

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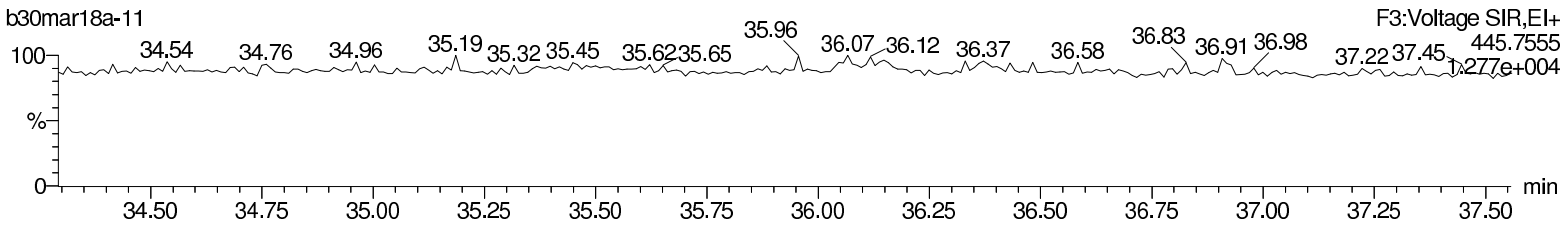

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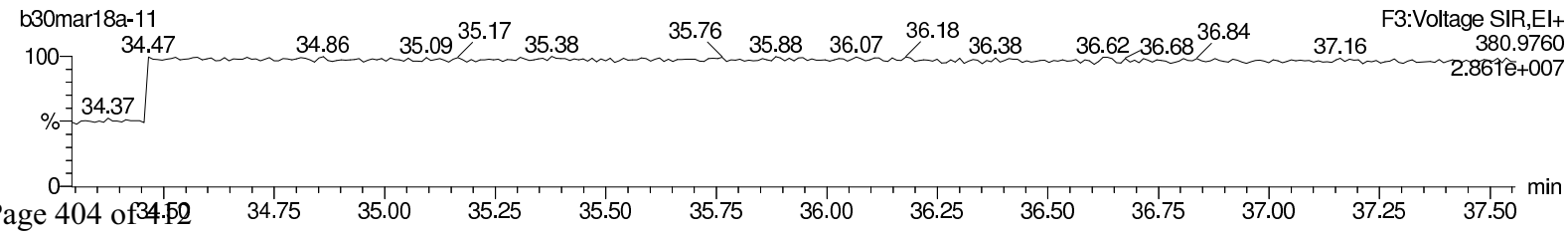

Dataset: C:\MassLynx\Default.pro\CCAL Results\1613-b30mar18a-11.qld

Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
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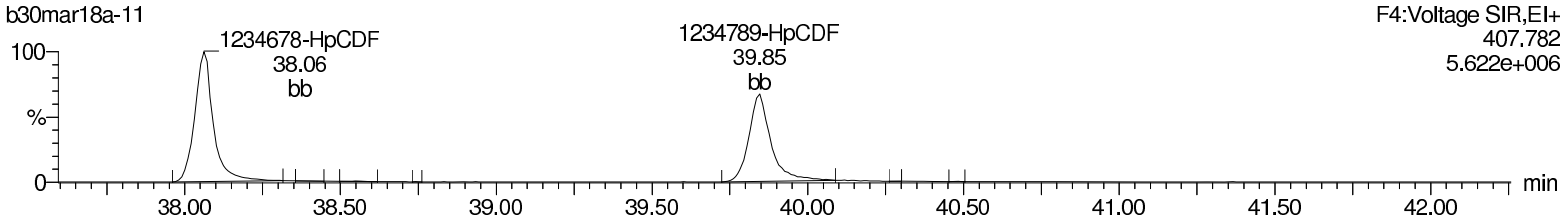
Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

Total-heptafurans



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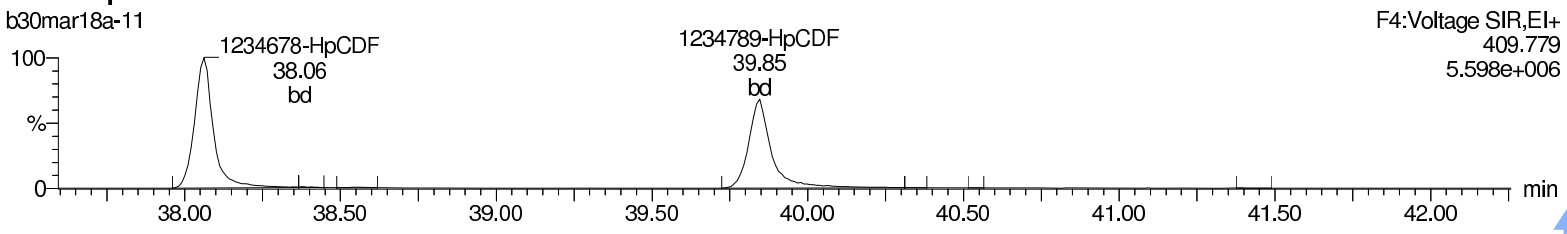

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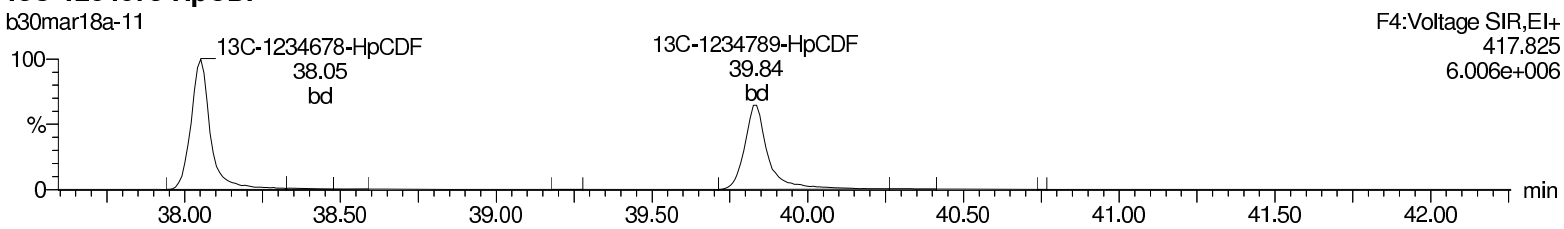

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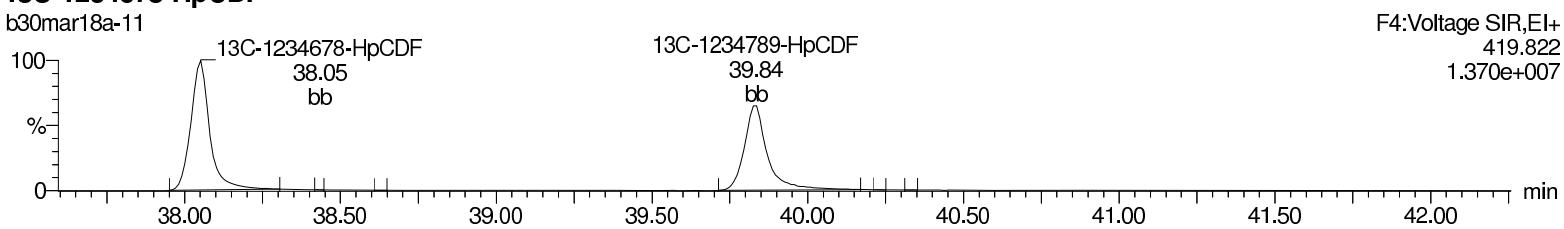

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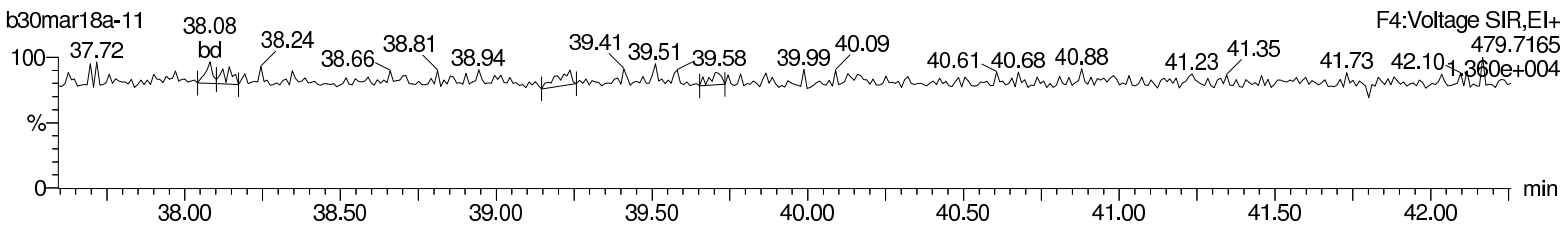

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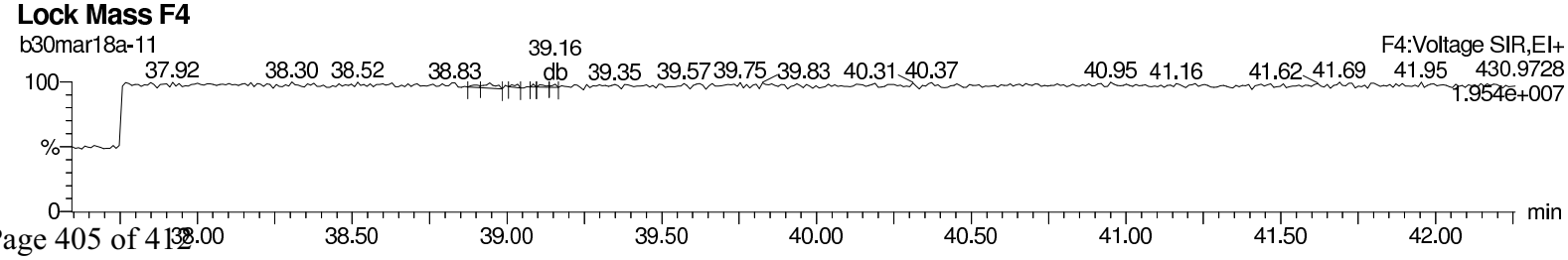

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Last Altered: Monday, April 02, 2018 09:05:26 Eastern Standard Time
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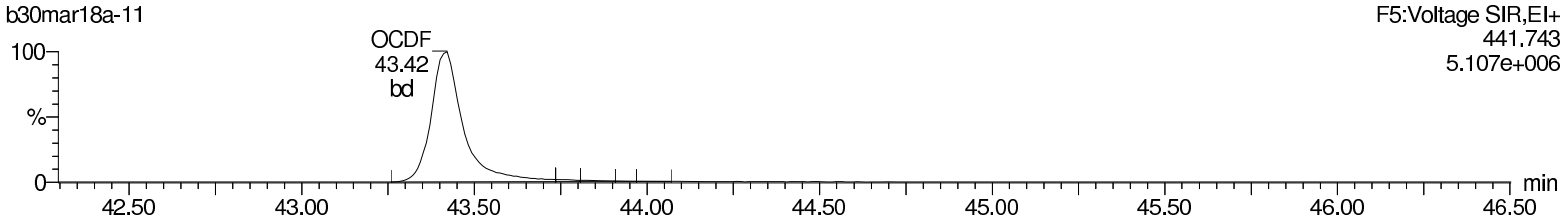
Name: b30mar18a-11, Date: 30-Mar-2018, Time: 17:39:25, ID: CS3WT UD180115-01.2 CPSFY, Description: , Job: b30mar18a, Task: HRP763_1, User: CLP

OCDF



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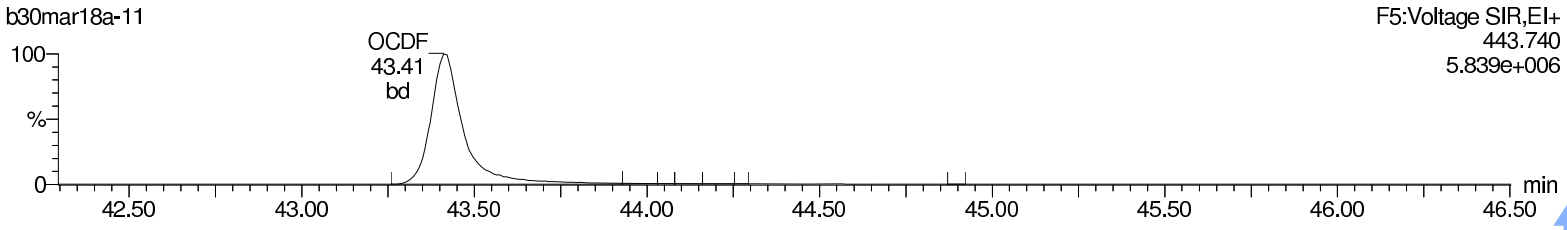

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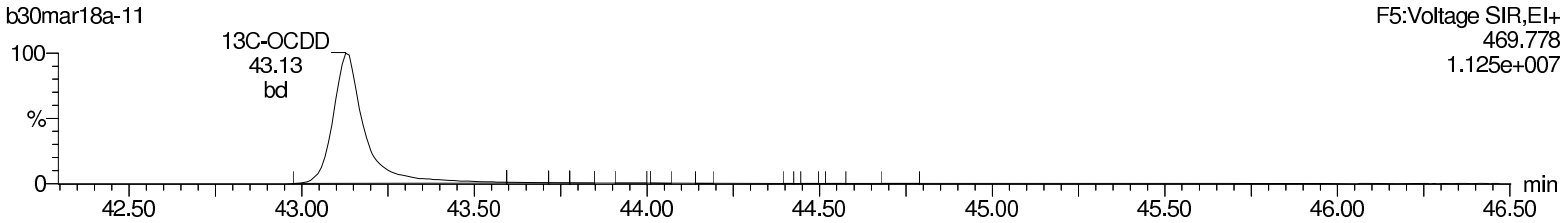

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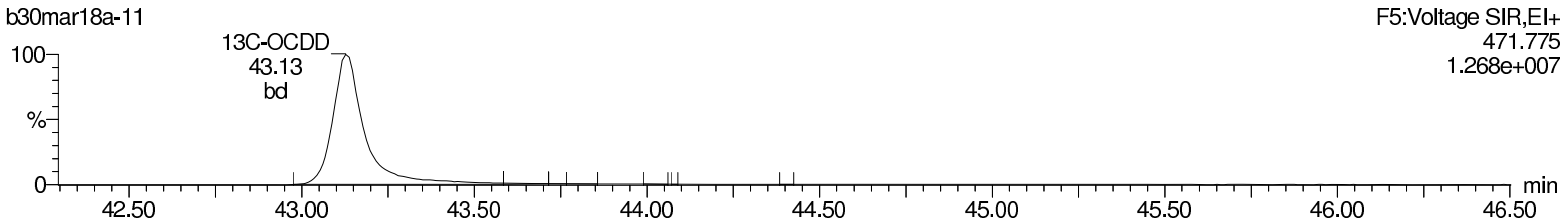

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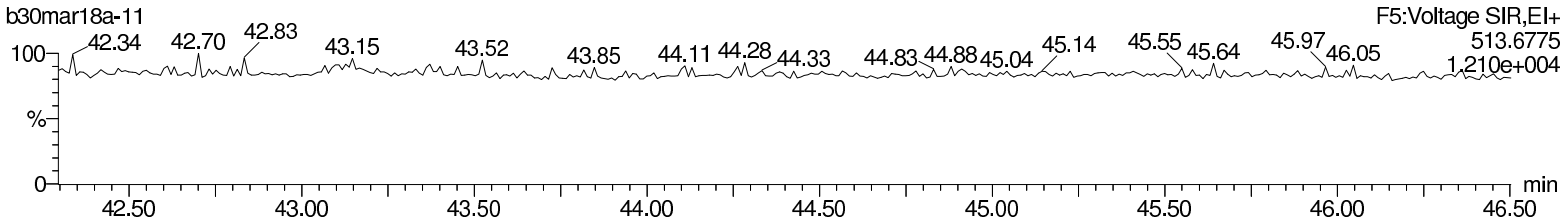

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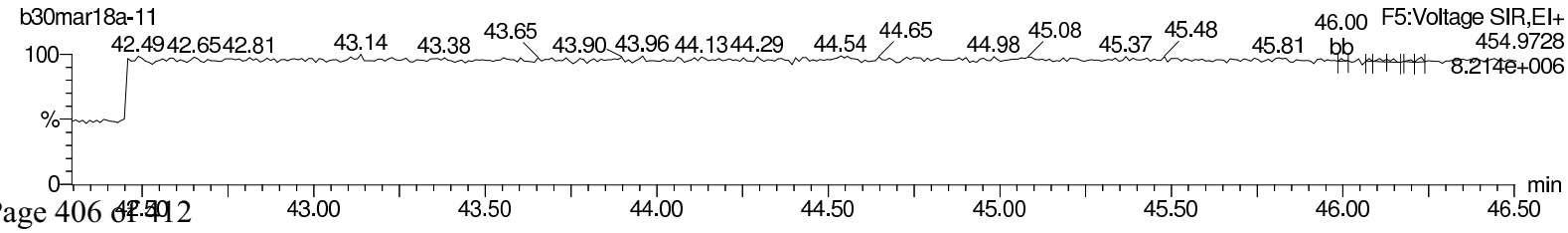

Instrument: HRP763_1

Name	Run Date	Analyst	Sample Information	Batch ID	Injection Volume	Ms Method	Tune Method
b30mar18a_2-1	30-MAR-2018 18:36:09	Chris Presnell	SB		1 uL	dioxin_db5ms	10K
b30mar18a_2-2	30-MAR-2018 19:23:56	Chris Presnell	13114001-1	37286	1 uL	dioxin_db5ms	10K
b30mar18a_2-3	30-MAR-2018 20:12:26	Chris Presnell	13121001-1	37302	1 uL	dioxin_db5ms	10K
b30mar18a_2-4	30-MAR-2018 21:01:01	Chris Presnell	13123001-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-5	30-MAR-2018 21:49:34	Chris Presnell	13123002-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-6	30-MAR-2018 22:38:08	Chris Presnell	13123003-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-7	30-MAR-2018 23:26:43	Chris Presnell	13123004-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-8	31-MAR-2018 00:15:16	Chris Presnell	13123005-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-9	31-MAR-2018 01:03:50	Chris Presnell	13123006-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-10	31-MAR-2018 01:52:23	Chris Presnell	13123007-1	37301	1 uL	dioxin_db5ms	10K
b30mar18a_2-11	31-MAR-2018 02:40:57	Chris Presnell	13127001-1	37303	1 uL	dioxin_db5ms	10K
b30mar18a_2-12	31-MAR-2018 03:29:31	Chris Presnell	13127002-1	37303	1 uL	dioxin_db5ms	10K
b30mar18a_2-13	31-MAR-2018 04:18:06	Chris Presnell	CS3WT UD180115-01.2 CPSG2		1 uL	dioxin_db5ms	10K

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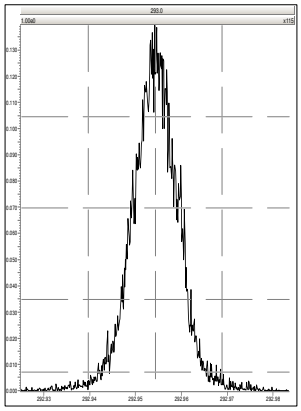
Resolution Check Report **MassLynx 4.1**

Printed: Saturday, March 31, 2018 05:14:45 Eastern Standard Time

M 292.9824 R 13090



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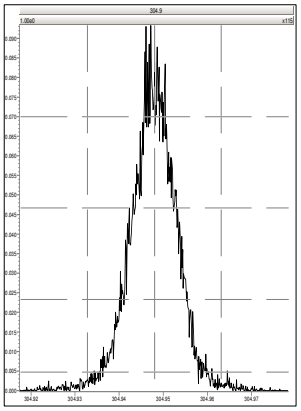

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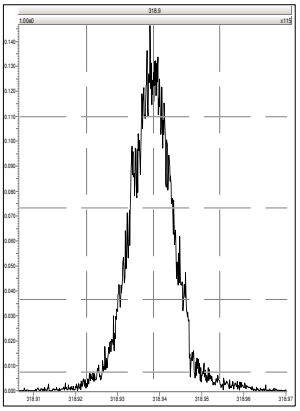

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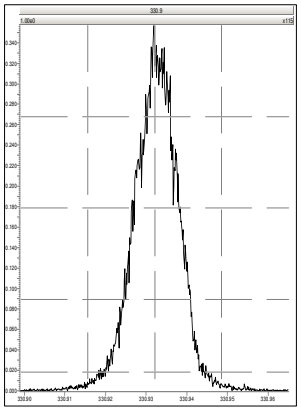

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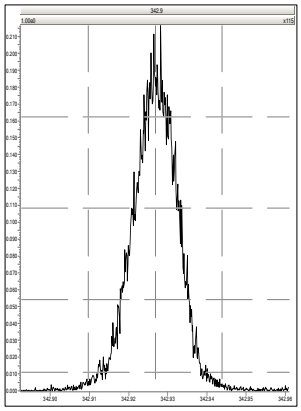

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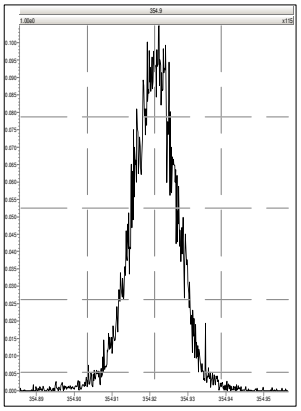

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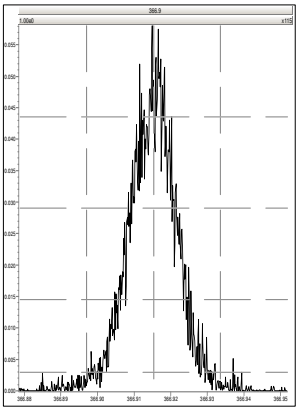

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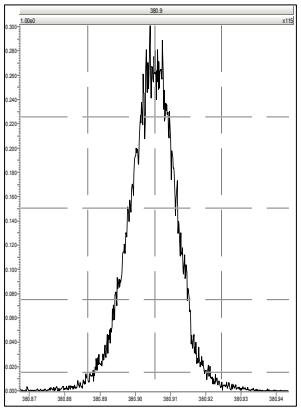

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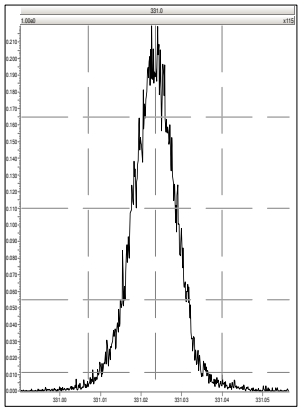

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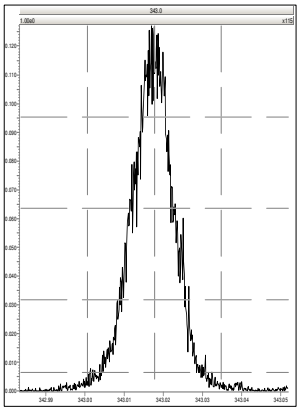

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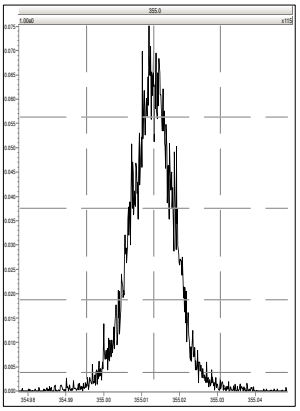

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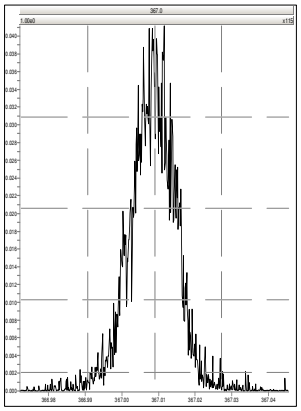

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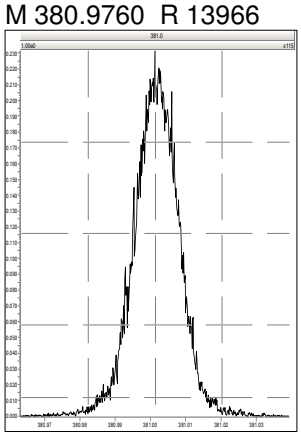

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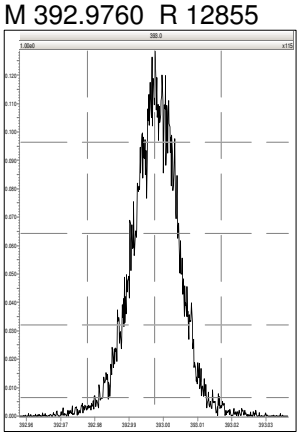

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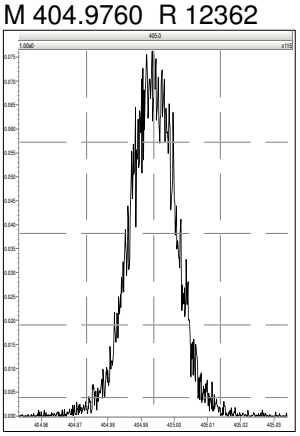

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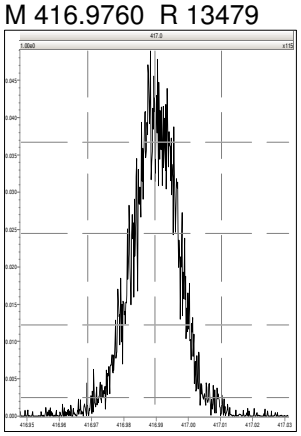

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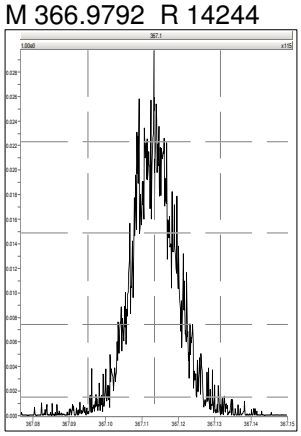

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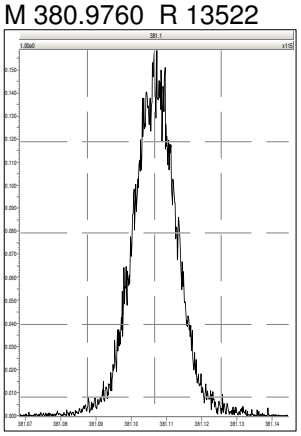

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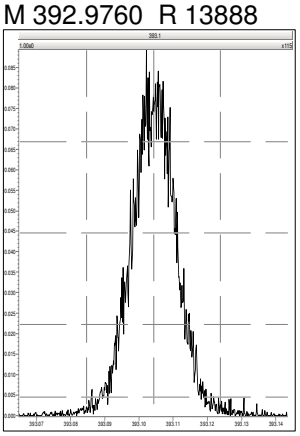

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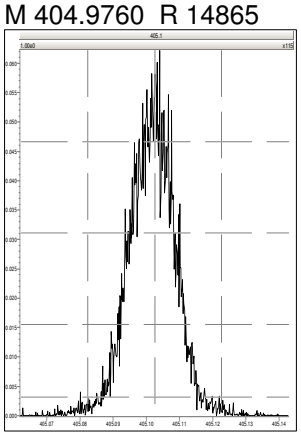

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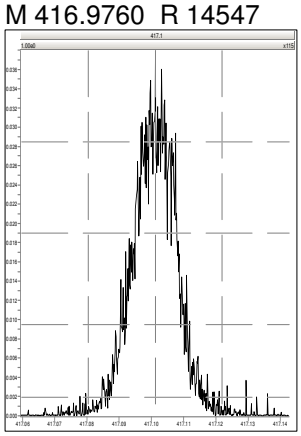

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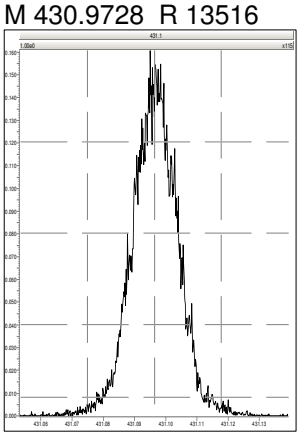

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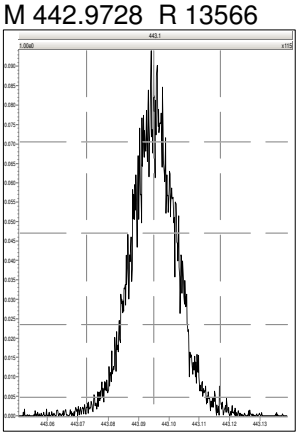

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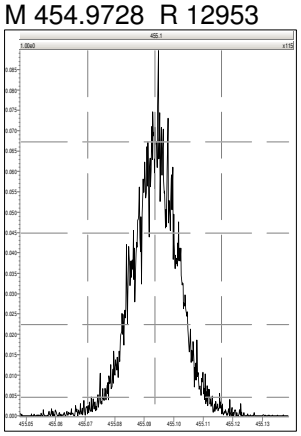

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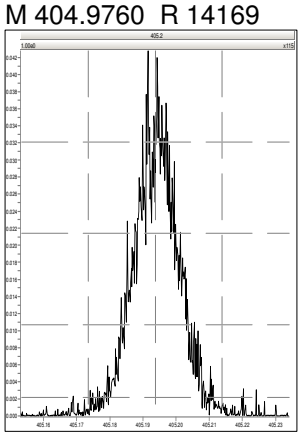

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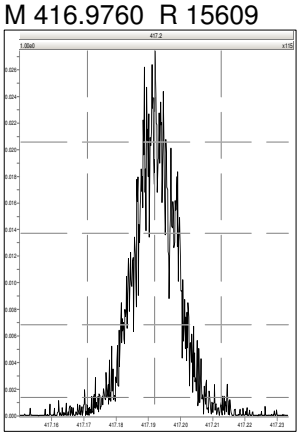

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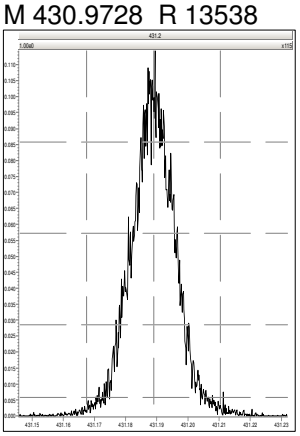

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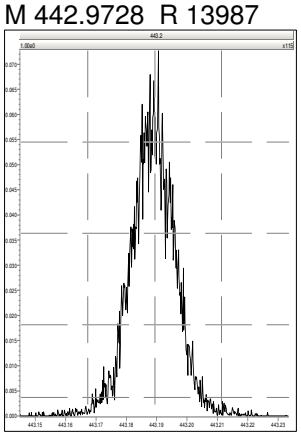

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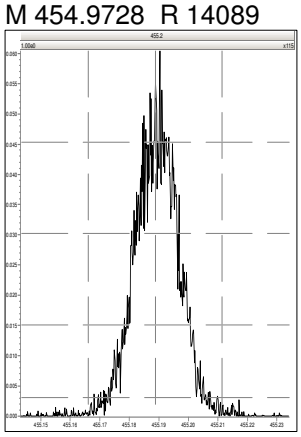

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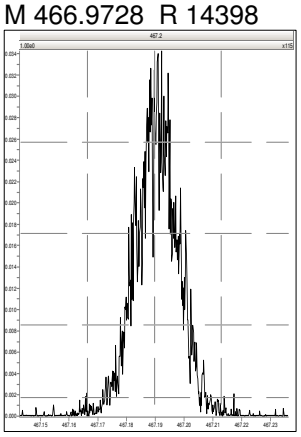

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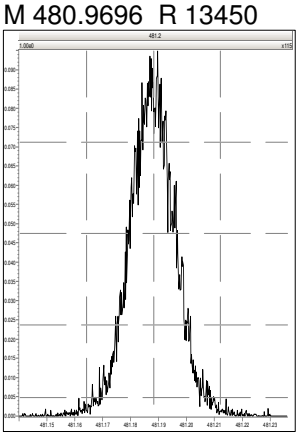

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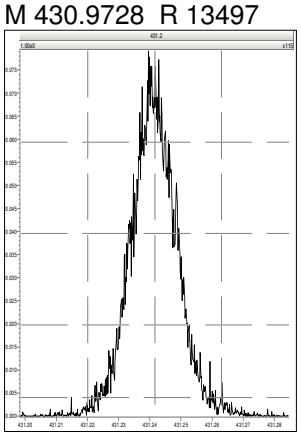

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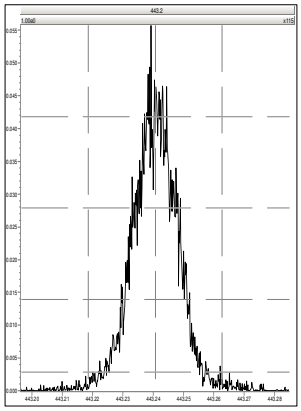

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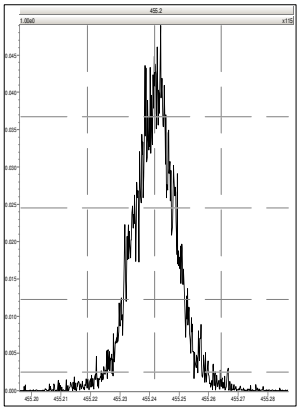

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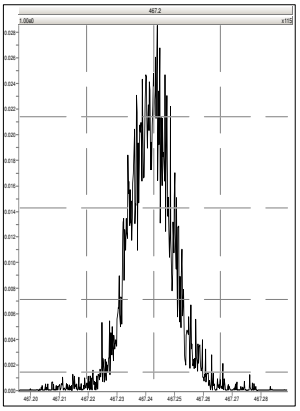

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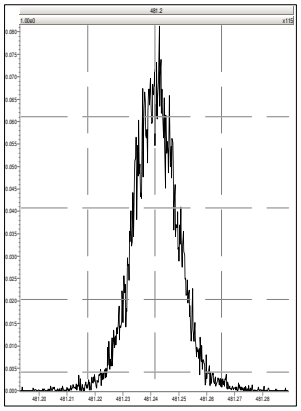

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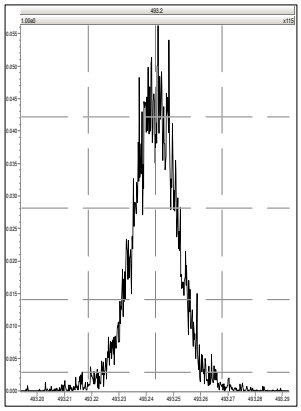

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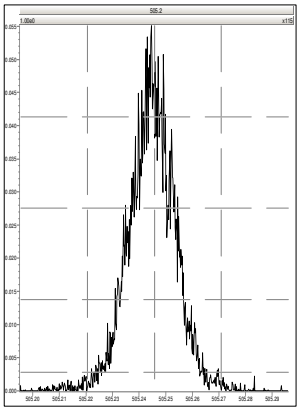

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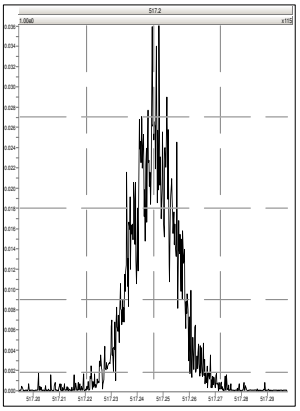

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Miscellaneous

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No non conformance reports were generated for this work order

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Appendix C: 2017/18 BMP Subarea Prioritization Analysis

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Appendix C: 2017/18 BMP Subarea Prioritization Analysis

Prepared by

The Stormwater Expert Panel

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LA0455
October 2018

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Acronyms

BEF	Bioaccumulation Equivalency Factors
BMP	Best Management Practice
CASQA	California Stormwater Quality Association
Cd	Cadmium
CM	Culvert Modification
COC	Constituent of Concern
CV	Coefficient of Variation
Cu	Copper
Det	Detected
DNQ	Detected not Quantified
ENTS	Engineered Natural Treatment Systems
ISRA	Interim Source Removal Action
LOX	Liquid Oxygen Plant
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/L	milligram per liter
NASA	National Aeronautics and Space Administration
ND	Not Detected
NPDES	National Pollutant Discharge Elimination System
Pb	Lead
PL	Permit Limit
PS	Particulate Strength
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigations
RWQCB	Regional Water Quality Control Board
SSFL	Santa Susana Field Laboratory
SW	Stormwater
TCDD	Tetrachlorodibenzo-*p*-dioxin
TEQ	Toxic Equivalence
TSS	Total Suspended Solids
USEPA	U.S. Environmental Protection Agency

Executive Summary

The 2010 Engineered Natural Treatment Systems (ENTS) and Expert Panel Work Plan for SSFL Outfalls 008 and 009 (Outfall 008/009 BMP Work Plan) identified an annual process for the Surface Water Expert Panel (Expert Panel) to evaluate subareas within the Outfall 008 and 009 watersheds for potential implementation of new Best Management Practices (BMPs). These BMPs may include source controls (such as removal of impacted surface soils), erosion and sediment controls (such as straw wattles and hydromulch), instream measures (such as bank stabilization and grade control structures), and/or structural treatment controls (such as sediment basins, media filters, and biofilters). The purpose of any newly proposed BMPs would be to improve National Pollutant Discharge Elimination System (NPDES) permit compliance at Outfalls 008 and 009 (Order No. R4-2010-0090).

A new NPDES Permit became effective on April 1, 2015 (Order No. R4-2015-033), continuing to regulate stormwater discharges at the SSFL NPDES outfalls. The 2015 Permit also included a requirement to develop a Site-Wide Expert Panel Work Plan to replace the Outfall 008/009 BMP Work Plan. The Site-Wide Stormwater Work Plan and 2014/15 Annual Report ("2015 Work Plan") (SSFL Surface Water Expert Panel, 2015) was developed to meet this requirement. The 2015 Work Plan included the continuation of the Outfall 008 and 009 annual BMP subarea prioritization analysis (Geosyntec Consultants and SSFL Surface Water Expert Panel, 2011), which is presented herein. In response to benchmark exceedances for lead, dioxin, manganese, and iron at Outfall 001 in the 2016/17 reporting year, three new potential BMP subareas within the Outfall 001 watershed were monitored in the 2017/18 reporting year. These Outfall 001 watershed subareas are included in this year's BMP subarea prioritization analysis.

The purpose of this BMP subarea prioritization analysis is to rank subareas within the Outfall 001, 008, and 009 watersheds for potential implementation of new or enhanced stormwater controls and to evaluate existing measures, based on the most current available data and subarea-specific considerations. The approach recommended by the SSFL Surface Water Expert Panel ("Expert Panel") is to rank potential BMP subarea monitoring locations based on the results of water quality sample comparisons between (a) stormwater concentrations and permit limits, and (b) subarea stormwater particulate strengths[1] and background stormwater particulate strengths. A statistical methodology was developed to rank the subareas based on these comparison results, while accounting for the number of data available at each subarea as well as number of data observations that fall above these thresholds (i.e., reflecting statistical confidence in how frequently each subarea will exceed the comparison thresholds). This methodology relies on "weighting factors" that are calculated for each COC for each subarea. The pollutant-specific weighting factors are ultimately summed to produce a multi-constituent score to allow relative ranking between the monitored locations. This approach was submitted to the RWQCB on June 22, 2011, presented at a public meeting on August 25, 2011 and at the California Stormwater Quality Association (CASQA) conference in 2011, published in Stormwater Magazine in 2013 (Otto & Hobson et. al., 2013), and published in Water Resources Impact in March 2016 (Costa, et al., 2016).

[1] Particulate strength is determined by taking the total concentrations of the compound minus its dissolved concentrations and dividing by the total suspended solids, which provides a measure of the mass of particulate form of the compound per mass of suspended sediment. These values are useful in evaluating the relative strength of sediment-based pollutant sources in stormwater samples.

The stormwater monitoring data included in this analysis fell into the following categories and periods of record:

1) Interim Source Removal Action (ISRA) and BMP performance monitoring data (2009-2018);
2) Potential BMP subarea monitoring data (2010-2018);
3) NPDES outfall monitoring data (2004-2018); and
4) Non-Industrial Sources Special Study monitoring data along the Northern Drainage (2016-2018).

Where available, data from co-located ISRA subareas were combined with data from BMP subareas to provide a more robust dataset at potential BMP locations. Additional stormwater monitoring data collected along the Northern Drainage as part of the Non-Industrial Sources Special Study were incorporated into the analyses herein. The exact periods of record vary by dataset and by sample subarea but are all-inclusive since the beginning of each monitoring program. This prioritization evaluation was originally intended to occur annually through the term of the Outfall 008/009 BMP Work Plan (i.e., through 2015); the first was submitted to RWQCB by the Expert Panel and Geosyntec in July 2011. However, this process was extended under the 2015 Work Plan, expanded site-wide, and will continue through 2018/2019 to assess the effectiveness of controls and to compute relative water quality conditions between various subareas.

This year, as in previous years, the SSFL Stormwater Expert Panel has overseen and reviewed the BMP subarea prioritization analysis and evaluated the results to make new BMP recommendations. Initial analysis results were presented to the Expert Panel in a meeting held July 23, 2018. The Expert Panel received the draft BMP subarea prioritization analysis memo in August 2018 and the revised draft in September 2018.

Results Summary

The monitoring locations in Table ES-1 are identified as the highest ranked subareas, with multi-constituent scores ranging from 0.50 to 0.92 out of a maximum score of 1.0. Scores closer to 1.0 indicate the monitoring locations with poorer historical water quality. Table ES-1 is limited to the top-ranked subareas discussed below; a complete summary table is provided in the main report as Table 13. Besides the multi-constituent scores, information within Table ES-1 is also of significance because:

- Only three of the top twenty monitoring locations (CABMP0001, CABMP0002, and CABMP0003) are both active (i.e., not discontinued[2]) and not upstream of an existing treatment control BMP (i.e., most sites have downstream stormwater treatment). CABMP0001, CABMP0002, and CABMP0003 are newly added monitoring sites located within Outfall 001 that reflect runoff from a former hydrogen gas facility, which is currently being demolished. This year's ranking is based on only one sample at each of these Outfall 001 subarea locations.
- ILBMP0001 was not ranked in the top 20 but was the only subarea where 2,3,7,8-TCDD was detected (but not quantified) in the 2017/18 reporting year; and

[2] No site was discontinued if it had known water quality issues. Sites were typically discontinued due to reclassification due to upstream BMP implementation, redundancy, or termination of the required ISRA monitoring period.

- The top 20 sites include the top two highest ranked locations for dioxins, and the top fourteen highest ranked locations for metals.

The top 20 monitoring locations are located in either the Outfall 001 or Outfall 009 watersheds. In some cases, results from a discontinued monitoring location reflect conditions prior to or following implementation of temporary measures or corrective actions; where applicable, this is indicated in the "description" column of the table. Figures ES-3 through ES-9 show the locations of the top 20 ranked subarea monitoring locations, with approximate drainage areas and site-specific ranking results. A detailed discussion of each of the top 20 ranked monitoring locations is provided in Section 5 of this report.

Outfall 008 and Outfall 009 remain ranked very low, at 95 overall, reflecting their relatively good overall water quality compared to many of the more paved subareas. Outfall 001 is ranked 42 overall, which is similar to the stormwater background locations (43 and higher). There were also several instances of concentrations greater than NPDES permit limits at the background locations.

Figure ES-1 summarizes the key subarea monitoring locations that have both an influent and effluent paired location, focusing on the locations ranked in the top 20 from the multi-constituent prioritization analysis. This comparison demonstrates that treatment through the BMPs resulted in improved water quality, as demonstrated by a decrease between the influent and effluent rank for all BMPs except the northern detention bioswale and CM-1. For example, the flow-weighted average rank of the two influent streams to the B1 media filter (ranked 22 and 60 individually) is more highly ranked than the associated B1 media filter effluent, which is ranked 62. A similar occurrence is observed for the influent/effluent ranks for the southern detention bioswale, Upper Lot Media Filter, CM-1, CM-9, the ELV treatment BMP, and the lower parking lot sedimentation basin and biofilter.

Figure ES-2 summarizes a select subset of subarea monitoring locations ranked in the top 20 that are associated with a BMP modification and/or improvement. In most cases, the helipad excepted, there was a decrease in location rank based on the multi-constituent score after the BMP was implemented, demonstrating that BMP implementation has generally resulted in improved water quality.

In summary, there are no locations in the Outfall 008 or 009 watersheds ranked in the top 20 that are both active and without downstream treatment. The three locations in the Outfall 001 watershed (CABMP0001, CABMP0002, CABMP0003) are ranked in the top 20 and are both active and without treatment from a downstream BMP; however, this ranking is based on only one sample per site. Additionally, the infrastructure at these sites is currently being removed and stormwater is being managed under the site Stormwater Pollution Prevention Plan (SWPPP). Therefore, additional BMPs are not warranted for these areas this year, but the CABMP0001 location will continue to be monitored as an indication of changes associated with this demolition activity.

Table ES- 1. Subareas Ranked by Multi-Constituent Score

Rank			Multi-Constituent Score	BMP Subarea (Co-locations)	Watershed	Description	Approximate Upgradient Drainage Area (ac)	Number of Events Sampled		Both the NPDES permit limit and 95th percentile background particulate strength threshold exceeded for at least one COC	Site Status	
Overall	From Maximum Metal Weighting	From Maximum Dioxin Weighting						2009-2018	2017-2018		Currently Upstream of Treatment BMP[1]	Action Planned
1	2	10.5	0.92	ILBMP0002	Outfall 009	Road runoff to CM-9, before treatment	2.2	23	2	TRUE	CM-9	None needed - Upstream of existing BMP
2	5	5.5	0.87	EVBMP0003 (A2SW0001)	Outfall 009	CM-1 upstream west, pre-ELV improvements, before treatment - OLD	4.9	18	0	TRUE	CM-1	None needed - Monitoring location replaced with new site ID, reflecting current conditions
3	3	32.5	0.72	A2BMP0008	Outfall 009	Well 13 Road Runoff, north side - OLD	1.0	2	0	TRUE	Sandbag berm to allow settling	None needed - Upstream of existing flow diversion BMP; data to be evaluated again next year
5	7	32.5	0.63	CABMP0001	Outfall 001	Driveway downgradient of hydrogen gas storage tank	2.2	1	1	TRUE	N/A	None planned due to ongoing demolition (source removal)
5	7	32.5	0.63	CABMP0003	Outfall 001	Road runoff downstream of hydrogen gas facility	1.0	1	1	TRUE	N/A	None planned due to ongoing demolition (source removal)
5	7	32.5	0.63	A1SW0009-A	Outfall 009	CM-9 downstream-underdrain outlet (post-A1LF asphalt removal, pre-filter fabric over weir boards) - OLD	10.2	1	0	TRUE	N/A	None needed - Monitoring location replaced with new site ID, reflecting current conditions
7	27	7.5	0.60	EVBMP0002	Outfall 009	Helipad (pre-sandbag berms) - OLD	4.1	6	0	TRUE	Sandbag berms; runoff pumped to Silvernale	None needed - Monitoring location replaced with new site ID, reflecting current conditions
8	9	32.5	0.60	APBMP0001	Outfall 009	Road runoff to ashpile culvert inlet, pre-ELV improvements - OLD	3.6	2	0	TRUE	N/A	None needed - Monitoring location replaced with new site ID, reflecting current conditions
9	29	7.5	0.55	LPBMP0001-A	Outfall 009	Lower lot sheetflow (post-gravel bag berms)	2.7	6	0	TRUE	N/A	None needed - Monitoring location discontinued when lower lot biofilter constructed
10	30	5.5	0.53	ILBMP0008	Outfall 009	Eastern Concrete Swale (B1436 Southern Detention Bioswale influent)	13.3	18	2	TRUE	B1436 Southern Detention Bioswale	None needed – Upstream of existing BMP
11	21	18.5	0.51	A1SW0009-B	Outfall 009	CM-9 downstream-underdrain outlet (post-filter fabric over weir boards, post-A1LF asphalt removal) - OLD	10.2	6	0	TRUE	N/A	None needed - Monitoring location replaced with new site ID, reflecting current conditions
12	45.5	2	0.50	B1BMP0009	Outfall 009	Upper Lot Media Filter – Road Culvert Influent	2.5	8	2	TRUE	B1 Media Filter	None needed – Upstream of existing BMP
15.5	15	32.5	0.50	EVBMP0006	Outfall 009	2012-2013 Area II Road near ELV ditch	8.2	1	0	FALSE	ELV Treatment BMP	None needed - Monitoring location replaced with new site ID, reflecting current conditions
15.5	15	32.5	0.50	B1SW0002	Outfall 009	Woolsey Canyon Road Runoff, before treatment	5.7	2	0	TRUE	N/A	None needed - Monitoring location discontinued when sufficient data had been collected
15.5	15	32.5	0.50	LXBMP0010	Outfall 009	Service Area Road BMP – Road Runoff Influent to CM-3	0.25	1	0	FALSE	Service Area Road BMP	None needed – Upstream of existing BMP
15.5	15	32.5	0.50	CABMP0002	Outfall 001	Driveway downgradient of hydrogen gas facility buildings	0.59	1	1	FALSE	N/A	None planned due to ongoing demolition (source removal)
15.5	4	61	0.50	EVBMP0004	Outfall 009	2012-2013 Lower Helipad Road	2.5	3	0	TRUE	N/A	None needed – Monitoring location discontinued following

Rank			Multi-Constituent Score	BMP Subarea (Co-locations)	Watershed	Description	Approximate Upgradient Drainage Area (ac)	Number of Events Sampled		Both the NPDES permit limit and 95th percentile background particulate strength threshold exceeded for at least one COC	Site Status	
Overall	From Maximum Metal Weighting	From Maximum Dioxin Weighting						2009-2018	2017-2018		Currently Upstream of Treatment BMP[1]	Action Planned
												installation of the ELV treatment BMP
15.5	15	32.5	0.50	B1SW0014-A	Outfall 009	B1 media filter effluent (pre-media filter reconstruction) - OLD	8.6	1	0	FALSE	N/A	None needed - Monitoring location replaced with new site ID, reflecting current conditions
19	80.5	1	0.50	LPBMP0002	Outfall 009	Lower parking lot influent to cistern, before treatment	29.9	24	2	TRUE	Lower Lot Biofilter	None needed – Upstream of existing BMP
20	1	92	0.50	ILBMP0007 (ILBMP0005-7)	Outfall 009	Northern Detention Bioswale Effluent	2.6	19	0	TRUE	Lower Lot Biofilter	None needed – Upstream of existing BMP

Notes

(1) For those sites indicated as currently upstream of a treatment BMP, no further treatment or pretreatment are needed; downstream controls are functioning well, as demonstrated in Table 15.

- The rounding of weights may account for similar weights being ranked differently.
- Approximate drainage areas based on the cumulative drainage area of the SWMM catchment in which the monitoring location is located.
- Gray text indicates historical subarea monitoring locations that are discontinued.
- "OLD" in the location description means that the location is now sampled under a new suffix (-A, -B, etc.) due to a change in the upstream watershed, typically BMP implementation or improvement. Ranks of sites before and after improvements/modifications are illustrated in Figure ES-2 below.

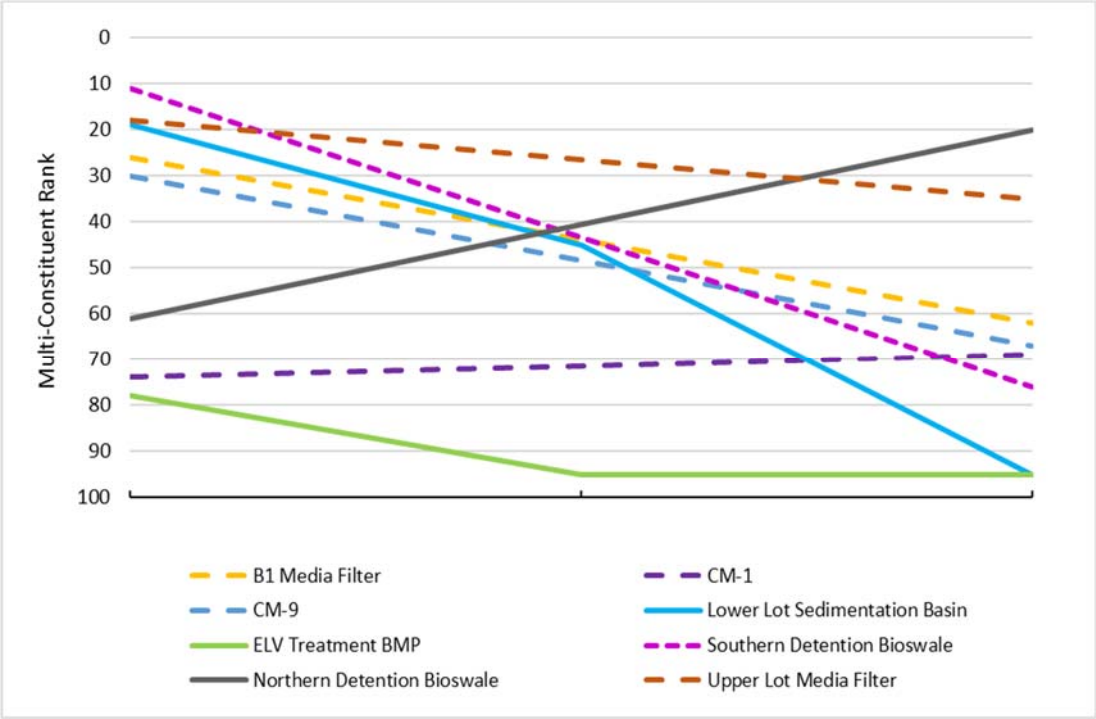


Figure ES- 1. Graphical Comparison of BMP Influent/Effluent Monitoring Location Ranks[3]

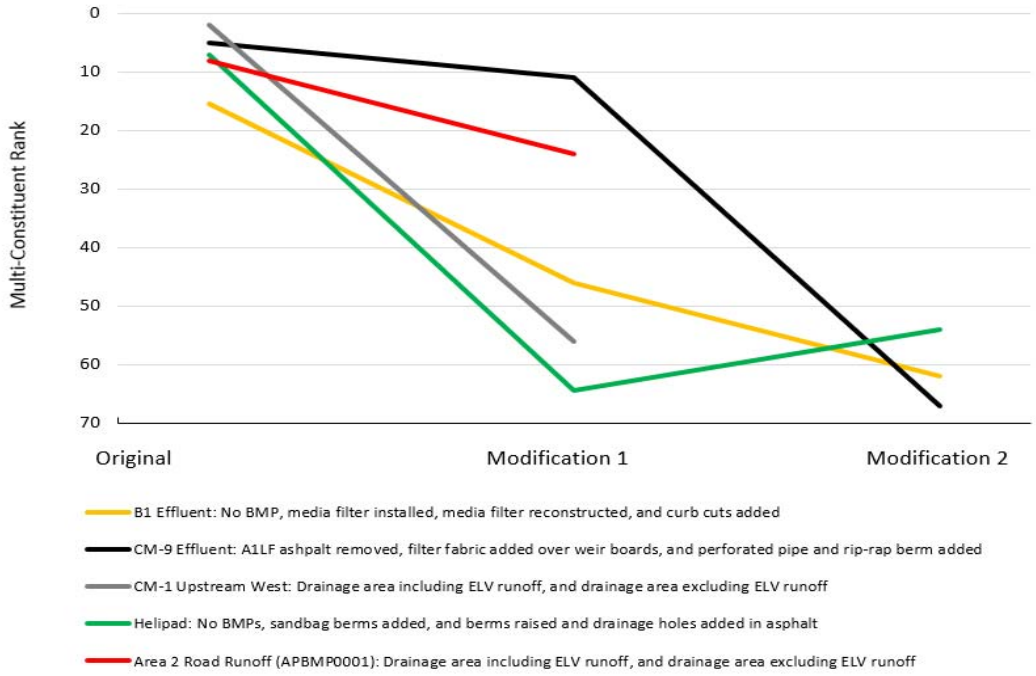
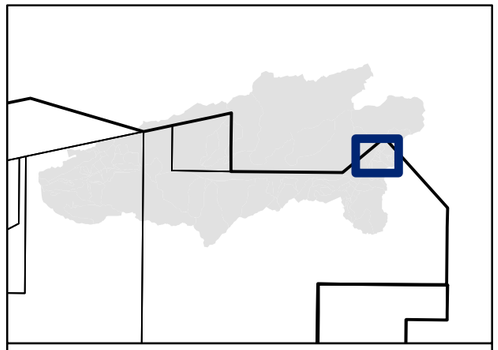


Figure ES- 2. Graphical Comparison of BMP Improvement Ranks

[3] Dashed lines identify paired influent/effluent results that represent data from two influent monitoring locations. In these instances, the multi-constituent ranks of the two influent monitoring locations are flow-weighted.



Legend

Site Designations

- Active Site
- Not Active Site
- Top 20 Ranked Site With Downstream Treatment
- Top 20 Ranked Site Without Downstream Treatment
- Stormwater Background Monitoring Location
- BMP Subarea Monitoring Location

Other Designations

- Drainage
- Storm Drain
- Treatment BMPs
- Asphalt Removal
- Completed ISRA Area
- Untreated Drainage Area
- Drainage Area Treated by Upper Lot Media Filter
- Drainage Area Treated by Biofilter
- Drainage Area Treated by B1 Media Filter

Labels written in grey text within the map indicate sites that are not Top 20 Ranked.

0 40 80 160 Feet

Figure ES-3
Top 20 Ranked: B1 Area

Santa Susana Field Laboratory
Ventura County, CA

August 2018

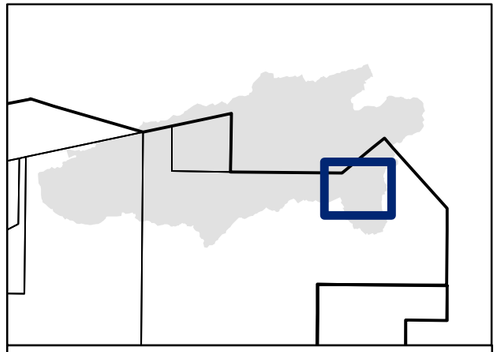
Date: 8/23/2018, Path: Z:\GIS\Projects\Boeing\SSFL\2018 LA0408002_Ranking Memo\ES-3_2018 Priority Sites-B1.mxd, User: OLincoln

Geosyntec consultants

N

BGBMP0005
EPNDSW07
B1SW0012
B1SW0002 (Discontinued, Top 20 Ranked)
B1 Media Filter
B1BMP0004 (B1BMP0004-5, B1SW0015)
B1SW0014-A (Discontinued, Top 20 Ranked)
B1SW0014-B/C (Discontinued, Not Top 20 Ranked)
B1BMP0006, B1SW0010,
B1BMP0001-A (B1SW0001-A)
B1BMP0001 (B1SW0001)
B1SW0007
B1BMP0005 (B1BMP0013, B1SW0011, B1BMP0004-5)
Lower Lot Biofilter
Upper Lot Media Filter
Detention Basin
B1BMP0008
B1SW0009
B1SW0008
B1SW0006, B1SW0006-A
B1BMP0007
B1BMP0009 (Active, Top 20 Ranked)
B1BMP0011
LPBMP0004
B1BMP0010
B1BMP0003 (B1BMP0002)
B1SW0005, B1SW0005-A
LPBMP0003
Lower Lot Sediment Basin
B1SW0004, B1SW0004-A
B1SW0003

Site ID	Rank	Site Description	Multi-Pollutant Score	Metals Rank	Dioxin Rank	Total Samples	2017-2018 Samples
B1BMP0009	12	Upper Lot Media Filter – Road Culvert Influent	0.50	45.5	2	8	2
B1SW0002	15.5	Woolsey Canyon Road Runoff, before treatment	0.50	15	32.5	2	0
B1SW0014-A	15.5	B1 media filter effluent (pre-media filter reconstruction) - OLD	0.50	15	32.5	1	0



Legend

Site Designations

- Active Site
- Not Active Site
- Stormwater Background Monitoring Location
- BMP Subarea Monitoring Location
- Top 20 Ranked Site With Downstream Treatment
- Top 20 Ranked Site Without Downstream Treatment

Other Designations

- Drainage
- Storm Drain
- Treatment BMPs
- Asphalt Removal
- Completed ISRA Area
- Untreated Drainage Area
- Drainage Area Treated by B1 Media Filter
- Drainage Area Treated by Biofilter
- Drainage Area Treated by CM-9
- Drainage Area Treated by Detention Bioswales
- Drainage Area Treated by Upper Lot Media Filter

Labels written in grey text within the map indicate sites that are not Top 20 Ranked.

0 65 130 260 Feet

Figure ES-4
Top 20 Ranked: Lower Lot & Detention Bioswale Areas

Santa Susana Field Laboratory
Ventura County, CA

August 2018

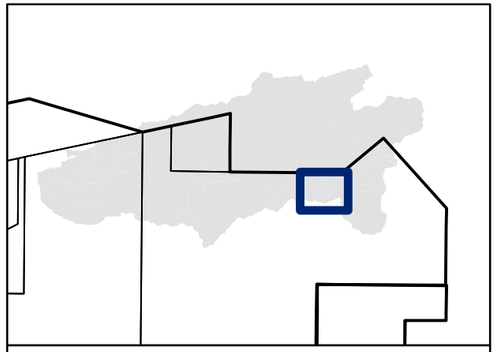
Date: 8/23/2018, Path: Z:\GIS\Projects\Boeing\SSFL\2018 LA0408l02_Ranking Memo\ES-4_2018 Priority Sites-LL.mxd, User: OLincoln

Geosyntec consultants

N

EPNDSW06
ILBMP0001
LPBMP0001-A (Discontinued, Top 20 Ranked)
LPBMP0001 (Discontinued, Not Top 20 Ranked)
LPBMP0002 (Active, Top 20 Ranked)
Lower Lot Sediment Basin
Lower Lot Cistern
ILBMP0006
ILBMP0007 (ILBMP0005-7) (Discontinued, Top 20 Ranked)
ILBMP0005 (Active, Not Top 20 Ranked)
ILBMP0005-7 (Discontinued, Not Top 20 Ranked)
ILSW0005
ILSW0006, ILSW0006-A
Detention Bioswales
ILSW0002, ILSW0002-A
ILSW0001, ILSW0001-A
ILBMP0004
ILSW0008
ILBMP0008 (Active, Top 20 Ranked)
ILSW0004, ILSW0004-A
ILSW0007
ILSW0003

Site ID	Rank	Site Description	Multi-Pollutant Score	Metals Rank	Dioxin Rank	Total Samples	2017-2018 Samples
LPBMP0001-A	9	Lower lot sheetflow (post-gravel bag berms)	0.6	29	7.5	6	0
LPBMP0002	19	Lower parking lot influent to cistern, before treatment	0.50	80.5	1	24	2
ILBMP0008	10	Upstream 2 (B1436 Southern Detention Bioswale influent)	0.53	30	5.5	18	2
ILBMP0007 (ILBMP0005-7)	20	Northern Detention Bioswale Effluent	0.50	1	92	19	0



Legend

Site Designations

- Active Site
- Not Active Site
- Stormwater Background Monitoring Location
- BMP Subarea Monitoring Location
- Top 20 Ranked Site With Downstream Treatment
- Top 20 Ranked Site Without Downstream Treatment

Other Designations

- Drainage
- Storm Drain
- Treatment BMPs
- Asphalt Removal
- Completed ISRA Area
- Untreated Drainage Area
- Drainage Area Treated by Biofilter
- Drainage Area Treated by CM-8
- Drainage Area Treated by CM-9

Labels written in grey text within the map indicate sites that are not Top 20 Ranked.

0 45 90 180 Feet

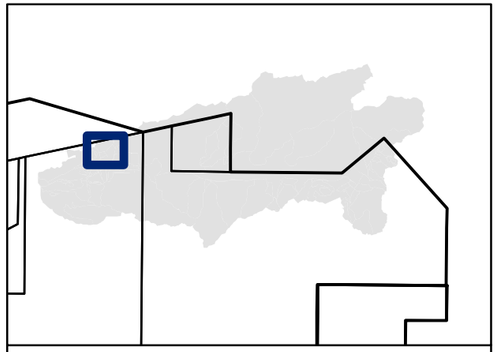
Figure ES-5
Top 20 Ranked: CM-9 Area

Santa Susana Field Laboratory
Ventura County, CA

August 2018

Date: 8/23/2018, Path: Z:\GIS\Projects\Boeing\SSFL\2018 LA0408\02_Ranking Memo\ES-5_2018 Priority Sites-CM9.mxd, User: OLincoln

Site ID	Rank	Site Description	Multi-Pollutant Score	Metals Rank	Dioxin Rank	Total Samples	2017-2018 Samples
ILBMP0002	1	Road runoff to CM-9, before treatment	0.9	2	10.5	23	2
A1SW0009-A	5	CM-9 downstream-underdrain outlet (post-A1LF asphalt removal, pre-filter fabric over weir boards) - OLD	0.63	7	32.5	1	0
A1SW0009-B	11	CM-9 downstream-underdrain outlet (post-filter fabric over weir boards, post-A1LF asphalt removal) - OLD	0.51	21	18.5	6	0



Legend

Site Designations

- Active Site
- Not Active Site
- Stormwater Background Monitoring Location
- BMP Subarea Monitoring Location
- Top 20 Ranked Site With Downstream Treatment
- Top 20 Ranked Site Without Downstream Treatment

Other Designations

- Drainage
- Storm Drain
- Treatment BMPs
- Asphalt Removal
- Completed ISRA Area
- Untreated Drainage Area
- Helipad
- Drainage Area Treated by ELV Treatment BMP

Labels written in grey text within the map indicate sites that are not Top 20 Ranked.

0 35 70 140 Feet

Figure ES-6
Top 20 Ranked: North of CM-1 Area

Santa Susana Field Laboratory
Ventura County, CA

August 2018

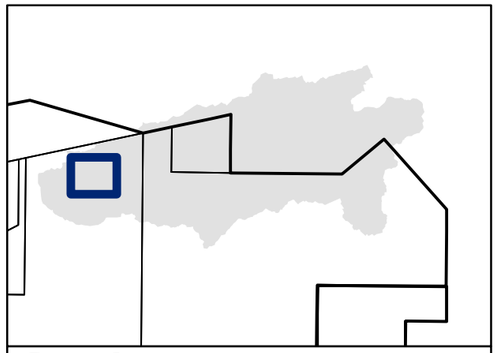
Date: 8/23/2018, Path: Z:\GIS\Projects\Boeing\SSFL\2018 LA0408002_Ranking Memo\ES-6_2018 Priority Sites-CM1.mxd, User: OLincoln

Geosyntec consultants

N

Outfall 009
A2SW0003
A2SW0004
EPNDSW01
EPNDSW02
A2BMP0003
A2BMP0008 (Active, Top 20 Ranked)
A2BMP0009
EVBMP0002 (Old/Active,Top 20 Ranked)
EVBMP0002-A/B (Active, Not Ranked Top 20)
A2BMP0010
A2BMP0004

Site ID	Rank	Site Description	Multi-Pollutant Score	Metals Rank	Dioxin Rank	Total Samples	2017-2018 Samples
A2BMP0008	3	Well 13 Road Runoff, north side - OLD	0.72	3	32.5	2	0
EVBMP0002	7	Helipad (pre-sandbag berms) - OLD	0.6	27	7.5	6	0



Legend

Site Designations

- Active Site
- Not Active Site
- Stormwater Background Monitoring Location
- BMP Subarea Monitoring Location
- Top 20 Ranked Site With Downstream Treatment
- Top 20 Ranked Site Without Downstream Treatment

Other Designations

- Drainage
- Storm Drain
- Treatment BMPs
- Asphalt Removal
- Completed ISRA Area
- Untreated Drainage Area
- Drainage Area Treated by CM-1
- Drainage Area Treated by ELV Treatment BMP
- Drainage Area Treated by Helipad BMP

Labels written in grey text within the map indicate sites that are not Top 20 Ranked.

0 45 90 180 Feet

Figure ES-7
Top 20 Ranked: ELV Area

Santa Susana Field Laboratory
Ventura County, CA

August 2018

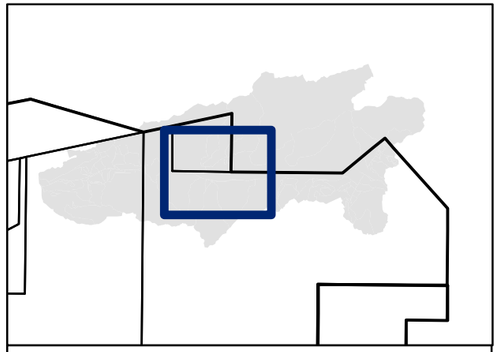
Date: 8/23/2018, Path: Z:\GIS\Projects\Boeing\SSFL\2018 LA0408002_Ranking Memo\ES-7_2018 Priority Sites-ELV.mxd, User: OLincoln

Geosyntec consultants

N

A2BMP0005
A2BMP0011
A2SW0002 (A2SW0002-A)
A2BMP0007
EVBMP0003 (A2SW0001) (Active, Top 20 Ranked)
EVBMP0003-A (Active, Not Top 20 Ranked)
EVBMP0010
ELV Sump
EVBMP0004 (Discontinued, Top 20 Ranked)
EVBMP0001-A
EVBMP0005
EVBMP0006 (Discontinued, Top 20 Ranked)
APBMP0001 (Discontinued, Top 20 Ranked)
APBMP0001-A (Active, Not Top 20 Ranked)
EVBMP0007
EVBMP0009
APBMP0002, APSW0013
EVBMP0008
CM-1
APSW0014
APSW0005
APSW0006, APSW0006-A
ELV Treatment BMP
APBMP0003
APSW0011
APSW0012
APSW0004

Site ID	Rank	Site Description	Multi-Pollutant Score	Metals Rank	Dioxin Rank	Total Samples	2017-2018 Samples
EVBMP0003 (A2SW0001)	2	CM-1 upstream west, pre-ELV improvements, before treatment - OLD	0.87	5	5.5	18	0
APBMP0001	8	Road runoff to ashpile culvert inlet, pre-ELV improvements - OLD	0.6	9	32.5	2	0
EVBMP0006	15.5	2012-2013 Area II Road near ELV ditch	0.50	15	32.5	1	0
EVBMP0004	15.5	2012-2013 Lower Helipad Road	0.50	4	61	3	0



Legend

Site Designations

- Active Site
- Not Active Site
- Stormwater Background Monitoring Location
- BMP Subarea Monitoring Location
- Top 20 Ranked Site With Downstream Treatment
- Top 20 Ranked Site Without Downstream Treatment

Other Designations

- Drainage
- Storm Drain
- Treatment BMPs
- Asphalt Removal
- Completed ISRA Area
- Untreated Drainage Area
- Drainage Area Treated by CM-2
- Drainage Area Treated by CM-3
- Drainage Area Treated by CM-4
- Drainage Area Treated by CM-5
- Drainage Area Treated by CM-6
- Drainage Area Treated by CM-10
- Drainage Area Treated by LOX BMP

Labels written in grey text within the map indicate sites that are not Top 20 Ranked.

0 105 210 420 Feet

Figure ES-8
Top 20 Ranked: CM-3 Area

Santa Susana Field Laboratory
Ventura County, CA

August 2018

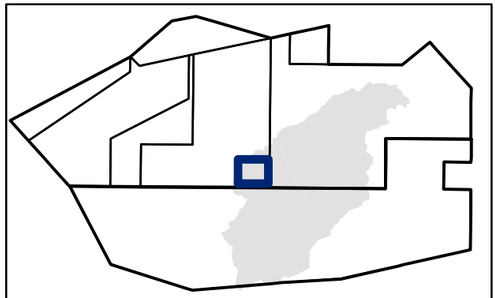
Date: 8/23/2018, Path: Z:\GIS\Projects\Boeing\SSFL\2018 LA\408\02_Ranking Memo\ES-8_2018 Priority Sites-CM3.mxd, User: OLincoln

Geosyntec consultants

N

EPNDSW03
BGBMP0003
LXBMP0001
LXBMP0002
LXBMP0003
LXBMP0006 (LXSW0010)
BGBMP0004
EPNDSW05
CM-5
LXBMP0007, LXSW0007
LXBMP0008, LXSW0008
EPNDSW04
LXBMP0004
LXBMP0005
LXBMP0009 (LXSW0009)
LXSW0002, LXSW0002-A
CM-2
LXBMP0010 (Active, Top 20 Ranked)
LXBMP0012
LXBMP0011
BGBMP0002 (LXSW0003)
CM-6
CM-7
CM-10
CM-4
CM-3

Site ID	Rank	Site Description	Multi-Pollutant Score	Metals Rank	Dioxin Rank	Total Samples	2017-2018 Samples
LXBMP0010	15.5	Service Area Road BMP – Road Runoff Influent to CM-3	0.50	15	32.5	1	0



Legend

Site Designations

- Active Site
- Not Active Site
- BMP Subarea Monitoring Location
- Top 20 Ranked Site With Downstream Treatment
- Top 20 Ranked Site Without Downstream Treatment

Other Designations

- Drainage
- Storm Drain
- Untreated Drainage Area
- Outfall 001 Watershed Boundary

Figure ES-9
Top 20 Ranked: Outfall 001 Area

Santa Susana Field Laboratory
Ventura County, CA

September 2018

Date: 9/17/2018, Path: Z:\GIS\Projects\Boeing\SSFL\2018 LA0408\02_Ranking Memo\ES-9_2018 Priority Sites-OF0

Geosyntec consultants

N

CABMP0003 (Active, Top 20 Ranked)

CABMP0001 (Active, Top 20 Ranked)

CABMP0002 (Active, Top 20 Ranked)

Site ID	Rank	Site Description	Multi-Pollutant Score	Metals Rank	Dioxin Rank	Total Samples	2017-2018 Samples
CABMP0001	5	Driveway downgradient of hydrogen gas storage tank	0.63	7	32.5	1	1
CABMP0003	5	Road runoff downstream of hydrogen gas facility	0.63	7	32.5	1	1
CABMP0002	15.5	Driveway downgradient of hydrogen gas facility buildings	0.50	15	32.5	1	1

1 Introduction

The purpose of this analysis is to prioritize and rank subareas in the Santa Susana Field Laboratory (SSFL) watersheds for potential implementation of new or enhanced stormwater controls[4], to improve National Pollutant Discharge Elimination System (NPDES) permit compliance at the regulated Outfalls. In prior years, subarea monitoring locations, and subsequently this ranking analysis scope, was limited to the Outfall 008 and 009 watersheds. However, the 2017/18 Sampling and Analysis Plan (SAP) included three new subarea monitoring locations in the Outfall 001 watershed. Therefore, the scope of the prioritization and ranking analysis has been expanded to include Outfalls 008, 009, and 001 watersheds.

The annual approach recommended by the SSFL Surface Water Expert Panel ("Expert Panel") [5] is to:

1. Compare potential BMP subarea[6] monitoring results with subarea-specific stormwater background[7] data and NPDES permit limits[8];
2. Determine pollutant-specific "weighting factors" for each potential BMP subarea monitoring location based on this comparison (using a statistical methodology that accounts for sample size and number of results that are above both of these thresholds), with the highest weighting factors assigned to subareas that most frequently exceed both of these thresholds;
3. Determine multi-constituent ranking "scores" for each subarea based on the pollutant-specific weighting factors; and
4. Rank the potential best management practices (BMPs) monitoring subareas based on the multi-constituent ranking scores.

---

[4] For the purpose of this report, the overarching term "stormwater controls" will be used to describe the standard suite of passive control practices, including erosion controls, sediment controls, and treatment controls. For detailed definitions or examples of erosion and sediment controls, see the CASQA Construction BMP Handbook at http://www.cabmphandbooks.com; for a detailed definition or examples of treatment controls, see the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures at http://www.vcstormwater.org/documents/workproducts/technicalguidancemanual/2010final/Ventura_TGM%2011-4-10.pdf. The more general term, "Best Management Practice" (or BMP), is used in this report as a synonym for "stormwater control" but is used only for referencing the "potential BMP subarea monitoring locations," or monitoring locations where new stormwater controls are being contemplated based on a review of available monitoring results.

[5] The recommended approach outlined herein was developed jointly by the SSFL Surface Water Expert Panel and Geosyntec Consultants, with review from The Boeing Company, NASA, and the Los Angeles Regional Water Quality Control Board.

[6] "Potential BMP subarea monitoring locations" are defined here as drainage areas with an outlet location for stormwater runoff sampling, and including land uses that include ISRA, RCRA Facility Investigation (RFI), and/or developed areas (i.e., subareas containing buildings, asphalt parking lots, roads, etc.) so that impacted runoff quality might be expected and/or treatment BMPs might be necessary, pending an evaluation of the monitoring results.

[7] "Stormwater background monitoring locations" are defined here as locations in these watersheds that generally represent stormwater runoff from unimpacted areas, or areas that do not include ISRA, RFI, or significant development, thereby representing subarea-specific background (or reference) stormwater quality.

[8] The NPDES permit limits are only applicable to the outfalls and not to the subareas within the outfall drainage areas; however, the permit limits were used as benchmark values for the BMP subarea prioritization analyses discussed herein.

This general approach is summarized in the flow chart included as Attachment 1. SSFL stormwater background concentrations are established based on data from Interim Source Removal Action (ISRA) performance and potential BMP subarea monitoring locations that represent runoff from drainage areas with minimal to no RCRA Facility Investigations (RFI), ISRA, or developed (i.e., roof or pavement) areas. The selection process of potential BMP subarea monitoring locations is described in the December 16, 2010 sampling recommendations memo from the Expert Panel and Geosyntec (Geosyntec, 2010). Although this analysis is based on concentrations and does not account for pollutant load or watershed size, monitoring locations were selected based on the goal of capturing runoff from nearly all known areas of potential anthropogenic pollutant sources within these two watersheds. In cases where the drainage areas are small, they generally include mostly paved surfaces, so runoff volumes are still significant.

The Outfall 001, 008, and 009 watershed subarea monitoring locations used for this BMP evaluation are shown in Attachment 2. Details on the subarea monitoring locations are provided in Attachment 3. These include: Each subarea is listed with its category (or data type), watershed, co-location (i.e., an alternate subarea identifier for the same location), a location description, and approximate drainage area. The drainage areas contributing to each of the treatment BMPs installed throughout the Outfall 009 watershed are shown in Attachment 4[9]. Potential BMP subareas include the letters "BMP" in the subarea identifier, while Special Studies locations include "EPNDSW" in the subarea identifier and ISRA performance monitoring locations include the letters "SW" in the subarea identifier. At the Expert Panel's recommendation, some ISRA and Culvert Modification (CM) performance monitoring locations are included here for BMP siting consideration, to verify/test the performance of some stormwater controls, and to verify that runoff from below a completed ISRA area is comparable to the runoff from above the ISRA area. NPDES compliance monitoring outfalls 001, 008, and 009 and Northern Drainage stormwater monitoring results from the Non-Industrial Sources Special Study (introduced in the 2015/2016 SSFL State-Wide Stormwater Annual Report), were also included for comparison and method testing purposes. The Special Study monitoring results were incorporated into the analyses herein as either BMP subarea or background monitoring data (as shown in Table 1 and Table 6). The data summarized and their periods of record in this report are as follows:

- ISRA performance monitoring data: 12/2009 – 12/2014
- BMP performance monitoring data: 12/2009 – 3/2018
- NPDES outfall monitoring data: 10/2004 – 3/2018
- Potential and active BMP subarea monitoring data: 12/2010 – 3/2018
- Non-Industrial Sources Special Study stormwater monitoring data: (12/2016 – 3/2018)

The number of sampling event results currently available for each of the BMP subarea monitoring locations is based on one to thirty-two storms sampled, depending on the location. Where available, data from co-located ISRA subareas were combined with data from BMP subareas in order to provide a more robust dataset at potential BMP locations. Additionally, the number of samples collected from a single subarea within the Outfall 001 watershed (one sample per subarea) and the Outfall 008

[9] The existing structural treatment BMPs are currently limited to the Outfall 009 watershed.

watershed (up to 15 samples depending on parameter) is considerably fewer than the maximum number of samples collected from a single subarea in the Outfall 009 watershed (up to 32 samples depending on parameter). For Outfall 001, this is due in part to sample locations being newly instated during the 2017/18 reporting year. The fewer number of samples in the Outfall 008 watershed is due in part to fewer events with sufficient runoff to enable sampling, which is likely due to the absence of directly connected impervious areas and hardened conveyance systems (e.g., paved roads, inlets, storm drains, and lined channels). Additionally, with the exception of Outfall 008, monitoring in the Outfall 008 watershed was discontinued in 2014.

Measured precipitation varied by reporting year[10]. Approximately 9.8 inches were recorded over the 2017/18 reporting year, which is 58% of the average annual rainfall (16.8 inches)[11]. The four qualifying events of the reporting year were January 8-9, 2018 (2.78 inches), February 26-March 3, 2018 (1.66 inches), March 10-16, 2018 (1.92 inches), and March 21-23, 2018 (2.94 inches). The 1-year, 24-hour design storm depth (2.5 inches) was not exceeded during any storms this season. During the 2017/18 reporting year, of the outfalls analyzed herein, discharge occurred at Outfall 009 but did not occur at Outfalls 001 and 008[12]. No exceedances were observed at Outfall 009.

All NPDES and BMP/ISRA stormwater sampling data reported herein were validated by qualified lab quality review professionals[13]. All TCDD TEQ results include Bioaccumulation Equivalency Factors (BEFs), consistent with NPDES reporting requirements (see Appendix A of the 2012 BMP Subarea Ranking Analysis memo (Expert Panel and Geosyntec Consultants, 2012) for more information on the effects of

[10] The "reporting year" (previously referred to as the "rainy season") is defined herein as June 1 through May 31 (e.g., water quality samples collected from January 9, 2018 to March 23, 2018 were included in this memo and represent the 2017/18 reporting year).

[11] 19.04 inches of rainfall were recorded over the 2009/2010 reporting year, 23.38 inches over 2010/2011, 11.41 inches over 2011/2012, 8.09 inches over 2012/2013, 6.07 inches over 2013/2014, 12.10 inches over 2014/2015, 11.97 inches over 2015/2016, and 23.35 inches over 2016/17. Most of the rain in any reporting year occurred during the late fall to early spring periods, with very little rain occurring during the other months.

[12] The ranking of NPDES outfalls in this analysis is currently limited to the outfalls to which the analyzed subareas discharge. For example, although Outfall 002 discharged in the 2017/18 reporting year, no potential BMP subareas were sampled in the Outfall 002 watershed in that same year.

[13] Data validation is the process of evaluating data for program, method and laboratory quality control compliance, and will determine the validity and usability of the data. A Level II validation was performed on all dioxins results for the BMP monitoring program and for dioxins results above the permit limit for the performance monitoring program. In addition, validation was performed to investigate anomalous results at a Level II and validation was performed to investigate the performance of the Dekaport Cone Splitter at a Level IV. A Level II validation involves a review of field methods and a high-level review of laboratory methods. The primary purpose of performing a Level II validation on the dioxin results was to address blank contamination and estimated maximum possible concentration (EMPC) values. An EMPC value is assigned to a dioxin isomer when a peak is within the retention time window of a target dioxin or furan isomer; however, at least one of the identification criteria from the method was not met for that peak. Therefore, this peak cannot be positively identified as a dioxin or furan. The Level II validation process would evaluate the EMPC values and revise these values to non-detects at either the level of interference or the reporting limit, whichever is higher. A Level IV validation is a definitive evaluation of the data and involves a very detailed review of the field and laboratory processes including the raw data files used to identify and quantitate dioxins and furan. This level of validation requires the validator to reproduce a percentage of the result from the raw data files to ensure that systemic errors or errors of omission or transcription errors are not present in the final reported data.

BEFs on calculated TEQ results). For all parameters, lab results that are estimated (or "J-flagged," or results that are above the detection limit but below the reporting limit) are included in the analysis since it is the Expert Panel's view that the minor decrease in the statistical confidence in these individual results still enhances the overall confidence in the sample summary statistics by providing additional data observations, especially considering the limited number of data available for many locations (and it is these summary statistics that serve as the basis for the Expert Panel's BMP recommendations).

Although this analysis discusses current treatment controls and focuses on the identification of subareas that may require new treatment controls, the Expert Panel continues to strongly recommend the rigorous application of erosion and sediment control practices and stream channel stabilization measures as-needed sitewide. The Expert Panel also continues to recommend the stabilization of roadways and the implementation of source controls, including source removal, such as through the ISRA program.

This analysis follows prior reports prepared by the Expert Panel on dioxins and metals stormwater background sources at the SSFL (SSFL Surface Water Expert Panel, 2010; SSFL Surface Water Expert Panel, 2009), and is based on the October 2010 BMP Plan for the Outfall 008 and 009 Watersheds (MWH et al., 2010). This analysis is the most refined of several generations of alternatives that were iteratively developed and tested by the Expert Panel and Geosyntec for the selection of potential BMP locations.

2 Data Summary

For this BMP subarea prioritization analysis, the constituents of concern (COCs) are defined as total suspended solids (TSS), cadmium (Cd), copper (Cu), lead (Pb), mercury (Hg), TCDD TEQ, and 2,3,7,8-TCDD because these constituents have periodically been measured at concentrations above the current NPDES permit limits at the Outfall 008 and 009 monitoring stations, with the exception of TSS and 2,3,7,8-TCDD which are without permit limits but are included here as other informative measurements[14]. Due to the varying objectives of each of the monitoring programs, not all COCs were sampled at all subareas.

2.1 Stormwater Background Monitoring Locations

Several subarea monitoring locations were selected to be representative of stormwater background runoff quality because they represent locations that are not expected to be impacted by historical or ongoing subarea activities. All background locations are within Outfalls 008 and 009; there are not currently any sampled background subareas in Outfall 001. The number of samples for each COC at each stormwater background subarea is summarized in Table 1. These samples were collected for all events that occurred when flow was observed[15]. All but two background locations have been discontinued as of this reporting year (e.g. A1SW0006 was discontinued after the 2010/2011 reporting year because the low concentrations of constituents in the samples limited the performance evaluation of CM-11, which was the primary intent of monitoring at that time (MWH et al., 2013)); other background sites were

[15] Average rainfall at SSFL was 16.9 inches from 1959-2017. In contrast, 9.8 inches of total rainfall was recorded to-date in the 2017/18 reporting year.

discontinued for similar reasons, which is documented in prior years' Annual Reports and BMP Monitoring Sampling and Analysis Plans (SAPs).

Table 1. Stormwater background monitoring location dataset summary (2009/10 to 2017/18)

Location (Co-location)	Description	Number of Sample Results for Indicated COCs						
		TSS	Cd	Cu	Pb	Hg	TCDD TEQ	2,3,7,8 -TCDD
A1SW0002	Background - CM-8 upstream, before treatment	10	0	0	10	0	0	0
A1SW0006	Background - CM-11 upstream, before treatment	12	0	0	0	0	12	12
BGBMP0001 (A2BMP0006, A2SW0007)	Background - CM-1 upstream east tributary, before treatment	9	9	7	9	9	9	9
BGBMP0002 (LXSW0003)	Background - CM-3 upstream, before treatment	4	3	4	4	4	4	4
BGBMP0003	Background - Sage Ranch near LOX	5	5	5	5	5	5	5
BGBMP0004 (EPNDSW05)	Background - Sage Ranch near CM-5	8	8	8	8	4	8	8
BGBMP0006 (A2SW0006)	Background - CM-1 upstream east tributary (ponded footprint), before treatment	7	1	1	7	1	7	7
BGBMP0007 (LXSW0001)	Background - CM-3 upstream, before treatment	7	6	7	7	7	7	7
HZSW0008	Background - Happy Valley upstream	1	0	0	1	0	1	1
HZSW0011	Background - Happy Valley upstream	2	0	2	0	0	2	2
HZSW0012	Background - Happy Valley upstream	1	0	0	1	0	0	0
HZSW0020 (HZSW0017)	Background - Happy Valley upstream	2	0	0	2	0	2	2
Total		68	32	34	54	30	57	57

Notes

- Gray text indicates historical subarea monitoring locations that are discontinued.
- Stormwater background locations with zero samples collected are excluded from this table.

Table 2 and Table 3 summarize the total number of samples, non-detect results (ND), and J-flagged results (DNQ), along with the minimum, median, 95th percentile, and maximum concentration values for each of the COCs for the stormwater background data results at Outfalls 008 and 009, respectively. All stormwater background 2,3,7,8-TCDD results are ND. Stormwater background concentration values for COCs that are higher than current permit limits (which apply only at the NPDES compliance outfalls) are highlighted in yellow. These results confirm previous observations by the Expert Panel and others regarding natural background stormwater quality at the SSFL that occasionally exceeds NPDES permit limits for some metals (including copper and lead) as well as TCDD TEQ with DNQs included (however, for permit compliance reporting purposes, TCDD TEQ excluding DNQ is used and background samples do not exceed permit limits for this parameter).

Table 2. Outfall 008 stormwater background results– concentrations (2009/10 to 2017/18)

COC	# Samples	# NDs	# DNQ	Min	Median	95th Percentile	Max	Permit Limits for OF008	% Samples Exceeding Permit Limit [b]
2,3,7,8-TCDD	5	5	5	6.20E-07	6.60E-07	4.68E-06	5.20E-06	NA	NA
Cadmium	0	NA	NA	NA	NA	NA	NA	NA	NA
Copper	2	0	0	2.4	2.7	2.97	3	14	0%
Lead	4	1	2	0.2	2.85	12.695	14	5.2	50%
Mercury	0	NA	NA	NA	NA	NA	NA	NA	NA
TCDD TEQ[a]	5	0	0	1.9E-11	4.02E-09	6.62E-09	7.02E-09	2.80E-08	0%
TSS	6	0	3	2	17.5	74.25	76	NA	NA

Table 3. Outfall 009 stormwater background results– concentrations (2009/10 to 2017/18)

COC	# Samples	# NDs	# DNQ	Min	Median	95th Percentile	Max	Permit Limits for OF009	% Samples Exceeding Permit Limit [b]
2,3,7,8-TCDD	52	52	42	2.00E-08	7.57E-07	4.18E-06	5.40E-06	NA	NA
Cadmium	32	31	22	0.1	0.1	0.25	0.25	4	0%
Copper	32	2	14	0.14	2	7.005	19	13	3%
Lead	50	11	26	0.0898	0.6595	13.75	64	5.2	14%
Mercury	30	29	26	0.0453	0.1	0.1	0.1	0.13	0%
TCDD TEQ[a]	52	12	0	1E-12	9.21E-10	1.01E-06	1.29E-06	2.80E-08	29%
TSS	62	8	33	0.53	7.05	80.65	750	NA	NA

Notes for Tables 2 and 3

- Units are in mg/L for TSS, µg/L otherwise
- (a) Permit limit applies to TCDD TEQ (no DNQ), while this comparison is made with TCDD TEQ (DNQ included).
- (b) The percent of samples exceeding the permit limit was calculated by dividing the number of concentration results greater than the permit limit by the number of all sampled results for each COC. If non-detect results (reported equal to the DL) are greater than the permit limit, they are included in this calculation.
- No substitution assumptions were made in the attempt to quantify NDs. For example, "< 0.20" refers to a non-detect with a detection limit of 0.20 µg/L.
- RWQCB split sample results excluded.
- Highlighted values exceed the permit limit for that COC (used here as benchmarks as the permit limits only apply to the outfall locations).
- J flagged/DNQ results are included for all COCs.
- With the exception of cadmium, which had all ND or J-flagged/estimated results, assumptions regarding the treatment of J-flag (or DNQ) results do not impact the 95th percentile stormwater background thresholds for any COC.
- Metals results shown here are for the total form only, consistent with the permit limits.

Particulate strength (PS) is a means to normalize stormwater pollutant concentrations by TSS and also indicate the treatability of the constituents. Normalizing pollutant concentrations by TSS is helpful for evaluating locations that have high COC concentrations in the runoff as a result of high TSS concentrations[16]. This is especially true for the COCs that are highly associated with particulates and are

[16] By applying particulate strengths, the Expert Panel is not suggesting that stormwater at SSFL be regulated using such metrics, but rather the Expert Panel is recommending the use of this solely as a diagnostic metric for the identification of source areas and for the ranking of potential BMP monitoring subareas for placement of new stormwater controls.

not found in significant quantities in dissolved (i.e. filtered) forms. This normalization with TSS to calculate PS for the stormwater background sites was performed to help identify critical COC source areas that may otherwise have mass discharges diluted by large flows. PS values have been previously used by the Expert Panel to assess sources of metals in SSFL NPDES outfall compliance monitoring data (SSFL Surface Water Expert Panel, 2009). The procedure used to calculate PS is described in Attachment 5.

Samples where both the total and filtered concentrations were detectable were used to determine the average filtered fractions at Outfalls 001, 008, and 009 (Table 4) which were used in the PS calculations for all sites. TCDD TEQ and 2,3,7,8-TCDD are assumed to have a filtered fraction of zero because of their extremely low solubility and high affinity for solids. In order to compare the particulate strength of BMP subareas to the particulate strength of background subareas, some filtered fractions also needed to be estimated (see Attachment 5).

Table 4. Average filtered fraction of COCs based on all available monitoring data in defined watershed; used in determination of particulate strength when filtered COC not measured (e.g., ISRA and CM performance monitoring datasets)

	Outfall 001			Outfall 008			Outfall 009		
COC	% Filtered	# Samples	CV	% Filtered	# Samples	CV	% Filtered	# Samples	CV
Copper	32	5	0.66	55	35	0.48	64	528	0.38
Lead	3	4	0.78	19	14	0.94	19	357	0.81
Cadmium	11	2	0.32	40	21	NA	57	50	0.37

Notes

- CV = Coefficient of variation, ratio of standard deviation to mean
- # samples = samples with both total and filtered detected and total > filtered (results with total < filtered were excluded from the analysis)
- Only two samples in the Outfall 008 watershed (10/18/05 and 1/18/10) were detected and valid (i.e. filtered concentration reported was less than or equal to total concentration reported for a given sample) for filtered cadmium. At the recommendation of the Expert Panel, the average filtered fraction of cadmium in the Outfall 008 watershed was computed using the detection limits of the total cadmium analyses as a conservative estimate for filtered cadmium.

To determine particulate strength thresholds, the 95th percentile background particulate strength was computed for all non-TSS analytes from all samples, regardless of watershed (Table 5). All PS results in Outfalls 001, 008, and 009, including the NPDES outfalls themselves, were compared to this single set of background particulate strength thresholds as part of the multi-constituent score calculation. TSS is omitted from this summary table as it is used in calculating the particulate strength values of the other constituents. The 95th percentile and maximum values are generally unaffected by the ND or missing filtered data assumptions that were made for the PS estimates.

Table 5. Stormwater background results - particulate strength (mg/kg) (2009/10 to 2017/18)

COC	# PS results	# NDs	Min	Median	95th Percentile	Max
Cadmium	28	27	ND	ND	ND	ND
Copper	26	0	0	60.71	503.1	669.73
Lead	53	11	ND	70.56	278.6	1058.42
Mercury	30	29	ND	ND	ND	ND
TCDD TEQ	57	12	ND	7.59E-08	8.53E-05	2.25E-03
TCDD TEQ_NoDNQ	57	45	ND	ND	5.51E-08	1.49E-05
2,3,7,8-TCDD	57	57	ND	ND	ND	ND

Notes

- Cells with ND refer to values based on total concentration non-detect results.
- RWQCB split sample results excluded
- # NDs reflect the number of non-detects in the total concentration.
- Particulate strength computation: PS = (Total concentration – Filtered concentration) / Total Suspended Solids
- In instances where samples were reported as having filtered concentrations greater than total concentrations, these samples were omitted from the analysis. As an example, one lead sample was reported as having filtered concentrations greater than total concentrations.

2.2 Stormwater BMP Subarea Monitoring Locations (Non-Background)

Table 6 provides a similar summary to Table 1, but shows the locations considered to be non-background sites (areas affected by site activities during historical laboratory operations and areas having buildings or paved surfaces, or otherwise disturbed by site operations). A map of the stormwater monitoring subareas is included as Attachment 2.

Table 6. Stormwater BMP subarea monitoring location dataset summary (2009/10 to 2017/18)

Location (Co-location)	Description	Number of Sample Results for Indicated COCs						
		TSS	Cd	Cu	Pb	Hg	TCDD TEQ	2,3,7,8 -TCDD
A1BMP0001	A1LF downstream, before treatment	5	5	5	5	4	5	5
A1BMP0002 (A1SW0004)	CM-9 upstream toward A1LF (pre-A1LF asphalt removal), before treatment - OLD	16	15	16	16	16	8	8
A1BMP0002-A (A1SW0004-A)	CM-9 upstream toward A1LF (post-A1LF asphalt removal), before treatment	12	12	12	12	12	11	11
A1BMP0004	Area 2 Road Runoff, SD inlet on north side of road	6	6	6	6	6	6	6
A1SW0003	CM-8 downstream (pre-filter fabric over weir boards) - OLD	10	0	0	10	0	0	0
A1SW0005	CM-9 downstream (pre-filter fabric over weir boards) - OLD	10	10	10	10	10	5	5
A1SW0007	CM-11 downstream (pre-filter fabric over weir boards) - OLD	12	0	0	0	0	12	12
A1SW0009-A	CM-9 downstream-underdrain outlet (post-A1LF asphalt	1	1	1	1	1	1	1

Location (Co-location)	Description	Number of Sample Results for Indicated COCs						
		TSS	Cd	Cu	Pb	Hg	TCDD TEQ	2,3,7,8 -TCDD
	removal, pre-filter fabric over weir boards) - OLD							
A1SW0009-B	CM-9 downstream-underdrain outlet (post-filter fabric over weir boards, post-A1LF asphalt removal) - OLD	6	6	6	6	6	5	5
A1SW0009-C (A1BMP0003)	CM-9 downstream-underdrain outlet (post-perforated pipe and upper basin installed)	11	11	11	11	11	11	11
A2BMP0002	A2LF drainage east	1	1	1	1	1	1	1
A2BMP0003	A2 u/s of ND confluence	8	8	8	8	8	8	8
A2BMP0004	Helipad culvert outlet	3	3	3	3	3	3	3
A2BMP0005	A2 u/s of CM-1 confluence	4	4	4	4	4	4	4
A2BMP0008	Well 13 Road Runoff, north side - OLD	2	2	0	2	2	2	2
A2BMP0009	Well 13 Road Runoff, east of OF0009 autosamplers	6	6	3	6	6	6	6
A2BMP0010	Well 13 Road Runoff, west side	5	5	4	5	4	5	5
A2BMP0011	Well 13 and Area 2 Road Runoff	8	8	3	8	8	8	8
A2SW0002	CM-1 effluent (pre-filter fabric over weir boards) - OLD	16	0	0	16	0	16	16
A2SW0002-A (A2BMP0007)	CM-1 effluent (post-filter fabric over weir boards)	15	11	8	15	11	15	15
APBMP0001	Road runoff to ashpile culvert inlet, pre-ELV improvements - OLD	2	2	2	2	2	2	2
APBMP0001-A	Area II road runoff, post-ELV stormwater improvements	5	5	5	5	4	5	5
APSW0014	AP/STP-1ABCDE downstream	2	2	2	2	2	2	2
B1BMP0001 (B1SW0010)	B1 media filter inlet (pre-media filter installation)	3	2	3	3	3	3	3
B1BMP0003 (B1BMP0002)	Upper parking lot / road runoff to B1 area culvert inlet	23	23	23	23	23	23	23
B1BMP0004 (B1BMP0004-5, B1SW0015)	B1 media filter inlet north, before treatment	21	21	21	21	21	21	21
B1BMP0005 (B1BMP0004-5, B1SW0011, B1SW0013)	B1 media filter inlet south, before treatment	26	26	26	26	26	26	26
B1BMP0007	B1, vegetated channel	12	12	12	12	12	12	12
B1BMP0008	B1 storm drain culvert outlet	2	2	2	2	2	2	2
B1BMP0009	Upper Lot Media Filter – Road Culvert Influent	8	8	8	8	8	8	8

Location (Co-location)	Description	Number of Sample Results for Indicated COCs						
		TSS	Cd	Cu	Pb	Hg	TCDD TEQ	2,3,7,8 -TCDD
B1BMP0010	Upper Lot Media Filter – Parking Lot Influent	10	10	10	10	10	10	10
B1BMP0011	Upper Lot Media Filter - Effluent	2	2	2	2	2	2	2
B1SW0002	Woolsey Canyon Road Runoff, before treatment	2	2	2	2	2	2	2
B1SW0008	B1 upstream	2	2	0	0	0	2	2
B1SW0014-A	B1 media filter effluent (pre-media filter reconstruction) - OLD	1	1	1	1	1	1	1
B1SW0014-B	B1 media filter effluent (post-media filter reconstruction) - OLD	4	4	4	4	4	3	3
B1SW0014-C (B1BMP0006)	B1 media filter effluent (post-media filter reconstruction, post-curb cuts)	19	19	19	19	19	19	19
BGBMP0005 (EPNDSW07)	Sage ranch near entrance	2	2	2	2	1	2	2
CABMP0001	Driveway downgradient of hydrogen gas storage tank	1	1	1	1	1	1	1
CABMP0002	Driveway downgradient of hydrogen gas facility buildings	1	1	1	1	1	1	1
CABMP0003	Road runoff downstream of hydrogen gas facility	1	1	1	1	1	1	1
EPNDSW01	Northern Drainage above confluence with Area II drainage	9	1	1	9	1	9	9
EPNDSW02	Area II drainage above confluence with Northern Drainage	5	1	1	5	1	5	5
EPNDSW03	Northern Drainage downstream of LOX	9	1	1	9	1	9	9
EPNDSW04	Northern Drainage downstream of box culvert	9	1	1	9	1	9	9
EPNDSW06	Northern Drainage downstream of IEL stormdrain outlet discharge	9	1	1	9	1	9	9
EVBMP0001-A	ELV culvert inlet (helipad road and ELV ditch, composite)	12	12	10	12	12	12	12
EVBMP0002	Helipad (pre-sandbag berms) - OLD	6	6	6	6	6	6	6
EVBMP0002-A	Helipad (post-sandbag berms) - OLD	5	5	5	5	5	5	5
EVBMP0002-B	Helipad (post-sandbag berms raised, post-drainage holes in asphalt)	10	10	8	10	10	10	10

Location (Co-location)	Description	Number of Sample Results for Indicated COCs						
		TSS	Cd	Cu	Pb	Hg	TCDD TEQ	2,3,7,8 -TCDD
EVBMP0003 (A2SW0001)	CM-1 upstream west, pre-ELV improvements, before treatment - OLD	18	9	9	18	9	18	18
EVBMP0003-A	CM-1 upstream west, post-ELV improvements, before treatment	13	13	9	13	13	13	13
EVBMP0004	2012-2013 Lower Helipad Road	3	3	3	3	3	3	3
EVBMP0005	2012-2013 ELV drainage ditch (pre-ELV-1C ISRA) - OLD	2	2	2	2	2	2	2
EVBMP0006	2012-2013 Area II Road near ELV ditch	1	1	1	1	1	1	1
EVBMP0007	Influent to ELV sedimentation, before treatment	10	10	9	10	10	10	10
EVBMP0008	Effluent from ELV treatment BMP	13	13	11	13	13	13	13
EVBMP0009	Influent to ELV media filter, before treatment	11	11	9	11	11	11	11
EVBMP0010	Area 2 Road Runoff, SD inlet on north side of road	3	3	1	3	3	3	3
HZBMP0001 (HZSW0007)	Happy Valley downstream (pre-improvements) - OLD	13	6	13	13	6	12	12
HZBMP0002 (HZSW0004)	DRG downstream	4	4	4	4	4	4	4
HZBMP0003 (HZSW0003)	DRG downstream (furthest downstream)	15	7	15	15	7	15	15
HZSW0005	DRG upstream	1	0	0	0	0	1	1
HZSW0014	Happy Valley upstream	3	0	3	3	0	0	0
ILBMP0001	Lower parking lot 24" stormdrain bypass	32	32	32	32	32	32	32
ILBMP0002	Road runoff to CM-9, before treatment	23	23	23	23	23	23	23
ILBMP0003	A1LF parking lot - OLD	4	4	4	3	4	4	4
ILBMP0004	Western Concrete Swale (B1436 Southern Detention Bioswale Influent)	16	16	16	16	16	16	16
ILBMP0005 (ILBMP0005-7)	Downstream (B1436 Southern Detention Bioswale)	19	19	19	19	19	19	19
ILBMP0006	Upstream (B1436 Northern Detention Bioswale)	8	8	8	8	8	8	8
ILBMP0007 (ILBMP0005-7)	Northern Detention Bioswale Effluent	19	19	19	19	19	19	19
ILBMP0008	Eastern Concrete Swale (B1436 Southern Detention Bioswale influent)	18	18	18	18	18	18	18
ILSW0003	IEL-2 upstream	2	2	0	2	2	0	0

Location (Co-location)	Description	Number of Sample Results for Indicated COCs						
		TSS	Cd	Cu	Pb	Hg	TCDD TEQ	2,3,7,8 -TCDD
ILSW0004-A	IEL-2 downstream (post-ISRA excavation)	1	1	0	1	1	0	0
ILSW0007	IEL-2 upstream (2014-2015 reporting year)	1	1	0	1	1	0	0
ILSW0008	IEL-2 downstream (2014-2015 reporting year)	1	1	0	1	1	0	0
LFSW0002-A	CTLI downstream (post-ISRA excavation)	3	0	3	3	0	3	3
LPBMP0001	Lower lot sheetflow (pre-gravel bag berms) - OLD	2	2	2	2	2	2	2
LPBMP0001-A	Lower lot sheetflow (post-gravel bag berms)	6	6	6	6	6	6	6
LPBMP0002	Lower parking lot influent to cistern, before treatment	24	24	24	24	24	24	24
LPBMP0003	Lower parking lot sediment basin outlet, before treatment	24	24	24	24	24	24	24
LPBMP0004	Lower parking lot biofilter outlet	25	25	25	25	25	25	25
LXBMP0002	LOX mid - OLD	2	2	2	2	2	2	2
LXBMP0003	LOX east tributary - OLD	6	6	6	6	6	6	6
LXBMP0004	LOX southwest downstream of sandbag berm	5	5	5	5	5	5	5
LXBMP0005	LOX southeast downstream of sandbag berm	5	5	5	5	5	5	5
LXBMP0006 (LXSW0010)	LOX east, runoff along dirt road	5	5	5	5	5	5	4
LXBMP0007	LOX, inlet to western slope drain	1	1	1	1	1	1	1
LXBMP0009 (LXSW0009)	LOX, inlet to eastern slope drain	4	5	5	5	5	4	4
LXBMP0010	Service Area Road BMP – Road Runoff Influent to CM-3	1	1	1	1	1	1	1
LXSW0002	CM-3 downstream (pre-filter fabric over weir boards) - OLD	9	8	9	9	9	9	8
Total number of samples:		756	645	633	741	642	721	719

Notes

- Gray text indicates historical subarea monitoring locations that are discontinued.
- Locations where control practices are being evaluated where zero samples have been collected are excluded from this table.

Table 7, Table 8, and Table 9 summarize the total samples, non-detects (NDs), and J-flagged (DNQ) numbers of observations, along with the minimum, median, and maximum concentration values for each of the COCs for non-background locations at Outfalls 001, 008, and 009, respectively, where control practices are being evaluated.

Table 7. Outfall 001 BMP Subarea monitoring samples – Concentrations (2017/18)

COC	# Samples	# NDs	# DNQ	Min	Median	95th Percentile	Max	Permit Benchmarks for OF001	% Samples Exceeding Benchmarks [b]
2,3,7,8-TCDD	3	3	0	9.80E-07	1.12E-06	1.13E-06	1.13E-06	NA	NA
Cadmium	3	0	0	0.69	1.5	1.77	1.8	3.1	0%
Copper	3	0	0	12.1	16.6	20.56	21	14	67%
Lead	3	0	0	62	68.7	92.19	94.8	5.2	100%
Mercury	3	3	0	0.0453	0.0453	0.0453	0.0453	0.1	0%
TCDD TEQ[a]	3	0	0	2.25E-07	6.12E-06	6.27E-06	6.29E-06	2.80E-08	100%
TSS	3	0	0	216	327	442.2	455	NA	NA

Table 8. Outfall 008 BMP Subarea monitoring samples – Concentrations (2009/10 – 2017/18)

COC	# Samples	# NDs	# DNQ	Min	Median	95th Percentile	Max	Permit Limits for OF008	% Samples Exceeding Permit Limit [b]
2,3,7,8-TCDD	32	31	32	3.00E-08	1.58E-06	4.56E-06	6.07E-06	NA	NA
Cadmium	17	14	17	0.1	0.1	0.32	0.6	3.1	0%
Copper	35	0	10	0.94	2.9	13.6	19	14	6%
Lead	35	10	19	0.2	0.9	15.5	19	5.2	11%
Mercury	17	17	17	0.1	0.1	0.1	0.1	0.13	0%
TCDD TEQ[a]	32	11	0	1E-12	2.50E-11	2.61E-06	1.56E-05	2.80E-08	22%
TSS	36	6	14	1	17	390	840	NA	NA

Table 9. Outfall 009 BMP Subarea monitoring samples – Concentrations (2009/10 – 2017/18)

COC	# Samples	# NDs	# DNQ	Min	Median	95th Percentile	Max	Permit Limits for OF009	% Samples Exceeding Permit Limit [b]
2,3,7,8-TCDD	684	661	323	2.00E-08	6.35E-07	5.33E-06	2.20E-05	NA	NA
Cadmium	625	437	287	0.1	0.25	0.6928	6.8	4	0%
Copper	595	17	16	0.14	6.6	22.3	86	13	15%
Lead	703	47	125	0.0898	2.5	19	465	5.2	24%
Mercury	622	586	277	0.0453	0.1	0.12	1.7	0.13	4%
TCDD TEQ[a]	686	39	0	1E-12	1.23E-07	1.11E-05	4.00E-04	2.80E-08	67%
TSS	717	41	96	0.5	18	209.2	4290	NA	NA

Notes for Tables 7 – 9.

- Units are in mg/L for TSS, µg/L otherwise
- (a) Permit limit or benchmark applies to TCDD TEQ (no DNQ), while this comparison is made with TCDD TEQ.
- (b) The percent of samples exceeding the permit limit or benchmark was calculated by dividing the sum of concentration results greater than the permit limit by the sum of all sampled results for each COC. If non-detect results (reported equal to the DL) are greater than the permit limit, they are included in this calculation.
- No substitution assumptions were made in the attempt to quantify NDs. For example, "< 0.20" refers to a non-detect with a detection limit of 0.20 µg/L.
- RWQCB split sample results excluded.
- NA = No permit limit or benchmark is defined for the given COC.
- Highlighted values exceed the permit limit or benchmark for that COC.
- J flagged/DNQ results are included for all COCs.
- With the exception of cadmium, which had all ND or J-flagged/estimated results, assumptions regarding the treatment of J-flag (or DNQ) results do not impact the 95th percentile stormwater background thresholds for any COC.
- Metals results shown here are for the total form only, consistent with the permit limits or benchmarks.

3 Statistical Analysis

To allow for a visual and probabilistic comparison of the available stormwater sampling data, Figure 2 through Figure 7 show probability plots of the COC results collected from October 2004 to March 2018 at locations grouped into the following categories:

- Stormwater background;
- Potential BMP subarea;
- Outfall 008 (for comparison only); and
- Outfall 009 (for comparison only).

Outfall 001 is not included because of the limited number of samples collected since sampling was instated in the 2017/18 reporting year. Previous version of this analysis separated Outfall 008 and 009 results into pre-2009 and post-2009 datasets. Pre-2009 results represent grab samples and post-2009 results represent flow-weighted composite samples. However, recent statistical tests performed on these data showed no statistically significant differences between these datasets, and as such, these data have been presented as a single series for each outfall.

The x-axes show COC concentrations or PS and the y-axes show the probability of non-exceedance of (or probability that values are below) the given x-axis values. The Cunnane equation (Helsel and Hirsch, 1992) was used to compute the plotting positions, and a best-fit line (assuming a lognormal distribution) is shown for the stormwater background data. Note that non-detect results were included in computing the plotting positions but are not actually plotted (the other data observations are offset in their plotting position to appropriately consider the non-detect data in order to accurately estimate probability values). In general, these plots show that stormwater background concentrations exceed[17] NPDES permit limits for lead at ~18% probability, for TCDD TEQ at ~28% probability (although this estimated probability is zero when DNQ results are excluded), for copper at ~1% probability, and do not exceed the NPDES permit limits for cadmium. The 2,3,7,8-TCDD charts show very few data points because this congener is so rarely detected. Also, most of these 2,3,7,8-TCDD detections are lab estimates (i.e., DNQ) and not quantified at high reliability values. 2,3,7,8-TCDD was also never detected in a stormwater background sample. Furthermore, to increase the resolution for the purpose of relative comparison between sites, dioxin congener DNQ results are included for this analysis in contrast to NPDES reporting practice, which does not include DNQs; therefore, the NPDES outfall results that are shown above the permit limits here do not reflect past NPDES exceedances at concentrations shown.

Figure 1 provides a key for the COC probability charts. The yellow area includes observations that were less than background conditions, but still exceeded the permit limits. The blue area includes observations that were less than both the stormwater background best-fit line and the permit limit. The red area includes data that exceeded both the stormwater background conditions and permit limits,

[17] The term "exceed" is being used here as a statistical term only, indicating the likely probability of occurrence. It indicates values that are greater than a given threshold. It is not intended to have regulatory or non-compliance implications. This is particularly true for TCDD TEQ data, which include DNQ results here for statistical analysis purposes, in contrast to NPDES compliance assessment procedures, which require greater reliability for reporting and do not include DNQ results.

while the green area includes observations that exceeded the stormwater background conditions but not the permit limits. Fundamentally, the question is, "Which subareas most likely contribute to downstream permit limit exceedances as a result of elevated COC concentrations that are most likely due to particulate strengths that are above subarea-specific background levels?" These subareas will be identified by potential BMP subarea stormwater sampling results that fall to the right of the Permit limit in the concentration chart (yellow and red areas) **and** fall to the right of the stormwater background best-fit line on the particulate strength chart (in the green and red areas), or in other words, those samples and subareas which may contribute to downstream permit limit exceedances but their elevated COC concentrations are most likely due to particulate strengths that are above subarea-specific stormwater background levels. As will be discussed later in this report, the subareas with data that fall within the red area will receive the highest scores for prioritizing subareas for new or enhanced stormwater controls. Depending on the results for other COCs at an evaluation location, data within the green and yellow areas may also become a factor in prioritizing potential BMP subareas.

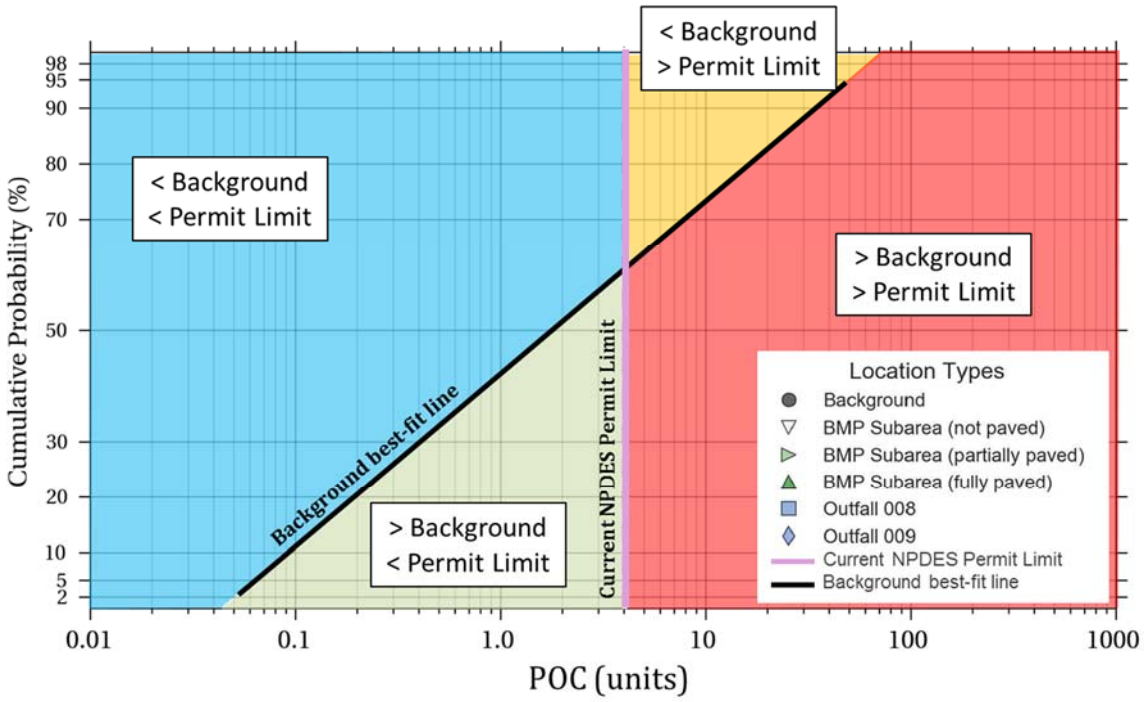


Figure 1. Probability Plot Key

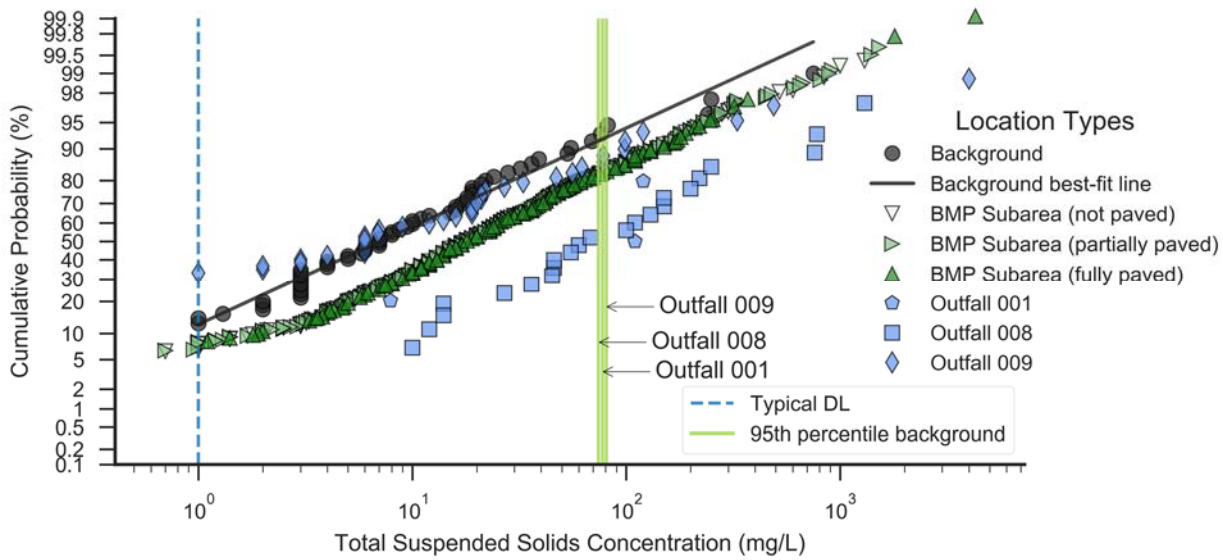


Figure 2. Probability plot for TSS concentrations[18]

[18] Note: Following the 2005 wildfire, an uncharacteristically high TSS value (4,000 mg/L) was measured at Outfall 009 on 10/17/2005.

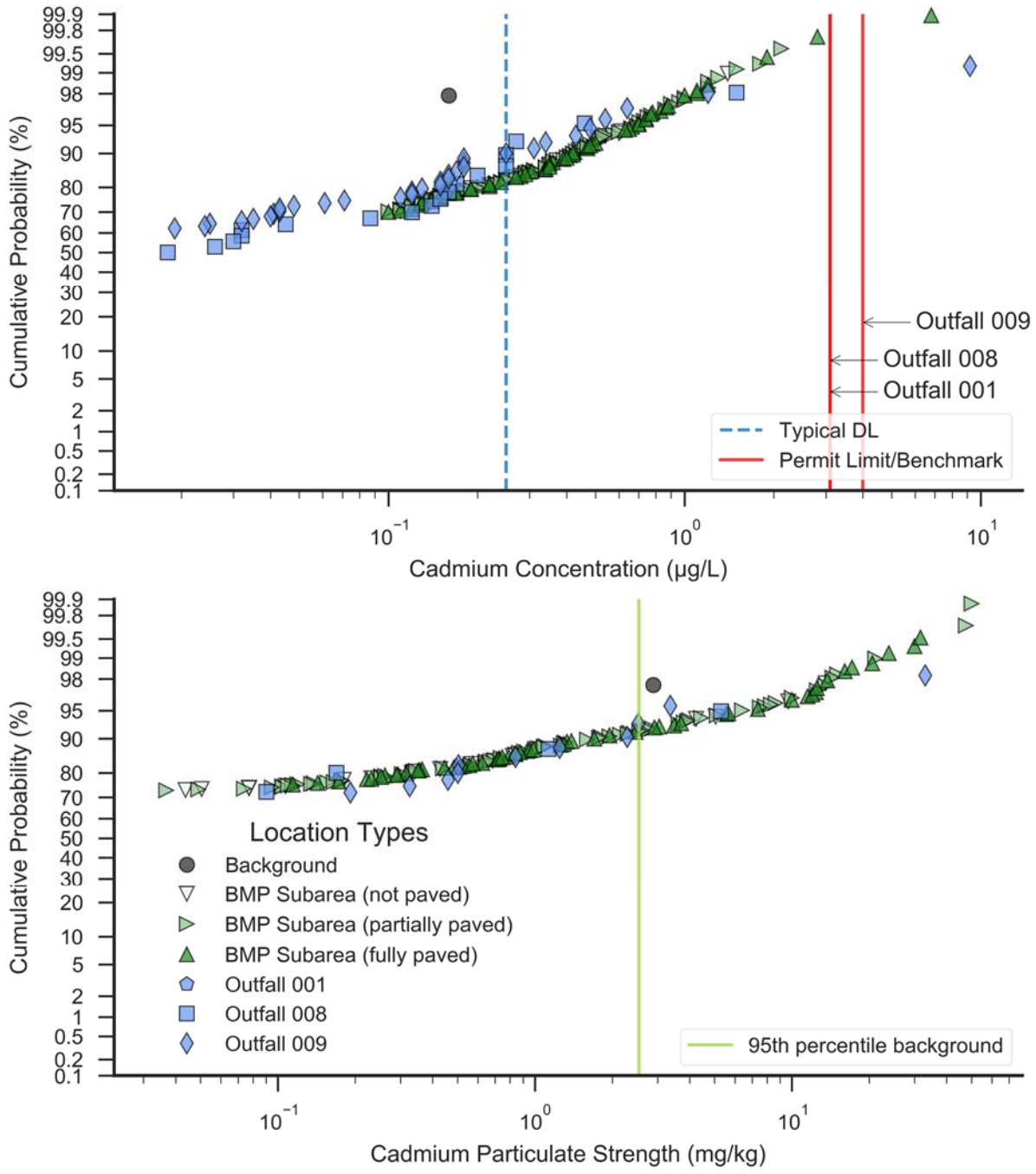


Figure 3. Probability plots for cadmium concentrations and particulate strengths[19, 20]

[19] Following the 2005 wildfires, an uncharacteristically high cadmium concentration (9.2 µg/L) was measured at Outfall 009 on 10/17/2005.

[20] A background best-fit line was not provided for total cadmium due to the limited number of background-detected results.

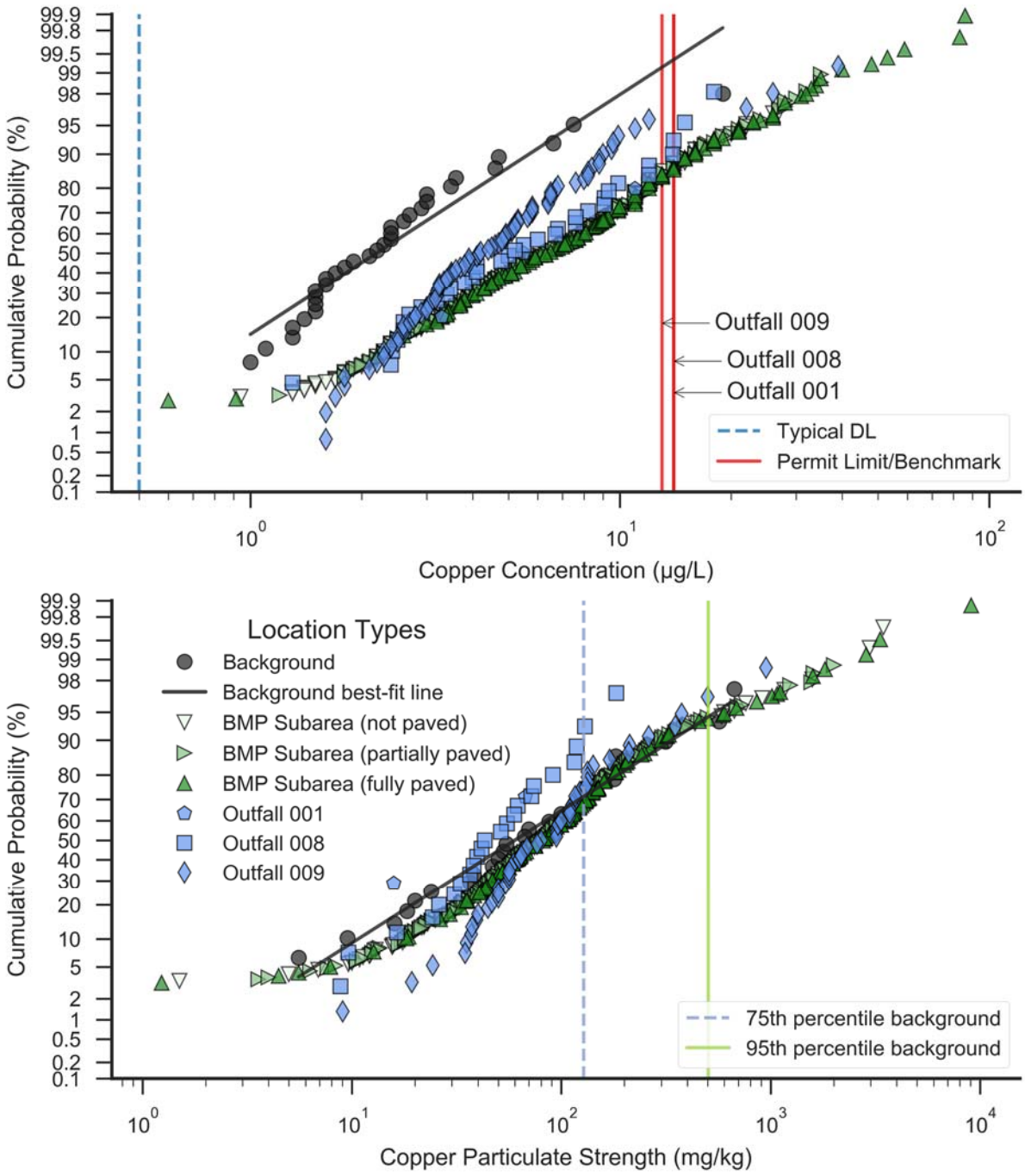


Figure 4. Probability plots for copper concentrations and particulate strengths

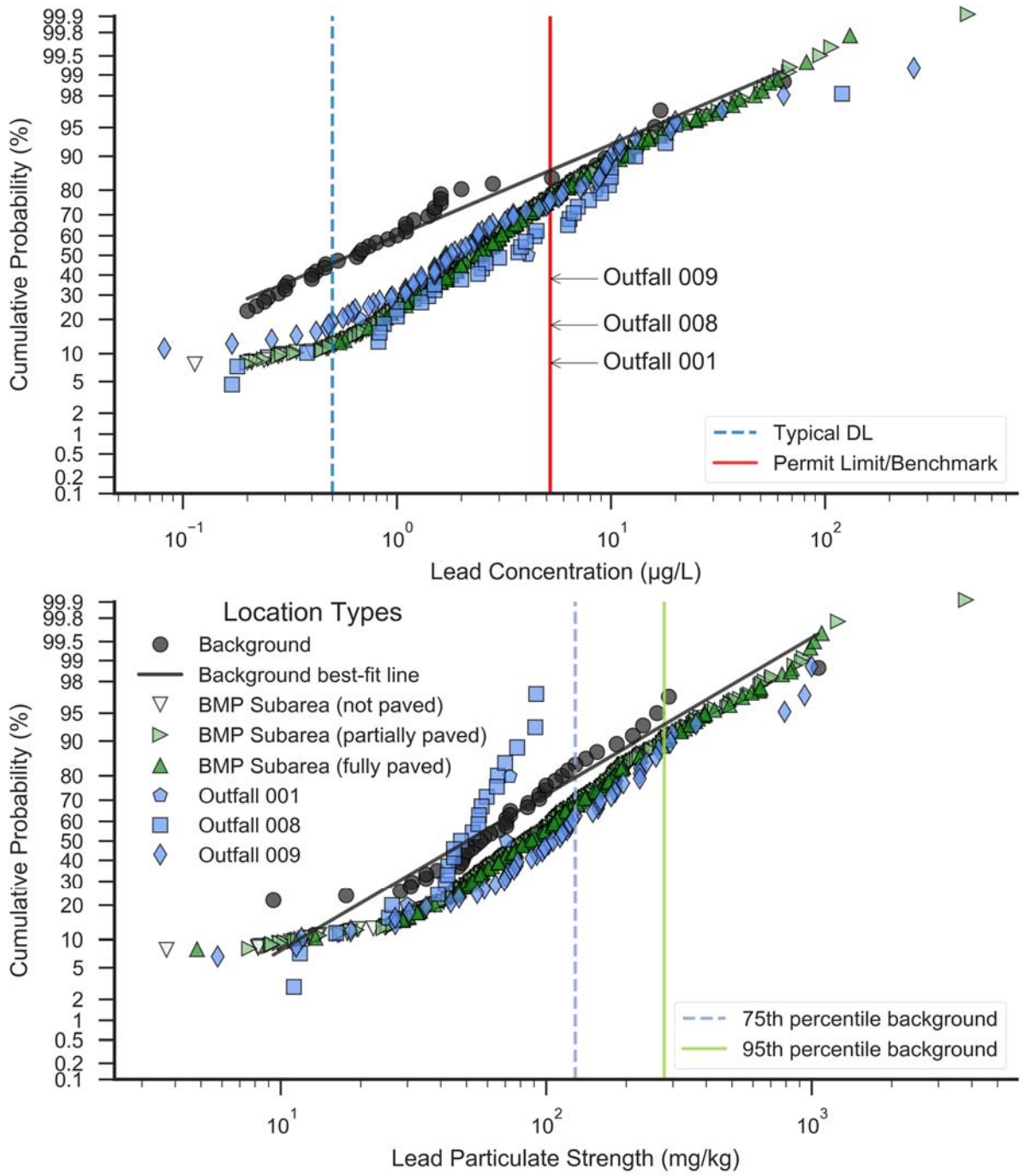


Figure 5. Probability plots for lead concentrations and particulate strengths[21]

[21] Following the 2005 wildfires, an uncharacteristically high lead concentration (260 µg/L) was measured at Outfall 009 on 10/17/2005.

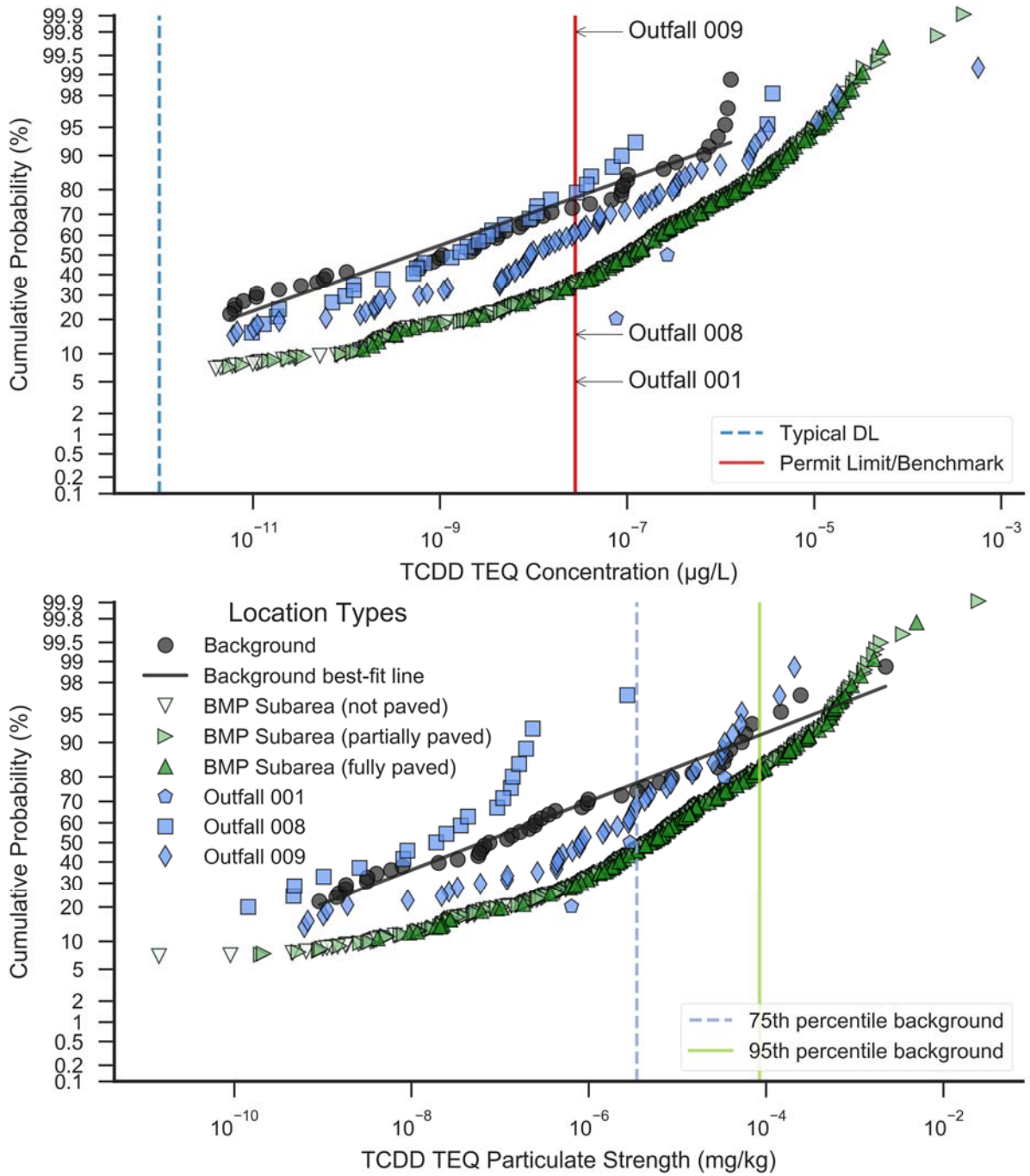


Figure 6. Probability plots for TCDD TEQ concentrations and particulate strengths[22]

[22] Following the 2005 wildfires, an uncharacteristically high TCDD TEQ concentration (3.6×10^{-4} µg/L) was measured at Outfall 009 on 10/17/2005.

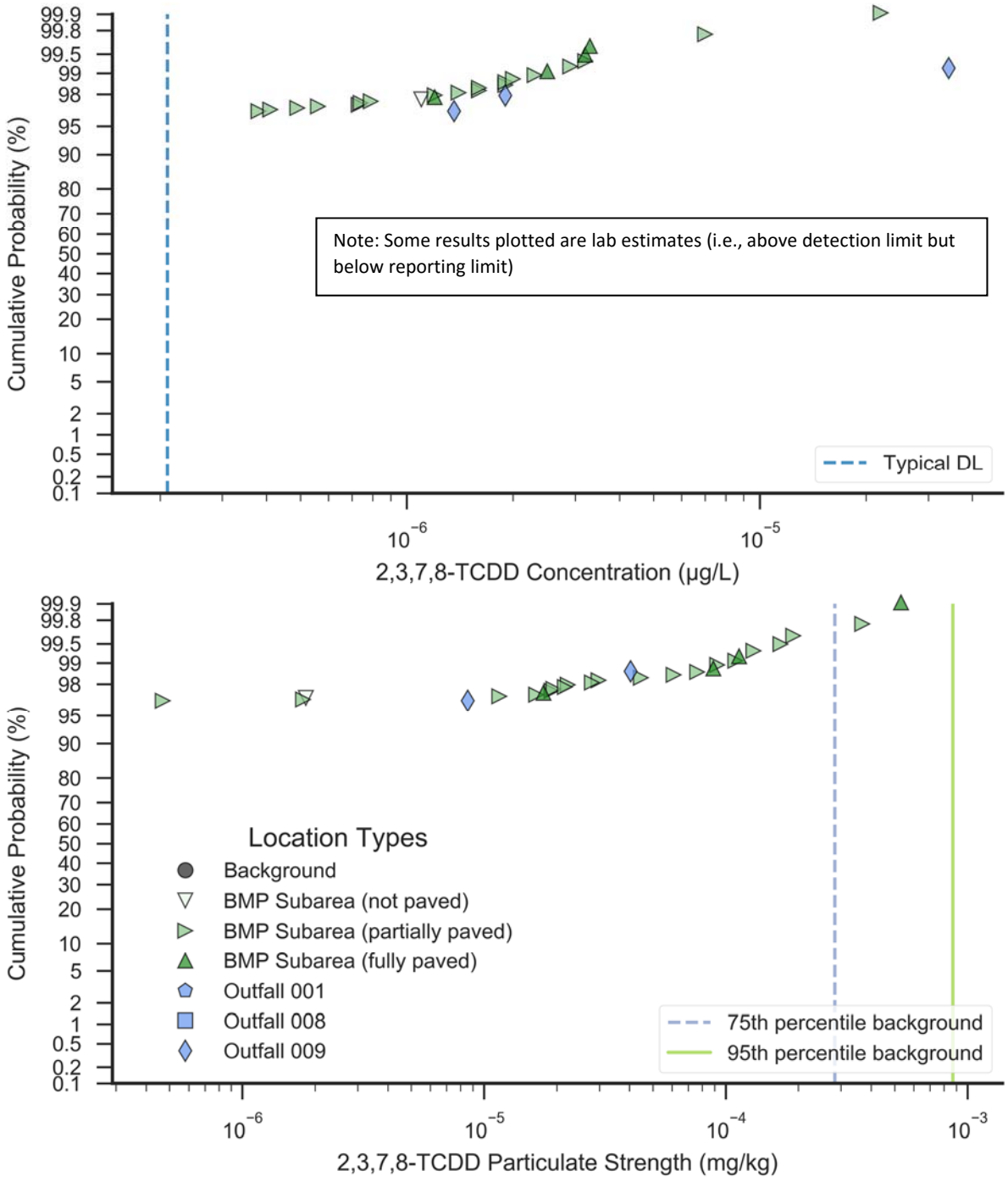


Figure 7. Probability plots for 2,3,7,8-TCDD concentrations and particulate strengths[23]

[23] Following the 2005 wildfires, an uncharacteristically high 2,3,7,8-TCDD concentration (3.4×10^{-5} µg/L) was measured at Outfall 009 on 10/17/2005.

4 Results

Subareas were ranked based on the results of comparisons between (a) stormwater concentrations and permit limits[24], and (b) stormwater particulate strengths and stormwater background particulate strengths to identify potential stormwater control locations. A statistical methodology (see Attachment 5) was developed to rank the subareas based on these comparison results, while accounting for the number of data available at each subarea as well as number of data observations that fall above these thresholds (i.e., reflecting statistical confidence in how frequently each subarea will exceed the comparison thresholds). This methodology relies on "weighting factors" (WFs) that are calculated for each COC for each subarea. The potential BMP subareas have been weighted based on general guidelines for small sample sets. The weighting methodology is described in more detail in Attachment 5 in the appendix.

Pollutant-specific weighting factors are summed for each potential BMP subarea to produce a multi-constituent score to allow for relative ranking amongst the potential BMP subareas. The highest ranked subareas are then recommended for consideration for new or enhanced stormwater control placement. In the case of tied scores, the average of the ranks is assigned to both subareas. Results for each BMP subarea and background monitoring subarea are summarized in Tables 10, 11, and 12 (subareas are organized by weight, ranked highest to lowest).

Table 10. Metals Weighting Factor Results, by Subarea

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	Maximum Metal Weight
1	ILBMP0007 (ILBMP0005-7)	Outfall 009	Northern Detention Bioswale Effluent	0.99
2	**ILBMP0002**	**Outfall 009**	**Road runoff to CM-9, before treatment**	**0.98**
3	**A2BMP0008**	**Outfall 009**	**Well 13 Road Runoff, north side - OLD**	**0.94**
4	EVBMP0004	Outfall 009	2012-2013 Lower Helipad Road	0.89
5	**EVBMP0003 (A2SW0001)**	**Outfall 009**	**CM-1 upstream west, pre-ELV improvements, before treatment - OLD**	**0.80**
7	**CABMP0001**	**Outfall 001**	**Driveway downgradient of hydrogen gas storage tank**	**0.75**
7	**CABMP0003**	**Outfall 001**	**Road runoff downstream of hydrogen gas facility**	**0.75**

[24] If non-TSS concentration results were higher than the applicable exceedance limit, the result was flagged as an exceedance. For TSS however, there is no exceedance limit. Instead, the 95th percentile concentration for background locations in Outfall 008 and 009 were individually computed. Then, all results in the Outfall 008 and 009 watersheds were compared against their respective watershed's 95th percentile background value to flag surrogate exceedance results. This procedure was not applied to TSS in the Outfall 001 watershed because no background results were available; therefore, the average (arithmetic mean) of the Outfall 008 and Outfall 009 TSS thresholds was used as a surrogate exceedance limit for samples collected in Outfall 001.

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	Maximum Metal Weight
7	A1SW0009-A	Outfall 009	CM-9 downstream-underdrain outlet (post-A1LF asphalt removal, pre-filter fabric over weir boards) - OLD	0.75
9	APBMP0001	Outfall 009	Road runoff to ashpile culvert inlet, pre-ELV improvements - OLD	0.69
15	EVBMP0006	Outfall 009	2012-2013 Area II Road near ELV ditch	0.5
15	BGBMP0005 (EPNDSW07)	Outfall 009	Sage ranch near entrance	0.5
15	CABMP0002	Outfall 001	Driveway downgradient of hydrogen gas facility buildings	0.5
15	B1BMP0001 (B1SW0010)	Outfall 009	B1 media filter inlet (pre-media filter installation)	0.5
15	APBMP0001-A	Outfall 009	Area II road runoff, post-ELV stormwater improvements	0.5
15	B1SW0014-A	Outfall 009	B1 media filter effluent (pre-media filter reconstruction) - OLD	0.5
15	B1SW0002	Outfall 009	Woolsey Canyon Road Runoff, before treatment	0.5
15	HZSW0020 (HZSW0017)	Outfall 008	Background - Happy Valley upstream	0.5
15	A1BMP0004	Outfall 009	Area 2 Road Runoff, SD inlet on north side of road	0.5
15	LXBMP0004	Outfall 009	LOX southwest downstream of sandbag berm	0.5
15	LXBMP0010	Outfall 009	Service Area Road BMP – Road Runoff Influent to CM-3	0.5
21	A1SW0009-B	Outfall 009	CM-9 downstream-underdrain outlet (post-filter fabric over weir boards, post-A1LF asphalt removal) - OLD	0.39
22	EVBMP0010	Outfall 009	Area 2 Road Runoff, SD inlet on north side of road	0.34
24.5	HZSW0011	Outfall 008	Background - Happy Valley upstream	0.31
24.5	LPBMP0001	Outfall 009	Lower lot sheetflow (pre-gravel bag berms) - OLD	0.31
24.5	APSW0014	Outfall 009	AP/STP-1ABCDE downstream	0.31
24.5	LXBMP0002	Outfall 009	LOX mid - OLD	0.31
27	EVBMP0002	Outfall 009	Helipad (pre-sandbag berms) - OLD	0.27
28	A1BMP0001	Outfall 009	A1LF downstream, before treatment	0.25
29	LPBMP0001-A	Outfall 009	Lower lot sheetflow (post-gravel bag berms)	0.17
30	ILBMP0008	Outfall 009	Eastern Concrete Swale (B1436 Southern Detention Bioswale influent)	0.12
31.5	EPNDSW03	Outfall 009	Northern Drainage downstream of LOX	0.12
31.5	EPNDSW04	Outfall 009	Northern Drainage downstream of box culvert	0.12

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	Maximum Metal Weight
35	HZBMP0002 (HZSW0004)	Outfall 008	DRG downstream	0.11
35	LFSW0002-A	Outfall 009	CTLI downstream (post-ISRA excavation)	0.11
35	A2BMP0004	Outfall 009	Helipad culvert outlet	0.11
35	BGBMP0002 (LXSW0003)	Outfall 009	Background - CM-3 upstream, before treatment	0.11
35	Outfall 001	Outfall 001	NPDES Outfall 001	0.11
38.5	B1SW0014-B	Outfall 009	B1 media filter effluent (post-media filter reconstruction) - OLD	0.04
38.5	A2BMP0005	Outfall 009	A2 u/s of CM-1 confluence	0.04
40	**LXBMP0003**	**Outfall 009**	**LOX east tributary - OLD**	**0.03**
41	**EVBMP0002-B**	**Outfall 009**	**Helipad (post-sandbag berms raised, post-drainage holes in asphalt)**	**0.02**
42.5	LXBMP0009 (LXSW0009)	Outfall 009	LOX, inlet to eastern slope drain	0.02
42.5	A2BMP0009	Outfall 009	Well 13 Road Runoff, east of OF0009 autosamplers	0.02
44	**EPNDSW01**	**Outfall 009**	**Northern Drainage above confluence with Area II drainage**	**0.02**
45.5	A2BMP0011	Outfall 009	Well 13 and Area 2 Road Runoff	0.01
45.5	**B1BMP0009**	**Outfall 009**	**Upper Lot Media Filter – Road Culvert Influent**	**0.01**
50.5	**HZBMP0003 (HZSW0003)**	**Outfall 008**	**DRG downstream (furthest downstream)**	**0.01**
50.5	EPNDSW02	Outfall 009	Area II drainage above confluence with Northern Drainage	0.01
50.5	EVBMP0002-A	Outfall 009	Helipad (post-sandbag berms) - OLD	0.01
50.5	A1SW0005	Outfall 009	CM-9 downstream (pre-filter fabric over weir boards) - OLD	0.01
50.5	LXBMP0006 (LXSW0010)	Outfall 009	LOX east, runoff along dirt road	0.01
50.5	**BGBMP0007 (LXSW0001)**	**Outfall 009**	**Background - CM-3 upstream, before treatment**	**0.01**
50.5	**BGBMP0006 (A2SW0006)**	**Outfall 009**	**Background - CM-1 upstream east tributary (ponded footprint), before treatment**	**0.01**
50.5	LXBMP0005	Outfall 009	LOX southeast downstream of sandbag berm	0.01
80.5	ILBMP0003	Outfall 009	A1LF parking lot - OLD	0
80.5	**ILBMP0004**	**Outfall 009**	**Western Concrete Swale (B1436 Southern Detention Bioswale Influent)**	**0**
80.5	**ILBMP0005 (ILBMP0005-7)**	**Outfall 009**	**Downstream (B1436 Southern Detention Bioswale)**	**0**
80.5	LXSW0002	Outfall 009	CM-3 downstream (pre-filter fabric over weir boards) - OLD	0

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	Maximum Metal Weight
80.5	**A1BMP0002 (A1SW0004)**	**Outfall 009**	**CM-9 upstream toward A1LF (pre-A1LF asphalt removal), before treatment - OLD**	**0**
80.5	ILBMP0006	Outfall 009	Upstream (B1436 Northern Detention Bioswale)	0
80.5	LXBMP0007	Outfall 009	LOX, inlet to western slope drain	0
80.5	A1SW0007	Outfall 009	CM-11 downstream (pre-filter fabric over weir boards) - OLD	0
80.5	A1SW0006	Outfall 009	Background - CM-11 upstream, before treatment	0
80.5	**LPBMP0004**	**Outfall 009**	**Lower parking lot biofilter outlet**	**0**
80.5	LPBMP0003	Outfall 009	Lower parking lot sediment basin outlet, before treatment	0
80.5	ILSW0004-A	Outfall 009	IEL-2 downstream (post-ISRA excavation)	0
80.5	ILSW0007	Outfall 009	IEL-2 upstream (2014-2015 reporting year)	0
80.5	ILSW0008	Outfall 009	IEL-2 downstream (2014-2015 reporting year)	0
80.5	**A1BMP0002-A (A1SW0004-A)**	**Outfall 009**	**CM-9 upstream toward A1LF (post-A1LF asphalt removal), before treatment**	**0**
80.5	A1SW0002	Outfall 009	Background - CM-8 upstream, before treatment	0
80.5	**A1SW0009-C (A1BMP0003)**	**Outfall 009**	**CM-9 downstream-underdrain outlet (post-perforated pipe and upper basin installed)**	**0**
80.5	A1SW0003	Outfall 009	CM-8 downstream (pre-filter fabric over weir boards) - OLD	0
80.5	LPBMP0002	Outfall 009	Lower parking lot influent to cistern, before treatment	0
80.5	ILSW0003	Outfall 009	IEL-2 upstream	0
80.5	**ILBMP0001**	**Outfall 009**	**Lower parking lot 24" stormdrain bypass**	**0**
80.5	B1BMP0010	Outfall 009	Upper Lot Media Filter – Parking Lot Influent	0
80.5	HZSW0014	Outfall 008	Happy Valley upstream	0
80.5	B1BMP0011	Outfall 009	Upper Lot Media Filter - Effluent	0
80.5	B1BMP0008	Outfall 009	B1 storm drain culvert outlet	0
80.5	B1SW0008	Outfall 009	B1 upstream	0
80.5	B1BMP0007	Outfall 009	B1, vegetated channel	0
80.5	B1SW0014-C (B1BMP0006)	Outfall 009	B1 media filter effluent (post-media filter reconstruction, post-curb cuts)	0
80.5	BGBMP0001 (A2BMP0006, A2SW0007)	Outfall 009	Background - CM-1 upstream east tributary, before treatment	0
80.5	BGBMP0003	Outfall 009	Background - Sage Ranch near LOX	0
80.5	**BGBMP0004 (EPNDSW05)**	**Outfall 009**	**Background - Sage Ranch near CM-5**	**0**

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	Maximum Metal Weight
80.5	B1BMP0005 (B1BMP0004-5, B1SW0011, B1SW0013)	Outfall 009	B1 media filter inlet south, before treatment	0
80.5	B1BMP0004 (B1BMP0004-5, B1SW0015)	Outfall 009	B1 media filter inlet north, before treatment	0
80.5	B1BMP0003 (B1BMP0002)	Outfall 009	Upper parking lot / road runoff to B1 area culvert inlet	0
80.5	**A2SW0002-A (A2BMP0007)**	**Outfall 009**	**CM-1 effluent (post-filter fabric over weir boards)**	**0**
80.5	A2SW0002	Outfall 009	CM-1 effluent (pre-filter fabric over weir boards) - OLD	0
80.5	Outfall 008	Outfall 008	NPDES Outfall 008	0
80.5	EPNDSW06	Outfall 009	Northern Drainage downstream of IEL stormdrain outlet discharge	0
80.5	**EVBMP0001-A**	**Outfall 009**	**ELV culvert inlet (helipad road and ELV ditch, composite)**	**0**
80.5	A2BMP0010	Outfall 009	Well 13 Road Runoff, west side	0
80.5	EVBMP0003-A	Outfall 009	CM-1 upstream west, post-ELV improvements, before treatment	0
80.5	EVBMP0005	Outfall 009	2012-2013 ELV drainage ditch (pre-ELV-1C ISRA) - OLD	0
80.5	**EVBMP0007**	**Outfall 009**	**Influent to ELV sedimentation, before treatment**	**0**
80.5	EVBMP0008	Outfall 009	Effluent from ELV treatment BMP	0
80.5	EVBMP0009	Outfall 009	Influent to ELV media filter, before treatment	0
80.5	HZBMP0001 (HZSW0007)	Outfall 008	Happy Valley downstream (pre-improvements) - OLD	0
80.5	HZSW0005	Outfall 008	DRG upstream	0
80.5	HZSW0008	Outfall 008	Background - Happy Valley upstream	0
80.5	A2BMP0003	Outfall 009	A2 u/s of ND confluence	0
80.5	HZSW0012	Outfall 008	Background - Happy Valley upstream	0
80.5	A2BMP0002	Outfall 009	A2LF drainage east	0
80.5	**Outfall 009**	**Outfall 009**	**NPDES Outfall 009**	**0**

Notes

- Potential BMP subareas sorted by maximum weight for the COC group, computed as described in Attachment 5.
- (**)NPDES outfalls are included for comparison and method testing purposes only; stormwater controls are not being contemplated at these locations.
- The rounding of weights may account for similar weights being ranked differently.
- **Bolded** locations indicate that both the metals NPDES permit limit and 95th percentile background particulate strength threshold were exceeded (for at least one metals COC).
- Gray text indicates historical subarea monitoring locations that are discontinued.
- Monitoring locations with zero samples collected are excluded from this table.

Table 11. Dioxins Weighting Factor Results, by Subarea

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	Maximum Dioxin Weight
1	LPBMP0002	Outfall 009	Lower parking lot influent to cistern, before treatment	0.999
2	B1BMP0009	Outfall 009	Upper Lot Media Filter – Road Culvert Influent	0.998
3	B1BMP0010	Outfall 009	Upper Lot Media Filter – Parking Lot Influent	0.979
4	B1BMP0004 (B1BMP0004-5, B1SW0015)	Outfall 009	B1 media filter inlet north, before treatment	0.956
5.5	EVBMP0003 (A2SW0001)	Outfall 009	CM-1 upstream west, pre-ELV improvements, before treatment - OLD	0.934
5.5	ILBMP0008	Outfall 009	Eastern Concrete Swale (B1436 Southern Detention Bioswale influent)	0.934
7.5	EVBMP0002	Outfall 009	Helipad (pre-sandbag berms) - OLD	0.93
7.5	LPBMP0001-A	Outfall 009	Lower lot sheetflow (post-gravel bag berms)	0.93
9	ILBMP0004	Outfall 009	Western Concrete Swale (B1436 Southern Detention Bioswale Influent)	0.89
10.5	B1BMP0003 (B1BMP0002)	Outfall 009	Upper parking lot / road runoff to B1 area culvert inlet	0.85
10.5	ILBMP0002	Outfall 009	Road runoff to CM-9, before treatment	0.85
12.5	EPNDSW03	Outfall 009	Northern Drainage downstream of LOX	0.76
12.5	EPNDSW06	Outfall 009	Northern Drainage downstream of IEL stormdrain outlet discharge	0.76
14	ILBMP0001	Outfall 009	Lower parking lot 24" stormdrain bypass	0.73
15.5	B1SW0008	Outfall 009	B1 upstream	0.69
15.5	B1BMP0011	Outfall 009	Upper Lot Media Filter - Effluent	0.69
17	A2BMP0005	Outfall 009	A2 u/s of CM-1 confluence	0.64
18.5	A1SW0009-B	Outfall 009	CM-9 downstream-underdrain outlet (post-filter fabric over weir boards, post-A1LF asphalt removal) - OLD	0.63
18.5	EPNDSW02	Outfall 009	Area II drainage above confluence with Northern Drainage	0.63
20	BGBMP0004 (EPNDSW05)	Outfall 009	Background - Sage Ranch near CM-5	0.60
21	EPNDSW04	Outfall 009	Northern Drainage downstream of box culvert	0.59
22	EVBMP0001-A	Outfall 009	ELV culvert inlet (helipad road and ELV ditch, composite)	0.58
23	LPBMP0003	Outfall 009	Lower parking lot sediment basin outlet, before treatment	0.56
32.5	A1SW0009-A	Outfall 009	CM-9 downstream-underdrain outlet (post-A1LF asphalt removal, pre-filter fabric over weir boards) - OLD	0.5
32.5	CABMP0001	Outfall 001	Driveway downgradient of hydrogen gas storage tank	0.5

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	Maximum Dioxin Weight
32.5	CABMP0002	Outfall 001	Driveway downgradient of hydrogen gas facility buildings	0.5
32.5	CABMP0003	Outfall 001	Road runoff downstream of hydrogen gas facility	0.5
32.5	**LFSW0002-A**	**Outfall 009**	**CTLI downstream (post-ISRA excavation)**	**0.5**
32.5	B1SW0014-B	Outfall 009	B1 media filter effluent (post-media filter reconstruction) - OLD	0.5
32.5	B1SW0014-A	Outfall 009	B1 media filter effluent (pre-media filter reconstruction) - OLD	0.5
32.5	A2BMP0002	Outfall 009	A2LF drainage east	0.5
32.5	**B1SW0002**	**Outfall 009**	**Woolsey Canyon Road Runoff, before treatment**	**0.5**
32.5	LXBMP0010	Outfall 009	Service Area Road BMP – Road Runoff Influent to CM-3	0.5
32.5	B1BMP0008	Outfall 009	B1 storm drain culvert outlet	0.5
32.5	Outfall 001	Outfall 001	NPDES Outfall 001	0.5
32.5	A2BMP0008	Outfall 009	Well 13 Road Runoff, north side - OLD	0.5
32.5	LPBMP0001	Outfall 009	Lower lot sheetflow (pre-gravel bag berms) - OLD	0.5
32.5	EVBMP0005	Outfall 009	2012-2013 ELV drainage ditch (pre-ELV-1C ISRA) - OLD	0.5
32.5	EVBMP0006	Outfall 009	2012-2013 Area II Road near ELV ditch	0.5
32.5	APBMP0001	Outfall 009	Road runoff to ashpile culvert inlet, pre-ELV improvements - OLD	0.5
32.5	LXBMP0002	Outfall 009	LOX mid - OLD	0.5
42	**EVBMP0003-A**	**Outfall 009**	**CM-1 upstream west, post-ELV improvements, before treatment**	**0.42**
43	**EVBMP0002-B**	**Outfall 009**	**Helipad (post-sandbag berms raised, post-drainage holes in asphalt)**	**0.41**
44	**EPNDSW01**	**Outfall 009**	**Northern Drainage above confluence with Area II drainage**	**0.41**
45	APBMP0001-A	Outfall 009	Area II road runoff, post-ELV stormwater improvements	0.38
46	HZBMP0002 (HZSW0004)	Outfall 008	DRG downstream	0.36
48	EVBMP0010	Outfall 009	Area 2 Road Runoff, SD inlet on north side of road	0.34
48	B1BMP0001 (B1SW0010)	Outfall 009	B1 media filter inlet (pre-media filter installation)	0.34
48	A2BMP0004	Outfall 009	Helipad culvert outlet	0.34
50.5	APSW0014	Outfall 009	AP/STP-1ABCDE downstream	0.31
50.5	BGBMP0005 (EPNDSW07)	Outfall 009	Sage ranch near entrance	0.31
52	B1BMP0007	Outfall 009	B1, vegetated channel	0.27

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	Maximum Dioxin Weight
53	B1BMP0005 (B1BMP0004-5, B1SW0011, B1SW0013)	Outfall 009	B1 media filter inlet south, before treatment	0.24
54	ILBMP0006	Outfall 009	Upstream (B1436 Northern Detention Bioswale)	0.23
55	B1SW0014-C (B1BMP0006)	Outfall 009	B1 media filter effluent (post-media filter reconstruction, post-curb cuts)	0.21
56	**A1BMP0004**	**Outfall 009**	**Area 2 Road Runoff, SD inlet on north side of road**	**0.19**
57	A2SW0002	Outfall 009	CM-1 effluent (pre-filter fabric over weir boards) - OLD	0.19
58.5	LXBMP0005	Outfall 009	LOX southeast downstream of sandbag berm	0.17
58.5	EVBMP0002-A	Outfall 009	Helipad (post-sandbag berms) - OLD	0.17
60	**A1SW0009-C (A1BMP0003)**	**Outfall 009**	**CM-9 downstream-underdrain outlet (post-perforated pipe and upper basin installed)**	**0.14**
61	EVBMP0004	Outfall 009	2012-2013 Lower Helipad Road	0.11
62	A2BMP0003	Outfall 009	A2 u/s of ND confluence	0.11
63	**A2SW0002-A (A2BMP0007)**	**Outfall 009**	**CM-1 effluent (post-filter fabric over weir boards)**	**0.10**
64	LXBMP0003	Outfall 009	LOX east tributary - OLD	0.07
65.5	LXBMP0006 (LXSW0010)	Outfall 009	LOX east, runoff along dirt road	0.05
65.5	**A1BMP0001**	**Outfall 009**	**A1LF downstream, before treatment**	**0.05**
67.5	BGBMP0002 (LXSW0003)	Outfall 009	Background - CM-3 upstream, before treatment	0.04
67.5	ILBMP0003	Outfall 009	A1LF parking lot - OLD	0.04
69	A2BMP0011	Outfall 009	Well 13 and Area 2 Road Runoff	0.038
70	**ILBMP0005 (ILBMP0005-7)**	**Outfall 009**	**Downstream (B1436 Southern Detention Bioswale)**	**0.036**
71	BGBMP0006 (A2SW0006)	Outfall 009	Background - CM-1 upstream east tributary (ponded footprint), before treatment	0.03
72	**A1BMP0002-A (A1SW0004-A)**	**Outfall 009**	**CM-9 upstream toward A1LF (post-A1LF asphalt removal), before treatment**	**0.026**
73	**EVBMP0007**	**Outfall 009**	**Influent to ELV sedimentation, before treatment**	**0.021**
74	A2BMP0009	Outfall 009	Well 13 Road Runoff, east of OF0009 autosamplers	0.02
76	BGBMP0003	Outfall 009	Background - Sage Ranch near LOX	0.01
76	A1SW0005	Outfall 009	CM-9 downstream (pre-filter fabric over weir boards) - OLD	0.01
76	LXBMP0004	Outfall 009	LOX southwest downstream of sandbag berm	0.01
92	A2BMP0010	Outfall 009	Well 13 Road Runoff, west side	0

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	Maximum Dioxin Weight
92	A1SW0006	Outfall 009	Background - CM-11 upstream, before treatment	0
92	A1SW0003	Outfall 009	CM-8 downstream (pre-filter fabric over weir boards) - OLD	0
92	A1SW0002	Outfall 009	Background - CM-8 upstream, before treatment	0
92	LXBMP0007	Outfall 009	LOX, inlet to western slope drain	0
92	LXBMP0009 (LXSW0009)	Outfall 009	LOX, inlet to eastern slope drain	0
92	**LPBMP0004**	**Outfall 009**	**Lower parking lot biofilter outlet**	**0**
92	**LXSW0002**	**Outfall 009**	**CM-3 downstream (pre-filter fabric over weir boards) - OLD**	**0**
92	**A1SW0007**	**Outfall 009**	**CM-11 downstream (pre-filter fabric over weir boards) - OLD**	**0**
92	A1BMP0002 (A1SW0004)	Outfall 009	CM-9 upstream toward A1LF (pre-A1LF asphalt removal), before treatment - OLD	0
92	EVBMP0008	Outfall 009	Effluent from ELV treatment BMP	0
92	ILSW0004-A	Outfall 009	IEL-2 downstream (post-ISRA excavation)	0
92	ILSW0008	Outfall 009	IEL-2 downstream (2014-2015 reporting year)	0
92	**HZBMP0001 (HZSW0007)**	**Outfall 008**	**Happy Valley downstream (pre-improvements) - OLD**	**0**
92	**HZBMP0003 (HZSW0003)**	**Outfall 008**	**DRG downstream (furthest downstream)**	**0**
92	HZSW0005	Outfall 008	DRG upstream	0
92	HZSW0008	Outfall 008	Background - Happy Valley upstream	0
92	HZSW0011	Outfall 008	Background - Happy Valley upstream	0
92	HZSW0012	Outfall 008	Background - Happy Valley upstream	0
92	BGBMP0001 (A2BMP0006, A2SW0007)	Outfall 009	Background - CM-1 upstream east tributary, before treatment	0
92	HZSW0014	Outfall 008	Happy Valley upstream	0
92	Outfall 008	Outfall 008	NPDES Outfall 008	0
92	BGBMP0007 (LXSW0001)	Outfall 009	Background - CM-3 upstream, before treatment	0
92	**ILBMP0007 (ILBMP0005-7)**	**Outfall 009**	**Northern Detention Bioswale Effluent**	**0**
92	ILSW0003	Outfall 009	IEL-2 upstream	0
92	EVBMP0009	Outfall 009	Influent to ELV media filter, before treatment	0
92	ILSW0007	Outfall 009	IEL-2 upstream (2014-2015 reporting year)	0
92	HZSW0020 (HZSW0017)	Outfall 008	Background - Happy Valley upstream	0
92	**Outfall 009**	**Outfall 009**	**NPDES Outfall 009**	**0**

Notes:

- Potential BMP subareas sorted by maximum weight for the COC group, computed as described in Section 5.
- (**) NPDES outfalls are included for comparison and method testing purposes only; stormwater controls are not being contemplated at these locations.

- The rounding of weights may account for similar weights being ranked differently.
- **Bolded** locations indicate that both the dioxins NPDES permit limit and 95th percentile background particulate strength threshold were exceeded (for at least one dioxin COC).
- Gray text indicates historical subarea monitoring locations that are discontinued.
- Locations with zero samples collected are excluded from this table.

Table 12. TSS Weighting Factor Results, by Subarea

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	TSS Weight
1	LXBMP0004	Outfall 009	LOX southwest downstream of sandbag berm	0.97
2.5	B1BMP0001 (B1SW0010)	Outfall 009	B1 media filter inlet (pre-media filter installation)	0.87
2.5	EVBMP0010	Outfall 009	Area 2 Road Runoff, SD inlet on north side of road	0.87
4	APBMP0001-A	Outfall 009	Area II road runoff, post-ELV stormwater improvements	0.81
5	A2BMP0008	Outfall 009	Well 13 Road Runoff, north side - OLD	0.75
16	CABMP0002	Outfall 001	Driveway downgradient of hydrogen gas facility buildings	0.5
16	APSW0014	Outfall 009	AP/STP-1ABCDE downstream	0.5
16	EVBMP0006	Outfall 009	2012-2013 Area II Road near ELV ditch	0.5
16	LXBMP0002	Outfall 009	LOX mid - OLD	0.5
16	HZBMP0001 (HZSW0007)	Outfall 008	Happy Valley downstream (pre-improvements) - OLD	0.5
16	CABMP0003	Outfall 001	Road runoff downstream of hydrogen gas facility	0.5
16	LPBMP0001	Outfall 009	Lower lot sheetflow (pre-gravel bag berms) - OLD	0.5
16	LXBMP0003	Outfall 009	LOX east tributary - OLD	0.5
16	HZSW0020 (HZSW0017)	Outfall 008	Background - Happy Valley upstream	0.5
16	ILSW0004-A	Outfall 009	IEL-2 downstream (post-ISRA excavation)	0.5
16	ILSW0003	Outfall 009	IEL-2 upstream	0.5
16	BGBMP0005 (EPNDSW07)	Outfall 009	Sage ranch near entrance	0.5
16	CABMP0001	Outfall 001	Driveway downgradient of hydrogen gas storage tank	0.5
16	B1SW0002	Outfall 009	Woolsey Canyon Road Runoff, before treatment	0.5
16	LFSW0002-A	Outfall 009	CTLI downstream (post-ISRA excavation)	0.5
16	B1SW0008	Outfall 009	B1 upstream	0.5
16	A2BMP0010	Outfall 009	Well 13 Road Runoff, west side	0.5
16	A2BMP0004	Outfall 009	Helipad culvert outlet	0.5
16	LXBMP0005	Outfall 009	LOX southeast downstream of sandbag berm	0.5
16	LXBMP0007	Outfall 009	LOX, inlet to western slope drain	0.5
16	Outfall 001	Outfall 001	NPDES Outfall 001	0.5
27	Outfall 008	Outfall 008	NPDES Outfall 008	0.42
29	A2BMP0009	Outfall 009	Well 13 Road Runoff, east of OF0009 autosamplers	0.34
29	A1SW0009-B	Outfall 009	CM-9 downstream-underdrain outlet (post-filter fabric over weir boards, post-A1LF asphalt removal) - OLD	0.34
29	LPBMP0001-A	Outfall 009	Lower lot sheetflow (post-gravel bag berms)	0.34
32	A2BMP0005	Outfall 009	A2 u/s of CM-1 confluence	0.31

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	TSS Weight
32	LXBMP0009 (LXSW0009)	Outfall 009	LOX, inlet to eastern slope drain	0.31
32	BGBMP0002 (LXSW0003)	Outfall 009	Background - CM-3 upstream, before treatment	0.31
34	EVBMP0003 (A2SW0001)	Outfall 009	CM-1 upstream west, pre-ELV improvements, before treatment - OLD	0.24
35	LXBMP0006 (LXSW0010)	Outfall 009	LOX east, runoff along dirt road	0.19
36	A2BMP0003	Outfall 009	A2 u/s of ND confluence	0.14
37	EVBMP0002	Outfall 009	Helipad (pre-sandbag berms) - OLD	0.11
38	EPNDSW06	Outfall 009	Northern Drainage downstream of IEL stormdrain outlet discharge	0.09
39.5	EVBMP0001-A	Outfall 009	ELV culvert inlet (helipad road and ELV ditch, composite)	0.07
39.5	A1BMP0002-A (A1SW0004-A)	Outfall 009	CM-9 upstream toward A1LF (post-A1LF asphalt removal), before treatment	0.07
41	BGBMP0006 (A2SW0006)	Outfall 009	Background - CM-1 upstream east tributary (ponded footprint), before treatment	0.06
42	A1SW0005	Outfall 009	CM-9 downstream (pre-filter fabric over weir boards) - OLD	0.05
44	A2BMP0011	Outfall 009	Well 13 and Area 2 Road Runoff	0.04
44	B1BMP0009	Outfall 009	Upper Lot Media Filter – Road Culvert Influent	0.04
44	BGBMP0004 (EPNDSW05)	Outfall 009	Background - Sage Ranch near CM-5	0.04
46	A1BMP0002 (A1SW0004)	Outfall 009	CM-9 upstream toward A1LF (pre-A1LF asphalt removal), before treatment - OLD	0.038
47.5	LXSW0002	Outfall 009	CM-3 downstream (pre-filter fabric over weir boards) - OLD	0.02
47.5	HZBMP0003 (HZSW0003)	Outfall 008	DRG downstream (furthest downstream)	0.02
49	B1BMP0003 (B1BMP0002)	Outfall 009	Upper parking lot / road runoff to B1 area culvert inlet	0.017
50	ILBMP0008	Outfall 009	Eastern Concrete Swale (B1436 Southern Detention Bioswale influent)	0.015
52	A1SW0002	Outfall 009	Background - CM-8 upstream, before treatment	0.01
52	A1SW0009-C (A1BMP0003)	Outfall 009	CM-9 downstream-underdrain outlet (post-perforated pipe and upper basin installed)	0.01
52	EVBMP0002-B	Outfall 009	Helipad (post-sandbag berms raised, post-drainage holes in asphalt)	0.01
80	HZSW0014	Outfall 008	Happy Valley upstream	0
80	ILBMP0001	Outfall 009	Lower parking lot 24" stormdrain bypass	0
80	ILBMP0002	Outfall 009	Road runoff to CM-9, before treatment	0
80	HZSW0012	Outfall 008	Background - Happy Valley upstream	0
80	ILBMP0003	Outfall 009	A1LF parking lot - OLD	0
80	HZSW0011	Outfall 008	Background - Happy Valley upstream	0

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	TSS Weight
80	A1BMP0001	Outfall 009	A1LF downstream, before treatment	0
80	ILBMP0005 (ILBMP0005-7)	Outfall 009	Downstream (B1436 Southern Detention Bioswale)	0
80	ILBMP0006	Outfall 009	Upstream (B1436 Northern Detention Bioswale)	0
80	ILBMP0007 (ILBMP0005-7)	Outfall 009	Northern Detention Bioswale Effluent	0
80	ILSW0007	Outfall 009	IEL-2 upstream (2014-2015 reporting year)	0
80	ILSW0008	Outfall 009	IEL-2 downstream (2014-2015 reporting year)	0
80	LPBMP0002	Outfall 009	Lower parking lot influent to cistern, before treatment	0
80	LPBMP0003	Outfall 009	Lower parking lot sediment basin outlet, before treatment	0
80	LPBMP0004	Outfall 009	Lower parking lot biofilter outlet	0
80	LXBMP0010	Outfall 009	Service Area Road BMP – Road Runoff Influent to CM-3	0
80	ILBMP0004	Outfall 009	Western Concrete Swale (B1436 Southern Detention Bioswale Influent)	0
80	HZSW0008	Outfall 008	Background - Happy Valley upstream	0
80	EPNDSW04	Outfall 009	Northern Drainage downstream of box culvert	0
80	HZBMP0002 (HZSW0004)	Outfall 008	DRG downstream	0
80	A1BMP0004	Outfall 009	Area 2 Road Runoff, SD inlet on north side of road	0
80	A1SW0003	Outfall 009	CM-8 downstream (pre-filter fabric over weir boards) - OLD	0
80	A1SW0006	Outfall 009	Background - CM-11 upstream, before treatment	0
80	A1SW0007	Outfall 009	CM-11 downstream (pre-filter fabric over weir boards) - OLD	0
80	A1SW0009-A	Outfall 009	CM-9 downstream-underdrain outlet (post-A1LF asphalt removal, pre-filter fabric over weir boards) - OLD	0
80	A2BMP0002	Outfall 009	A2LF drainage east	0
80	A2SW0002	Outfall 009	CM-1 effluent (pre-filter fabric over weir boards) - OLD	0
80	A2SW0002-A (A2BMP0007)	Outfall 009	CM-1 effluent (post-filter fabric over weir boards)	0
80	APBMP0001	Outfall 009	Road runoff to ashpile culvert inlet, pre-ELV improvements - OLD	0
80	B1BMP0004 (B1BMP0004-5, B1SW0015)	Outfall 009	B1 media filter inlet north, before treatment	0
80	B1BMP0005 (B1BMP0004-5, B1SW0011, B1SW0013)	Outfall 009	B1 media filter inlet south, before treatment	0

Rank	Potential BMP Subarea (Co-location)	Watershed	Description	TSS Weight
80	B1BMP0007	Outfall 009	B1, vegetated channel	0
80	B1BMP0008	Outfall 009	B1 storm drain culvert outlet	0
80	B1BMP0010	Outfall 009	Upper Lot Media Filter – Parking Lot Influent	0
80	B1BMP0011	Outfall 009	Upper Lot Media Filter - Effluent	0
80	B1SW0014-A	Outfall 009	B1 media filter effluent (pre-media filter reconstruction) - OLD	0
80	B1SW0014-B	Outfall 009	B1 media filter effluent (post-media filter reconstruction) - OLD	0
80	EVBMP0009	Outfall 009	Influent to ELV media filter, before treatment	0
80	EVBMP0008	Outfall 009	Effluent from ELV treatment BMP	0
80	EVBMP0007	Outfall 009	Influent to ELV sedimentation, before treatment	0
80	EVBMP0005	Outfall 009	2012-2013 ELV drainage ditch (pre-ELV-1C ISRA) - OLD	0
80	EVBMP0004	Outfall 009	2012-2013 Lower Helipad Road	0
80	EVBMP0003-A	Outfall 009	CM-1 upstream west, post-ELV improvements, before treatment	0
80	HZSW0005	Outfall 008	DRG upstream	0
80	EVBMP0002-A	Outfall 009	Helipad (post-sandbag berms) - OLD	0
80	EPNDSW02	Outfall 009	Area II drainage above confluence with Northern Drainage	0
80	EPNDSW01	Outfall 009	Northern Drainage above confluence with Area II drainage	0
80	BGBMP0007 (LXSW0001)	Outfall 009	Background - CM-3 upstream, before treatment	0
80	BGBMP0003	Outfall 009	Background - Sage Ranch near LOX	0
80	BGBMP0001 (A2BMP0006, A2SW0007)	Outfall 009	Background - CM-1 upstream east tributary, before treatment	0
80	B1SW0014-C (B1BMP0006)	Outfall 009	B1 media filter effluent (post-media filter reconstruction, post-curb cuts)	0
80	EPNDSW03	Outfall 009	Northern Drainage downstream of LOX	0
80	Outfall 009	Outfall 009	NPDES Outfall 009	0

Notes

- (**)NPDES outfalls are included for comparison and method testing purposes only, stormwater controls are not being contemplated at these locations.
- The rounding of weights may account for similar weights being ranked differently.
- Gray text indicates historical subarea monitoring locations that are discontinued.
- Locations with zero samples collected are excluded from this table.

A "multi-constituent" score was then calculated for each potential BMP subarea monitoring location by taking the arithmetic mean of the maximum metals and the maximum dioxins weighting factor values (Table 13). To be consistent with the methodology used in previous years' BMP subarea prioritization analyses, these two pollutant category values were weighted equally for the multi-constituent score. Between 2004 and 2018, the exceedance probability of TCDD TEQ (when compared to the permit limit of TCDD TEQ, no DNQ) is approximately 18% at Outfall 008 (noting that samples have not been collected

since the 2013/2014 reporting year), and approximately 40% at Outfall 009. Between 2004 and 2018, the lead (most problematic metal) permit limit exceedance probability is approximately 40% at Outfall 008 and approximately 25% at Outfall 009. The exceedance probabilities at Outfall 001 have not yet been calculated due to limited availability of sampling results. 2,3,7,8-TCDD was detected at one location in the 2017/18 reporting year—ILBMP0001. Water quality at stormwater background locations was generally good with no location ranked above 43, though there were several instances of concentrations greater than NPDES permit limits at background locations.

A complete summary of the weights computed by potential BMP subarea monitoring location (including number of samples, number of NDs, median, maximum, comparison to background percentiles, weight, and rank) is included as Attachment 6. For purposes of comparison, the Permit limit for TCDD TEQ has also been applied to 2,3,7,8-TCDD results.

Table 13. Subareas Ranked by Multi-Constituent Score

Rank	Potential BMP Subarea (Co-locations)	Watershed	Description	Approximate Upgradient Drainage Area (ac)	Multi-Constituent Score	Rank from Maximum Metal Weighting	Rank from Maximum Dioxin Weighting	Number of Events Sampled	Number of Events Sampled in 2017/18
1	ILBMP0002	Outfall 009	Road runoff to CM-9, before treatment	2.2	0.916	2	10.5	23	2
2	EVBMP0003 (A2SW0001)	Outfall 009	CM-1 upstream west, pre-ELV improvements, before treatment - OLD	4.9	0.866	5	5.5	18	0
3	A2BMP0008	Outfall 009	Well 13 Road Runoff, north side - OLD	1.0	0.72	3	32.5	2	0
5	CABMP0001	Outfall 001	Driveway downgradient of hydrogen gas storage tank	2.2	0.625	7	32.5	1	1
5	CABMP0003	Outfall 001	Road runoff downstream of hydrogen gas facility	1.0	0.625	7	32.5	1	1
5	A1SW0009-A	Outfall 009	CM-9 downstream-underdrain outlet (post-A1LF asphalt removal, pre-filter fabric over weir boards) - OLD	10.2	0.625	7	32.5	1	0
7	EVBMP0002	Outfall 009	Helipad (pre-sandbag berms) - OLD	4.1	0.6	27	7.5	6	0
8	APBMP0001	Outfall 009	Road runoff to ashpile culvert inlet, pre-ELV improvements - OLD	3.6	0.595	9	32.5	2	0
9	LPBMP0001-A	Outfall 009	Lower lot sheetflow (post-gravel bag berms)	2.7	0.55	29	7.5	6	0
10	ILBMP0008	Outfall 009	Eastern Concrete Swale (B1436 Southern Detention Bioswale influent)	13.3	0.528	30	5.5	18	2
11	A1SW0009-B	Outfall 009	CM-9 downstream-underdrain outlet (post-filter fabric over weir boards, post-A1LF asphalt removal) - OLD	10.2	0.51	21	18.5	6	0
12	B1BMP0009	Outfall 009	Upper Lot Media Filter – Road Culvert Influent	2.5	0.504	45.5	2	8	2

Rank	Potential BMP Subarea (Co-locations)	Watershed	Description	Approximate Upgradient Drainage Area (ac)	Multi-Constituent Score	Rank from Maximum Metal Weighting	Rank from Maximum Dioxin Weighting	Number of Events Sampled	Number of Events Sampled in 2017/18
15.5	EVBMP0006	Outfall 009	2012-2013 Area II Road near ELV ditch	8.2	0.5	15	32.5	1	0
15.5	B1SW0002	Outfall 009	Woolsey Canyon Road Runoff, before treatment	5.7	0.5	15	32.5	2	0
15.5	LXBMP0010	Outfall 009	Service Area Road BMP – Road Runoff Influent to CM-3	0.25	0.5	15	32.5	1	0
15.5	CABMP0002	Outfall 001	Driveway downgradient of hydrogen gas facility buildings	0.59	0.5	15	32.5	1	1
15.5	EVBMP0004	Outfall 009	2012-2013 Lower Helipad Road	2.5	0.5	4	61	3	0
15.5	B1SW0014-A	Outfall 009	B1 media filter effluent (pre-media filter reconstruction) - OLD	8.6	0.5	15	32.5	1	0
19	**LPBMP0002**	**Outfall 009**	**Lower parking lot influent to cistern, before treatment**	**29.9**	**0.499**	**80.5**	**1**	**24**	**2**
20	ILBMP0007 (ILBMP0005-7)	Outfall 009	Northern Detention Bioswale Effluent	2.6	0.497	1	92	19	0
21	**B1BMP0010**	**Outfall 009**	**Upper Lot Media Filter – Parking Lot Influent**	**2.4**	**0.490**	**80.5**	**3**	**10**	**2**
22	B1BMP0004 (B1BMP0004-5, B1SW0015)	Outfall 009	B1 media filter inlet north, before treatment	6.7	0.478	80.5	4	21	0
23	**ILBMP0004**	**Outfall 009**	**Western Concrete Swale (B1436 Southern Detention Bioswale Influent)**	**0.92**	**0.446**	**80.5**	**9**	**16**	**2**
24	**APBMP0001-A**	**Outfall 009**	**Area II road runoff, post-ELV stormwater improvements**	**0.26**	**0.44**	**15**	**45**	**5**	**0**
25	**EPNDSW03**	**Outfall 009**	**Northern Drainage downstream of LOX**	**370**	**0.439**	**31.5**	**12.5**	**9**	**1**
26	B1BMP0003 (B1BMP0002)	Outfall 009	Upper parking lot / road runoff to B1 area culvert inlet	8.6	0.425	80.5	10.5	23	0

Rank	Potential BMP Subarea (Co-locations)	Watershed	Description	Approximate Upgradient Drainage Area (ac)	Multi-Constituent Score	Rank from Maximum Metal Weighting	Rank from Maximum Dioxin Weighting	Number of Events Sampled	Number of Events Sampled in 2017/18
27	B1BMP0001 (B1SW0010)	Outfall 009	B1 media filter inlet (pre-media filter installation)	8.6	0.42	15	48	3	0
29	BGBMP0005 (EPNDSW07)	Outfall 009	Sage ranch near entrance	29.8	0.405	15	50.5	2	0
29	LPBMP0001	Outfall 009	Lower lot sheetflow (pre-gravel bag berms) - OLD	2.3	0.405	24.5	32.5	2	0
29	LXBMP0002	Outfall 009	LOX mid - OLD	9.1	0.405	24.5	32.5	2	0
31	**EPNDSW06**	**Outfall 009**	**Northern Drainage downstream of IEL stormdrain outlet discharge**	**84.5**	**0.380**	**80.5**	**12.5**	**9**	**1**
32	**ILBMP0001**	**Outfall 009**	**Lower parking lot 24" stormdrain bypass**	**30.2**	**0.367**	**80.5**	**14**	**32**	**2**
33	**EPNDSW04**	**Outfall 009**	**Northern Drainage downstream of box culvert**	**270**	**0.356**	**31.5**	**21**	**9**	**1**
35	**B1BMP0011**	**Outfall 009**	**Upper Lot Media Filter - Effluent**	**5.1**	**0.345**	**80.5**	**15.5**	**2**	**2**
35	B1SW0008	Outfall 009	B1 upstream	0.47	0.345	80.5	15.5	2	0
35	**A1BMP0004**	**Outfall 009**	**Area 2 Road Runoff, SD inlet on north side of road**	**0.27**	**0.345**	**15**	**56**	**6**	**0**
37.5	A2BMP0005	Outfall 009	A2 u/s of CM-1 confluence	43.3	0.34	38.5	17	4	0
37.5	EVBMP0010	Outfall 009	Area 2 Road Runoff, SD inlet on north side of road	0.13	0.34	22	48	3	0
39	**EPNDSW02**	**Outfall 009**	**Area II drainage above confluence with Northern Drainage**	**100**	**0.32**	**50.5**	**18.5**	**5**	**1**
40	APSW0014	Outfall 009	AP/STP-1ABCDE downstream	29.3	0.31	24.5	50.5	2	0

Rank	Potential BMP Subarea (Co-locations)	Watershed	Description	Approximate Upgradient Drainage Area (ac)	Multi-Constituent Score	Rank from Maximum Metal Weighting	Rank from Maximum Dioxin Weighting	Number of Events Sampled	Number of Events Sampled in 2017/18
41.5	Outfall 001	Outfall 001	NPDES Outfall 001	NA	0.305	35	32.5	3	0
41.5	LFSW0002-A	Outfall 009	CTLI downstream (post-ISRA excavation)	1.4	0.305	35	32.5	3	0
43	**BGBMP0004 (EPNDSW05)**	**Outfall 009**	**Background - Sage Ranch near CM-5**	**81.1**	**0.299**	**80.5**	**20**	**8**	**0**
44	**EVBMP0001-A**	**Outfall 009**	**ELV culvert inlet (helipad road and ELV ditch, composite)**	**7.4**	**0.290**	**80.5**	**22**	**12**	**0**
45	**LPBMP0003**	**Outfall 009**	**Lower parking lot sediment basin outlet, before treatment**	**29.9**	**0.279**	**80.5**	**23**	**24**	**2**
46	B1SW0014-B	Outfall 009	B1 media filter effluent (post-media filter reconstruction) - OLD	8.6	0.27	38.5	32.5	4	0
47	LXBMP0004	Outfall 009	LOX southwest downstream of sandbag berm	11.7	0.255	15	76	5	0
49.5	A2BMP0002	Outfall 009	A2LF drainage east	3.2	0.25	80.5	32.5	1	0
49.5	HZSW0020 (HZSW0017)	Outfall 008	Background - Happy Valley upstream	0.20	0.25	15	92	2	0
49.5	EVBMP0005	Outfall 009	2012-2013 ELV drainage ditch (pre-ELV-1C ISRA) - OLD	11.0	0.25	80.5	32.5	2	0
49.5	B1BMP0008	Outfall 009	B1 storm drain culvert outlet	43.2	0.25	80.5	32.5	2	0
52	HZBMP0002 (HZSW0004)	Outfall 008	DRG downstream	23.2	0.235	35	46	4	0
53	A2BMP0004	Outfall 009	Helipad culvert outlet	9.0	0.225	35	48	3	0
54	**EVBMP0002-B**	**Outfall 009**	**Helipad (post-sandbag berms raised, post-drainage holes in asphalt)**	**9.1**	**0.216**	**41**	**43**	**10**	**1**

Rank	Potential BMP Subarea (Co-locations)	Watershed	Description	Approximate Upgradient Drainage Area (ac)	Multi-Constituent Score	Rank from Maximum Metal Weighting	Rank from Maximum Dioxin Weighting	Number of Events Sampled	Number of Events Sampled in 2017/18
55	**EPNDSW01**	**Outfall 009**	**Northern Drainage above confluence with Area II drainage**	**433**	**0.211**	**44**	**44**	**9**	**1**
56	**EVBMP0003-A**	**Outfall 009**	**CM-1 upstream west, post-ELV improvements, before treatment**	**1.4**	**0.211**	**80.5**	**42**	**13**	**1**
57	HZSW0011	Outfall 008	Background - Happy Valley upstream	0.10	0.155	24.5	92	2	0
58	A1BMP0001	Outfall 009	A1LF downstream, before treatment	3.5	0.15	28	65.5	5	0
59	B1BMP0007	Outfall 009	B1, vegetated channel	50.6	0.135	80.5	52	12	0
60	B1BMP0005 (B1BMP0004-5, B1SW0011, B1SW0013)	Outfall 009	B1 media filter inlet south, before treatment	0.37	0.122	80.5	53	26	0
61	ILBMP0006	Outfall 009	Upstream (B1436 Northern Detention Bioswale)	2.6	0.114	80.5	54	8	0
62	B1SW0014-C (B1BMP0006)	Outfall 009	B1 media filter effluent (post-media filter reconstruction, post-curb cuts)	8.6	0.104	80.5	55	19	0
63	A2SW0002	Outfall 009	CM-1 effluent (pre-filter fabric over weir boards) - OLD	43.0	0.094	80.5	57	16	0
64.5	LXBMP0005	Outfall 009	LOX southeast downstream of sandbag berm	11.7	0.09	50.5	58.5	5	0
64.5	EVBMP0002-A	Outfall 009	Helipad (post-sandbag berms) - OLD	4.1	0.09	50.5	58.5	5	0
66	BGBMP0002 (LXSW0003)	Outfall 009	Background - CM-3 upstream, before treatment	16.8	0.075	35	67.5	4	0

Rank	Potential BMP Subarea (Co-locations)	Watershed	Description	Approximate Upgradient Drainage Area (ac)	Multi-Constituent Score	Rank from Maximum Metal Weighting	Rank from Maximum Dioxin Weighting	Number of Events Sampled	Number of Events Sampled in 2017/18
67	A1SW0009-C (A1BMP0003)	Outfall 009	CM-9 downstream-underdrain outlet (post-perforated pipe and upper basin installed)	10.2	0.0716	80.5	60	11	1
68	A2BMP0003	Outfall 009	A2 u/s of ND confluence	103	0.053	80.5	62	8	0
69	A2SW0002-A (A2BMP0007)	Outfall 009	CM-1 effluent (post-filter fabric over weir boards)	43.0	0.05	80.5	63	15	1
70	LXBMP0003	Outfall 009	LOX east tributary - OLD	21.3	0.05	40	64	6	0
71	LXBMP0006 (LXSW0010)	Outfall 009	LOX east, runoff along dirt road	0.28	0.03	50.5	65.5	5	0
72	A2BMP0011	Outfall 009	Well 13 and Area 2 Road Runoff	0.10	0.025	45.5	69	8	1
74	BGBMP0006 (A2SW0006)	Outfall 009	Background - CM-1 upstream east tributary (ponded footprint), before treatment	39.3	0.02	50.5	71	7	0
74	ILBMP0003	Outfall 009	A1LF parking lot - OLD	0.97	0.02	80.5	67.5	4	0
74	A2BMP0009	Outfall 009	Well 13 Road Runoff, east of OF0009 autosamplers	0.48	0.02	42.5	74	6	1
76	ILBMP0005 (ILBMP0005-7)	Outfall 009	Downstream (B1436 Southern Detention Bioswale)	15.6	0.018	80.5	70	19	2
77	A1BMP0002-A (A1SW0004-A)	Outfall 009	CM-9 upstream toward A1LF (post-A1LF asphalt removal), before treatment	6.6	0.013	80.5	72	12	1
78	EVBMP0007	Outfall 009	Influent to ELV sedimentation, before treatment	6.6	0.010	80.5	73	10	1
79.5	A1SW0005	Outfall 009	CM-9 downstream (pre-filter fabric over weir boards) - OLD	10.2	0.01	50.5	76	10	0
79.5	LXBMP0009 (LXSW0009)	Outfall 009	LOX, inlet to eastern slope drain	11.7	0.01	42.5	92	5	0

Rank	Potential BMP Subarea (Co-locations)	Watershed	Description	Approximate Upgradient Drainage Area (ac)	Multi-Constituent Score	Rank from Maximum Metal Weighting	Rank from Maximum Dioxin Weighting	Number of Events Sampled	Number of Events Sampled in 2017/18
82	HZBMP0003 (HZSW0003)	Outfall 008	DRG downstream (furthest downstream)	29.6	0.005	50.5	92	15	0
82	BGBMP0003	Outfall 009	Background - Sage Ranch near LOX	16.8	0.005	80.5	76	5	0
82	BGBMP0007 (LXSW0001)	Outfall 009	Background - CM-3 upstream, before treatment	16.8	0.005	50.5	92	7	0
95	HZBMP0001 (HZSW0007)	Outfall 008	Happy Valley downstream (pre-improvements) - OLD	21.4	0	80.5	92	13	0
95	HZSW0005	Outfall 008	DRG upstream	21.0	0	80.5	92	1	0
95	HZSW0008	Outfall 008	Background - Happy Valley upstream	NA	0	80.5	92	1	0
95	A2BMP0010	Outfall 009	Well 13 Road Runoff, west side	1.9	0	80.5	92	5	0
95	HZSW0012	Outfall 008	Background - Happy Valley upstream	0.40	0	80.5	92	1	0
95	EVBMP0009	Outfall 009	Influent to ELV media filter, before treatment	6.6	0	80.5	92	11	1
95	EVBMP0008	Outfall 009	Effluent from ELV treatment BMP	6.6	0	80.5	92	13	1
95	ILSW0003	Outfall 009	IEL-2 upstream	1.2	0	80.5	92	2	0
95	A1SW0003	Outfall 009	CM-8 downstream (pre-filter fabric over weir boards) - OLD	2.6	0	80.5	92	10	0
95	LXSW0002	Outfall 009	CM-3 downstream (pre-filter fabric over weir boards) - OLD	16.8	0	80.5	92	9	0
95	**A1BMP0002 (A1SW0004)**	**Outfall 009**	**CM-9 upstream toward A1LF (pre-A1LF asphalt removal), before treatment - OLD**	**6.6**	**0**	**80.5**	**92**	**16**	**0**
95	LXBMP0007	Outfall 009	LOX, inlet to western slope drain	11.7	0	80.5	92	1	0

Rank	Potential BMP Subarea (Co-locations)	Watershed	Description	Approximate Upgradient Drainage Area (ac)	Multi-Constituent Score	Rank from Maximum Metal Weighting	Rank from Maximum Dioxin Weighting	Number of Events Sampled	Number of Events Sampled in 2017/18
95	A1SW0007	Outfall 009	CM-11 downstream (pre-filter fabric over weir boards) - OLD	5.8	0	80.5	92	12	0
95	BGBMP0001 (A2BMP0006, A2SW0007)	Outfall 009	Background - CM-1 upstream east tributary, before treatment	39.3	0	80.5	92	9	1
95	A1SW0006	Outfall 009	Background - CM-11 upstream, before treatment	5.7	0	80.5	92	12	0
95	**LPBMP0004**	**Outfall 009**	**Lower parking lot biofilter outlet**	**29.9**	**0**	**80.5**	**92**	**25**	**2**
95	ILSW0004-A	Outfall 009	IEL-2 downstream (post-ISRA excavation)	1.2	0	80.5	92	1	0
95	ILSW0007	Outfall 009	IEL-2 upstream (2014-2015 reporting year)	NA/small	0	80.5	92	1	0
95	ILSW0008	Outfall 009	IEL-2 downstream (2014-2015 reporting year)	0.11	0	80.5	92	1	0
95	HZSW0014	Outfall 008	Happy Valley upstream	0.10	0	80.5	92	3	0
95	A1SW0002	Outfall 009	Background - CM-8 upstream, before treatment	2.6	0	80.5	92	10	0
95	Outfall 008	Outfall 008	NPDES Outfall 008	62.0	0	80.5	92	37	0
95	**Outfall 009**	**Outfall 009**	**NPDES Outfall 009**	**536**	**0**	**80.5**	**92**	**86**	**1**

Notes

- Potential BMP subareas sorted by multi-constituent score, computed as described in Section 5.
- (**) NPDES outfalls are included for comparison and method testing purposes only, stormwater controls are not being contemplated at these locations.
- The rounding of weights may account for similar weights being ranked differently.
- Approximate drainage areas based on the cumulative drainage area of the SWMM catchment in which the monitoring location is located (Geosyntec, 2011). At locations where the monitoring point is upstream of the catchment outfall a "<" sign is used.
- **Bolded** locations indicate that both the NPDES permit limit and 95th percentile background particulate strength threshold were exceeded for any one COC.
- Gray text indicates historical subarea monitoring locations that are discontinued.
- "OLD" in the location description means that the location is now sampled under a new suffix (-A, -B, etc.) due to a change in the upstream watershed, typically BMP implementation.

5 Discussion

The results presented previously are discussed below and will be used to support BMP and other subarea-specific recommendations in the 2017/18 Site-Wide Annual Report.

5.1 Subarea-Specific Evaluation of Top Ranked Subareas

The monitoring locations in Table 14 are identified as the highest ranked subareas, with multi-constituent scores ranging from 0.5 to 0.92 out of a maximum score of 1.0. Scores closer to 1.0 indicate the monitoring locations with poorer historical water quality. Table 14 is limited to the top-ranked subareas discussed below; a complete summary table is provided in Section 4 of this report as Table 13. Besides the multi-constituent scores, information within Table 14 is also of significance because:

- Only three of the top twenty monitoring locations (CABMP0001, CABMP0002, CABMP0003) are both active (i.e., not discontinued[25]) and not upstream of an existing treatment control BMP (i.e., most sites have downstream stormwater treatment). CABMP0001, CABMP0002, and CABMP0003 are newly added sites in Outfall 001 that reflect runoff from a hydrogen gas storage tank and facility buildings that has recently been removed;
- ILBMP0001 was not ranked in the top 20 but was the only subarea where 2,3,7,8-TCDD was detected (but not quantified) in the 2017/18 reporting year; and
- The top 20 sites include the top two highest ranked locations for dioxins, and the top fourteen highest ranked locations for metals.

In some cases, results from a discontinued monitoring location reflect conditions prior to or following implementation of temporary measures or corrective actions; where applicable, this is indicated in the "description" column of the table. The top 20 monitoring locations are located in the Outfall 001 and Outfall 009 watersheds.

Recommendations for specific site areas are summarized after the discussion of individual site results. The highest ranked subareas contain some historical subarea monitoring locations that are discontinued, indicated by gray text[26]; no Expert Panel recommendations are provided for these locations. It should also be noted that the 2017/18 reporting year experienced 9.8 inches of total rainfall, which is 58% of the average rainfall at SSFL of (16.8 inches, based on rainfall record 1959-2018).[27] Some monitoring areas were sampled for the first time this year, affecting the location rankings.

[25] No site was discontinued if it had known water quality issues. Sites were typically discontinued due to reclassification due to upstream BMP implementation, redundancy, or termination of the required ISRA monitoring period.

[26] Monitoring locations were discontinued for a number of reasons, including location improvements, changes in treatment type, and planned end of monitoring activities.

[27] Data from the Simi Hills – Rocketdyne Lab gauge (Ventura County Watershed Protection District site 249) was used to determine annual rainfall from 1958/1959 through 2000/2001. However, rainfall data was not available at this gauge from 1977/1978 through 1984/1985. Data from the Area 4 gauge (which was moved to Area 1 on

January 1, 2013) was used to determine annual rainfall from 2001/2002 through 2017/18. This results in a period of record (POR) of 50 years. Due to the reporting timeline for the Annual Report, reporting years have been defined as June 1 – May 31.

Table 14. Top-Ranked Subarea Ranking and Recommendation Details

BMP Subarea (Co-Location)	Description	Drainage Area (ac)	Total Number of Events Sampled through 2017	Multi-Constituent Score	Rank				Subarea Notes	Conclusions
					Overall	Metals	Dioxins	TSS		
ILBMP0002	Road runoff to CM-9, before treatment	2.2	23	0.92	1	2	10.5	80	ILBMP0002 drains to CM-9, which filters runoff through a horizontal media bed (sizing is currently estimated to achieve 10% long-term average runoff volume capture[1]). The other influent stream to CM-9, monitored at A1BMP0002-A, is ranked 77th overall, 72nd for dioxins, 80.5th for metals, and 39.5th for TSS. The effluent from CM-9 (A1SW0009-C [A1BMP0003]) is ranked 67th overall, 60th for dioxins, 80.5th for metals, and 52nd for TSS.	Significant and large improvement in water quality compared to the upstream, untreated runoff from both ILBMP0002 and A1BMP0002-A, showing that the improvements are not due to dilution alone.
EVBMP0003 (A2SW0001)	CM-1 upstream west, pre-ELV improvements, before treatment - OLD	4.9	18	0.87	2	5	5.5	34	CM-1, to which EVBMP0003 drains, is an existing CM that treats runoff from a 53 acre subwatershed (sizing is estimated to achieve around 7% long-term runoff volume capture under current conditions, with the new ELV stormwater treatment BMP in place). Based on fourteen events, the CM-1 effluent subarea (A2SW0002-A) is ranked 69th overall (multi-constituent score = 0.05), ranked 63rd for dioxins, 80.5th for metals, and 80th for TSS. The ELV area previously drained to EVBMP0003 and CM-1 due to an existing degraded asphalt channel below the ELV hillside that diverted a portion of this runoff onto the Area II Road and to EVBMP0003. This channel was improved and a stormwater treatment BMP was installed before the start of the 2013/2014 reporting year. Before the 2015/16 monitoring season, CM-1 upstream sand bags were replaced with rip-rap.	Significant and large water quality improvement achieved by CM-1.
A2BMP0008	Well 13 Road Runoff, north side - OLD	1.0	2	0.72	3	3	32.5	5	Samples were first collected at A2BMP0008 during the 2016/17 reporting year. The site is ranked 3rd for metals and 5th for TSS. In the 2017/18 reporting year, sandbags were placed around the drainage pipe entrance to allow for ponding and settling to occur prior to runoff overflowing the sand bags and discharging from the Well 13 Road.	No samples were collected after installation of sandbag berm.
CABMP0001	Driveway downgradient of hydrogen gas storage tank	2.2	1	0.63	5	7	32.5	16	Monitoring in this subarea reflects driveway runoff downgradient of a hydrogen gas storage tank. Samples were first collected at CABMP0001 as a potential BMP subarea in the 2017/18 reporting year. One sample has been collected at this location.	Limited data (1 sample) and changing conditions do not currently warrant new BMPs in this area. This subarea will continue to be monitored next season.
CABMP0003	Road runoff downstream of hydrogen gas facility	1.0	1	0.63	5	7	32.5	16	Monitoring in this subarea reflects road runoff downgradient of a hydrogen gas storage tank and facility. Samples were first collected at CABMP0003 as a potential BMP subarea in the 2017/18 reporting year. One sample has been collected at this location.	Limited data (1 sample) and changing conditions do not currently warrant new BMPs in this area. This subarea will continue to be monitored next season.
A1SW0009-A	CM-9 downstream-underdrain outlet (post-A1LF asphalt removal, pre-filter fabric over weir boards) - OLD	10.2	1	0.63	5	7	32.5	80	Monitoring in this subarea, added during the 2012/13 reporting year and discontinued during the 2013/2014 reporting year, reflects treated runoff (estimated at 10% capture[1]) from an area consisting of road runoff (ILBMP0002), a stabilized dirt road, rocky hillsides, and the AILF. In January of 2012, filter fabric was installed over the weir boards to reduce and filter seepage flows. In March of 2013, perforated flow spreader pipe and the upper basin were installed.	Based on five events following the March 2013 improvements, the upgraded subarea at this same location (now named A1SW0009-C) is ranked 67th overall, 60th for dioxins, 80.5th for metals, and 52nd for TSS. There have been 11 samples collected since the most recent BMP improvements completed in March 2013.
EVBMP0002	Helipad (pre-sandbag berms) - OLD	4.1	6	0.60	7	27	7.5	37	This site represents water quality at the Helipad, before sandbag installation. In November of 2011, sandbags were added at the site, then the sandbags were raised, and drainage holes were added to the helipad in September of 2012.	This location has been replaced with a new site ID reflecting post-improvement conditions. The current condition of the site (EVBMP0002-B) is ranked 54th overall, 43rd for dioxins, 41st for metals and 52nd for TSS.

BMP Subarea (Co-Location)	Description	Drainage Area (ac)	Total Number of Events Sampled through 2017	Multi-Constituent Score	Rank				Subarea Notes	Conclusions
					Overall	Metals	Dioxins	TSS		
APBMP0001	Road runoff to ashpile culvert inlet, pre-ELV improvements - OLD	3.6	2	0.60	8	9	32.5	80	This Area II (NASA) subarea represents runoff from several flat ISRA areas distributed throughout a relatively flat drainage area, as well as road runoff. This location was replaced with an alternate site ID after the ELV improvements were made, which altered the upstream drainage area.	This location has been replaced with a new site ID reflecting post-improvement conditions. The current condition of the site (APBMP0001-A) is ranked 24th overall, 45th for dioxins, 15th for metals, and 4th for TSS.
LPBMP0001-A	Lower lot sheetflow (post-gravel bag berms)	2.7	6	0.55	9	29	7.5	29	This discontinued monitoring subarea, which has been replaced by the cistern influent sample at LPBMP0002 (ranked 19th overall), reflects runoff from mostly paved parking and road areas, after the gravel bag berms were installed in September of 2011 to slow runoff and allow for some detention.	Not applicable, as this location has been discontinued
ILBMP0008	Eastern Concrete Swale (B1436 Southern Detention Bioswale influent)	13.3	18	0.53	10	30	5.5	50	This subarea reflects runoff into the B1436 Southern Detention Bioswale, which is a concrete swale that diverts sheetflow into a rock crib. ILBMP0008 drains to ILBMP0005, which is representative of the water quality at the downstream end of the bioswale. Based on 19 samples, ILBMP0005 (ILBMP0005-7) is ranked 76th overall, 70th for dioxins, 80.5th for metals, and 80th for TSS.	Notable improvement in water quality between the upstream and downstream end of the B1436 Southern Detention Bioswale.
A1SW0009-B	CM-9 downstream-underdrain outlet (post-filter fabric over weir boards, post-A1LF asphalt removal) - OLD	10.2	6	0.51	11	21	18.5	29	Monitoring in this subarea, added during the 2011/12 reporting year and discontinued following improvements during the 2012/2013 reporting year, reflects treated runoff (estimated at 10% capture[1]) from a 10.2-acre drainage area, consisting of road runoff (ILBMP0002), a stabilized dirt road, rocky hillsides, and the AILF. In January of 2012, filter fabric was installed over the weir boards to reduce and filter seepage flows. In March of 2013, perforated flow spreader pipe and the upper basin were installed. Based on five events following the March 2013 improvements, this subarea (now named A1SW0009-C) is ranked 67th overall, 60th for dioxins, 80.5th for metals, and 52nd for TSS	Not applicable, as this location has been improved.
B1BMP0009	Upper Lot Media Filter – Road Culvert Influent	2.5	8	0.50	12	45.5	2	44	This monitoring subarea reflects influent to the Upper Lot Media Filter road culvert, which is located upstream of B1BMP0011 (Upper Lot Media Filter – Effluent). Construction was completed at B1BMP0011 in May 2017. Based on two events collected at B1BMP0011, the subarea is ranked 35th overall, 15.5th for dioxins, 80.5th for metals, and 80th for TSS.	Notable improvement in water quality between the influent and effluent to the Upper Lot Media Filter.
EVBMP0006	2012-2013 Area II Road near ELV ditch	8.2	1	0.50	15.5	15	32.5	16	This monitoring subarea reflects Area II Road runoff near the ELV ditch. EVBMP0006 monitoring was discontinued following installation of the ELV Treatment BMP, installed to treat runoff from this area, among others.	Not applicable, as this location has been discontinued.
B1SW0002	Woolsey Canyon Road Runoff, before treatment	5.7	2	0.50	15.5	15	32.5	16	This monitoring subarea reflects Woolsey Canyon Road runoff, prior to downstream treatment at the B1 media filter	Not applicable, as this location has been discontinued.
LXBMP0010	Service Area Road BMP – Road Runoff Influent to CM-3	0.25	1	0.50	15.5	15	32.5	80	Monitoring in this area was added during the 2016-2017 reporting year to reflect road runoff diverted to CM-3. One effluent sample was collected in February of 2017 and no effluent samples were collected this season. Further, no CM-3 effluent samples were collected.	No conclusions can be drawn on CM-3 water quality improvement because no effluent samples have yet been collected. This site will continue to be monitored.

BMP Subarea (Co-Location)	Description	Drainage Area (ac)	Total Number of Events Sampled through 2017	Multi-Constituent Score	Rank				Subarea Notes	Conclusions
					Overall	Metals	Dioxins	TSS		
CABMP0002	Driveway downgradient of hydrogen gas facility buildings	0.59	1	0.50	15.5	15	32.5	16	Monitoring in this subarea reflects road runoff downgradient of a hydrogen gas facility. Samples were first collected at CABMP0002 as a potential BMP subarea in the 2017/18 reporting year. One sample has been collected at this location.	Limited data (1 sample) and changing conditions do not currently warrant new BMPs in this area. This subarea will continue to be monitored next season.
EVBMP0004	2012-2013 Lower Helipad Road	2.5	3	0.50	15.5	4	61	80	This monitoring subarea, discontinued in 2013-14 following installation of the ELV treatment BMP.	Not applicable, as this location has been discontinued.
B1SW0014-A	B1 media filter effluent (pre-media filter reconstruction) - OLD	8.6	1	0.50	15.5	15	32.5	80	B1SW0014-A represents B1 media filter effluent prior to reconstruction. In December of 2011, the media filter was reconstructed (B1SW0014-B) and in November of 2012, curb cuts were added to even the distribution of inflows to the B1 media filter on the south and north sides (B1SW0014-C). Based on 19 events, the B1 media filter effluent under current conditions (B1SW0014-C) is ranked 62nd overall, 80.5th for metals, 55th for dioxins, and 80th for TSS.	As shown in Table 15, water quality improvement is demonstrated when the multi-pollutant scores of the B1 media filter inlets (B1BMP0004 and B1BMP0005) are compared to the B1 media filter effluent (B1SW0014-C).
LPBMP0002	Lower parking lot influent to cistern, before treatment	29.9	24	0.50	19	80.5	1	80	LPBMP0002 reflects influent to the Lower Parking Lot cistern, which is located upstream of the Lower Parking Lot sediment basin (LPBMP0003) and Lower Parking Lot biofilter (LPBMP0004), arranged in series. As shown in Table 15, water quality improvement is demonstrated between the cistern influent and the sediment basin outlet and is even further improved at the biofilter outlet (LPBMP0004). Based on 25 samples, LPBMP0004 is ranked 95th overall, 92nd for dioxins, 80.5th for metals, and 80th for TSS. Monitoring at LPBMP0002, LPBMP0003, and LPBMP0004 were discontinued after 1/13/2017 due to sufficient data having been collected.	Based on rankings, notable water quality improvement achieved by the Lower Parking Lot BMP system.
ILBMP0007 (ILBMP0005-7)	Northern Detention Bioswale Effluent	2.6	19	0.50	20	1	92	80	This monitoring subarea reflects effluent from the Northeast Detention Bioswale, which is located downstream of ILBMP0006 (Upstream (B1436 Northern Detention Bioswale)). ILBMP0006 is ranked 61st overall, 54th for dioxins, 80.5th for metals, and 80th for TSS.	Water quality improvement is demonstrated only for dioxins between these two sites.

[1] Overflows also get partial sedimentation through temporary ponding behind weir boards.

- Gray text indicates historical subarea monitoring locations that are discontinued.

5.2 Other Observations

The following are additional observations based on the results of the prioritization analysis; these findings will also be considered in the development of any new BMPs:

- Dioxins (TCDD TEQ) and lead are the COCs most frequently responsible for producing high dioxins and metals weighting factors, respectively. In the 2017/18 reporting year, Permit limit exceedances were not observed at Outfall 001, Outfall 008 or Outfall 009 for these parameters. The term "exceed" is used here as a statistical term only, indicating a likely probability of occurrence, and indicates values that are greater than a given threshold.

- Table 15 summarizes the key locations that have both an influent and effluent paired location, focusing on the locations ranked in the top 20 from the multi-constituent prioritization analysis. This comparison demonstrates that treatment through the BMPs typically resulted in improved water quality, as demonstrated by a decrease between the influent and effluent rank. For example, two influent streams within the B1 area (ranked 22 and 60), as well as the flow-weighted B1 area influent rank (25.8) are more highly ranked than the associated B1 effluent (ranked 62). A similar occurrence is observed between the influent ranks and the paired effluent ranks for CM-1, CM-9, the ELV treatment BMP, the lower parking lot sedimentation basin, and the southern detention bioswale.

- Table 16 summarizes a select subset of locations ranked in the top 20 that are associated with BMP modifications. In most cases, the location rank based on the multi-constituent score was reduced after the BMP was implemented, demonstrating that BMP implementation has generally resulted in improved water quality. The lower lot sheetflow (LPBMP0001/-A) shows an increase in rank but was technically discontinued when the lower lot biofilter was constructed to treat these flows. The Helipad runoff shows a large decrease in rank (7 to 64.5) post-sandbag berm installation (EVBMP0002-A) but a slight increase in rank (64.5 to 54) after drainage holes were created in the asphalt (EVBMP0002-B).

- 2,3,7,8-TCDD was detected at one location—ILBMP0001— during the 2017/18 reporting year, in contrast to the 2016/17 reporting year where it was detected at six locations— EPNDSW01, EPNDSW04, EPNDSW06, EPNDSW07, ILBMP0007 and LPBMP0002. Similar to last year, all CM effluent monitoring locations are ranked lower than (i.e., better water quality) or equal to their most impacted influent streams (i.e., where two influent streams enter a CM, the effluent ranking is lower than or equal to that of the poorer quality influent), indicating that the CMs are performing well. This finding is consistent with the conclusions of the statistical analysis of influent/effluent data in the 2012 *Performance Evaluation Memorandum* (Geosyntec and Expert Panel, 2012). This finding is also consistent with the fact that, as part of the intended maintenance program, Boeing has removed (and properly disposed of) substantial quantities of sediment that have accumulated in the CMs, illustrating continued CM functionality and pollutant removal. However, this finding may also be associated with dilution by the less impacted influent stream.

- The most highly ranked subareas for TSS are the LOX southwest downstream of the sandbag berm (LXBMP0004) and the B1 media filter inlet, pre-media filter installation (B1BMP0001

(B1SW0010)). LXBMP0004 is a discontinued monitoring location, replaced by LXBMP0007 following the installation of the slope drains at the LOX sandbag berm. B1BMP0001 (B1SW0010) is also a discontinued monitoring location, replaced by B1BMP0004 and B1BMP0005 to characterize the northern and southern influent separately, and does not reflect the current influent quality to the B1 media filter. Regardless, B1SW0014-C, representing the paired B1 effluent monitoring point to B1BMP0001 shows an improvement in TSS ranking through the media filter.

- All of the top twenty overall ranked subareas represent drainage areas with either full or mixed runoff contributions from paved surfaces (mostly parking lots and roads). This may indicate that the remaining elevated COC concentrations in the Outfall 009 watershed and the untreated runoff in the Outfall 001 watershed may be derived from asphalt itself, activities occurring on the asphalt such as vehicle use or material/equipment storage, or from atmospheric deposition (which occurs relatively evenly across the site) onto directly connected impervious surfaces (e.g., asphalt) which are more efficient at washing off and transporting contaminants than pervious surfaces. These hypotheses were examined more closely in the Special Monitoring Studies for the Outfall 009 Watershed (SSFL and Geosyntec, 2015), which began in 2015 and is ongoing. The preliminary findings of the study showed that dioxin concentrations were affected by utility poles in BMP subareas and that high traffic subareas had higher concentrations of lead in both pavement solids samples and stormwater samples, with the fine fraction having the highest results.

- The top 20-ranked subareas based on the multi-constituent score include 11 subareas on Boeing property –

  A1SW0009-A and A1SW0009-B (CM-9 downstream-underdrain outlet (post-A1LF asphalt removal, pre- and post-filter fabric over weir boards) - OLD), B1BMP0009 (Upper Lot Media Filter – Road Culvert Influent), B1SW0014-A (B1 media filter effluent (pre-media filter reconstruction – OLD), B1SW0002 (Woolsey Canyon Road Runoff, before treatment), ILBMP0002 (road runoff to CM-9, before treatment), ILBMP0008 (Eastern Concrete Swale (B1436 Southern Detention Bioswale influent)), ILBMP0007 (Northern Detention Bioswale Effluent), LPBMP0001-A (Lower lot sheetflow (post-gravel bag berms)), LPBMP0002 (Lower parking lot influent to cistern, before treatment), and LXBMP0010 (Service Area Road BMP – Road Runoff Influent to CM-3).

  All 11 of the subareas are either upstream of existing treatment BMPs or were discontinued due to system improvements (e.g., A1SW0009-B). Of these subareas, LPBMP0002 is ranked highest for dioxins.

- The top 20-ranked subareas based on the multi-constituent score include nine subareas on NASA property –

  A2BMP0008 (Well 13 Road Runoff, north side - OLD), APBMP0001 (Area II Road runoff, pre- ELV stormwater improvements), CABMP0001 (Driveway downgradient of hydrogen gas storage tank), CABMP0002 (Driveway downgradient of hydrogen gas facility buildings), CABMP0003 (Road runoff downstream of hydrogen gas facility), EVBMP0002 (Helipad (pre-sandbag berms) -

OLD), EVBMP0003 (CM-1 upstream west, pre-ELV improvements, before treatment – OLD), EVBMP0004 (2012-2013 Lower Helipad Road), and EVBMP0006 (2012/2013 Area II Road near ELV ditch).

Four of the seven active subareas on NASA property are currently upstream of an existing treatment BMP: EVBMP0003 (CM-1), APBMP0001 (ELV improvements, currently under the designation APBMP0001-A) EVBMP0002 (Helipad sandbag berms, currently under the designation EVBMP0002-B), and A2BMP0008 (sandbag berm). The other untreated, active subareas (CABMP0001, CABMP0002, and CABMP0003) are located in Outfall 001 and reflect monitoring data downstream of a hydrogen gas storage tank and facility buildings, which are currently being demolished and removed from the site. Across all seven monitoring locations, EVBMP0003 was ranked highest for dioxins.

- As shown in Figure 2, channel processes appear to be a significant source of TSS for the Outfall 008 watershed (based on observations from previous years) and less so for the Outfall 009 watershed, where outfall TSS concentrations are near background. The Outfall 001 watershed was not included in this comparison due to the limited data collected in this reporting year. Northern Drainage improvements and stabilization measures are expected to continue providing a water quality benefit to these channels, particularly if the upcoming winter is wetter and helps channel vegetation to grow.

- While the analysis approach is concentration-based rather than load-based, because such a large percentage of the watersheds (and of the watersheds developed or known impacted areas) are represented by the monitoring locations, the approach roughly addresses load reduction aspects, noting that actual runoff coefficients do vary between subareas.

Table 15. Ranking Comparison of Top Ranked Monitoring Locations and their Influent/Effluent Pairs

BMP Area	Influent Monitoring Location			Effluent Monitoring Location			Rank Change
	Monitoring Location	Description	Influent Rank	Monitoring Location	Description	Effluent Rank	
CM-9	**ILBMP0002**	**Road runoff to CM-9, before treatment**	1	A1SW0009-C (A1BMP0003)	CM-9 downstream-underdrain outlet (post-perforated pipe and upper basin installed)	67	-66
	A1BMP0002-A (A1SW0004-A)	CM-9 upstream toward A1LF (post-A1LF asphalt removal), before treatment	77				10
	Flow-Weighted Influent Rank		30				-37
CM-1	EVBMP0003-A	CM-1 upstream west, post-ELV improvements, before treatment	56	A2SW0002-A (A2BMP0007)	CM-1 effluent (post-filter fabric over weir boards)	69	-13
	BGBMP0001 (A2BMP0006, A2SW0007)	Background - CM-1 upstream east tributary, before treatment	95				26
	Flow-Weighted Influent Rank		74				5
B1 Media Filter	**B1BMP0004 (B1BMP0004-5, B1SW0015)**	**B1 media filter inlet north, before treatment**	22	B1SW0014-C (B1BMP0006)	B1 media filter effluent (post-media filter reconstruction, post-curb cuts)	62	-40
	B1BMP0005 (B1BMP0004-5, B1SW0011, B1SW0013)	B1 media filter inlet south, before treatment	60				-2
	Flow-Weighted Influent Rank		26				-36
Lower Lot Sediment Basin	**LPBMP0002**	**Lower parking lot influent to cistern, before treatment**	**19**	LPBMP0003	Lower parking lot sediment basin outlet, before treatment	45	-26
				LPBMP0004	Lower parking lot biofilter outlet	95	-76
Southern Detention Bioswale	ILBMP0004	Western Concrete Swale (B1436 Southern Detention Bioswale Influent)	23	ILBMP0005 (ILBMP0005-7)	Downstream (B1436 Southern Detention Bioswale)	76	-53
	ILBMP0008	**Eastern Concrete Swale (B1436 Southern Detention Bioswale influent)**	**10**				-66
	Flow-Weighted Influent Rank		11				65
ELV Treatment BMP	EVBMP0007	Influent to ELV sedimentation, before treatment	78	EVBMP0009	Influent to ELV media filter, before treatment	95	-17
				EVBMP0008	Effluent from ELV treatment BMP	95	-17

Notes

- **Bolded** locations indicate that the monitoring location is ranked within the top 20 of the multi-constituent table (Table ES-1).
- Gray text indicates historical subarea monitoring locations that are discontinued.

Table 16. Ranking Comparison of Top Ranked Monitoring Locations Pre- vs. Post-BMP

Original Location Name	Description	Pre-BMP Rank	Suffix	Implementation Date	Description	Post-BMP Rank 1	Suffix	Implementation Date	Description	Post-BMP Rank 2	Suffix	Implementation Date	Description	Current BMP Rank
B1SW0014	B1 culvert effluent (no media filter) – OLD	N/A[1]	-A	9/1/2011[2]	B1 media filter effluent (pre-media filter reconstruction) - OLD	12.5	-B	12/16/2011	B1 media filter effluent (post-media filter reconstruction) - OLD	46	-C (B1BMP0006)	11/2/2012	B1 media filter effluent (post-media filter reconstruction, post-curb cuts)	62
A1SW0009	CM-9 downstream-underdrain outlet (pre-A1LF asphalt removal, pre-filter fabric over weir boards, pre-perforated pipe and rip-rap berm) - OLD	N/A[1]	-A	9/1/2012[2]	CM-9 downstream-underdrain outlet (post-A1LF asphalt removal, pre-filter fabric over weir boards, pre-perforated pipe and rip-rap berm) - OLD	5	-B	1/20/2012	CM-9 downstream-underdrain outlet (post-filter fabric over weir boards, post-A1LF asphalt removal) - OLD	11	-C (A1BMP0003)	3/1/2013	CM-9 downstream-underdrain outlet (post-perforated pipe and upper basin installed)	67
EVBMP0002	**Helipad (pre-sandbag berms) - OLD**	**7**	-A	11/14/2011	Helipad (post-sandbag berms) - OLD	64.5	-B	9/5/2012	Helipad (post-sandbag berms raised, post-drainage holes in asphalt)	54	N/A			
LPBMP0001	Lower Lot sheetflow (pre-gravel bag berms) - OLD	29	-A	9/26/2011	Lower Lot sheetflow (post-gravel bag berms)	9	N/A							
APBMP0001	**Road runoff to ashpile culvert inlet, pre-ELV improvements - OLD**	**8**	**-A**	**11/7/2013**	**Area II Road runoff, post-ELV stormwater improvements**	**24**	N/A							

Original Location Name	Description	Pre-BMP Rank	Suffix	Implementation Date	Description	Post-BMP Rank 1	Suffix	Implementation Date	Description	Post-BMP Rank 2	Suffix	Implementation Date	Description	Current BMP Rank
EVBMP0003 (A2SW0001)	**CM-1 upstream west, pre-ELV improvements, before treatment - OLD**	**2**	-A	11/1/2013	CM-1 upstream west, post-ELV improvements, before treatment	56	N/A							

Notes

- ([1]) "N/A" means there were no samples collected at this location under the specified name designation and therefore the monitoring location is not ranked.
- ([2]) Dates of 9/1/20XX assume work completed in the summer, prior to the start of the reporting year, but are not confirmed.
- **Bold** locations are ranked in the top 20 of the multi-constituent table (Table 13).
- Gray text indicates historical subarea monitoring locations that are discontinued.

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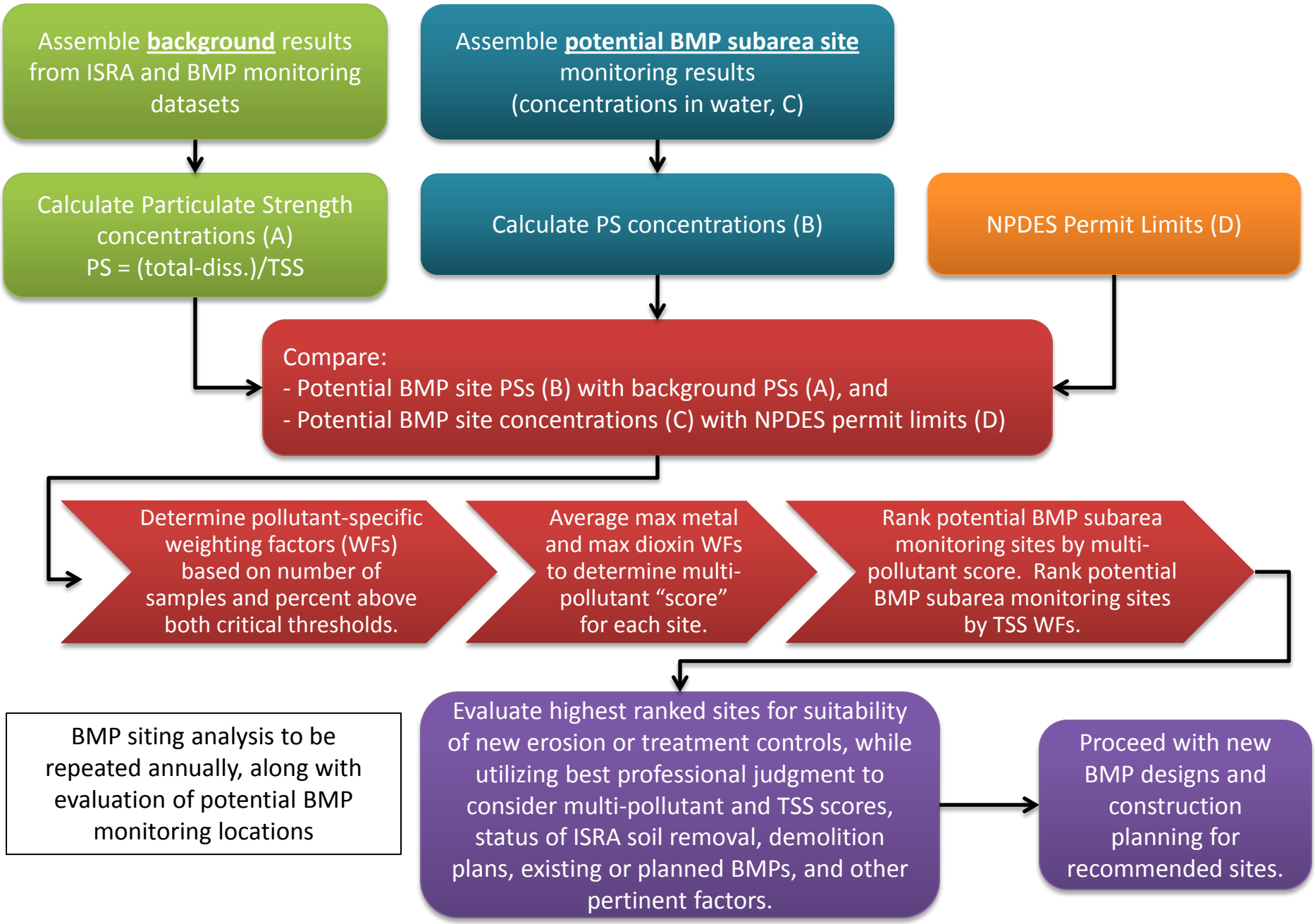
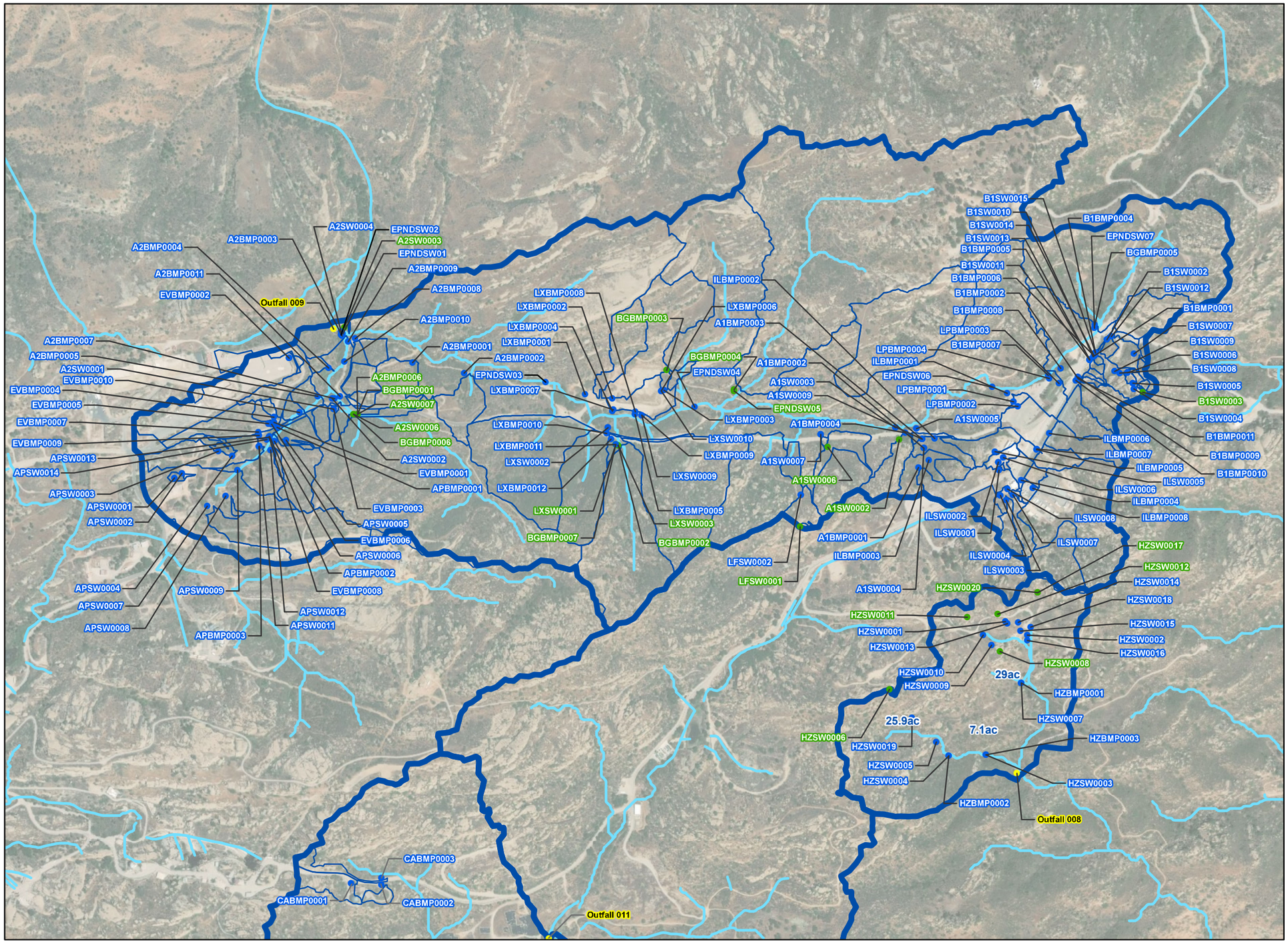
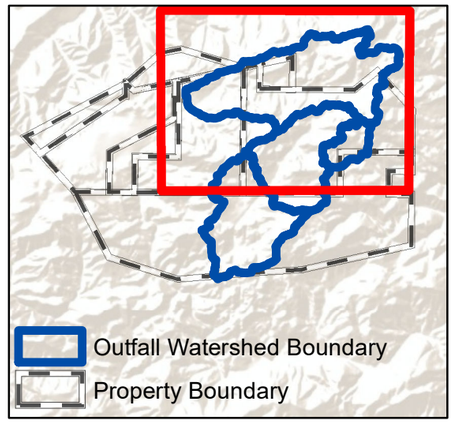
Attachment 1. Summary Flowchart for BMP Subarea Prioritization Analysis Approach







Legend

category

- BMP Subarea
- Background
- NPDES
- Outfall Watershed Boundary
- Drainage Areas
- Streams

Site Legend

- Potential BMP subarea site
- Stormwater background site
- Outfalls

N

1,000 500 0 1,000

Feet

ATTACHMENT 2

Map of Locations Used in Subarea Prioritization Analysis Outfall 001/008/009 Watersheds

Santa Susana Field Laboratory
Ventura County, CA

Geosyntec consultants

Los Angeles, CA	September 2018

Notes:
1) NPDES outfalls are included for comparison and method testing purposes only. Stormwater controls are not being contemplated at these locations.

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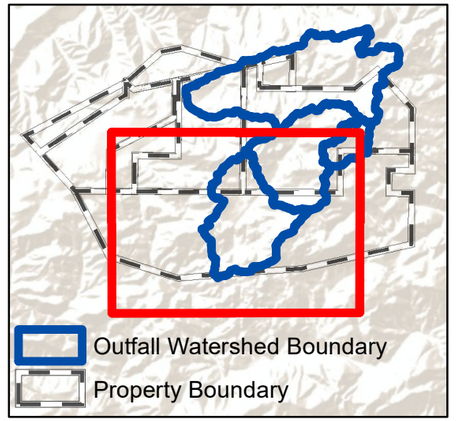

Legend

category

- BMP Subarea
- Background
- NPDES
- Outfall Watershed Boundary
- Drainage Areas
- Streams

Site Legend

- Potential BMP subarea site
- Stormwater background site
- Outfalls

N

1,000 500 0 1,000

Feet

ATTACHMENT 2

Map of Locations Used in Subarea Prioritization Analysis Outfall 001/008/009 Watersheds

Santa Susana Field Laboratory
Ventura County, CA

Geosyntec consultants

Los Angeles, CA	September 2018

Notes:
1) NPDES outfalls are included for comparison and method testing purposes only. Stormwater controls are not being contemplated at these locations.

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Attachment 3. Outfall 001, 008, and 009 Watershed Subarea Monitoring Locations

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
A1BMP0001	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	A1LF downstream, before treatment	3.5	2011-2012 reporting year: Discontinued based on results from the 2010-2011 reporting year below NPDES permit limits. Replaced by A1BMP0002 (co-located with A1SW0004) further downstream.
A1BMP0002 (A1SW0004)	Existing BMP Performance	BMP Subarea	Outfall 009	CM-9 upstream toward A1LF (pre-A1LF asphalt removal), before treatment - OLD	6.6	2012-2013 reporting year: Discontinued A1SW0004 as it had been monitored for three reporting years under the ISRA performance monitoring program. Continued monitoring at co-located BMP monitoring location A1BMP0002.
A1BMP0002-A (A1SW0004-A)	Existing BMP Performance	BMP Subarea	Outfall 009	CM-9 upstream toward A1LF (post-A1LF asphalt removal), before treatment	6.6	*See description A1BMP0002/A1SW0004.*
A1BMP0004	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Area 2 Road Runoff, SD inlet on north side of road	0.27	n/a
A1SW0002	ISRA Performance	Background	Outfall 009	Background - CM-8 upstream, before treatment	2.6	2011-2012 reporting year: Discontinued A1SW0002 due to the low concentrations observed in results from the previous reporting year.
A1SW0003	ISRA Performance	BMP Subarea	Outfall 009	CM-8 downstream (pre-filter fabric over weir boards) - OLD	2.6	2011-2012 reporting year: Discontinued A1SW0003 due to the low concentrations observed in results from the previous reporting year.
A1SW0003-A	ISRA Performance	BMP Subarea	Outfall 009	CM-8 downstream (post-filter fabric over weir boards)	2.6	*See description for A1SW0003.*
A1SW0005	ISRA Performance	BMP Subarea	Outfall 009	CM-9 downstream (pre-filter fabric over weir boards) - OLD	10.2	2011-2012 reporting year: A1SW0005 was replaced with A1SW0009, in order to monitor discharge from the CM-9

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						underdrains as the downstream monitoring point.
A1SW0005-A	ISRA Performance	BMP Subarea	Outfall 009	CM-9 downstream (post-filter fabric over weir boards)	10.2	*See description for A1SW0005.*
A1SW0006	ISRA Performance	Background	Outfall 009	Background - CM-11 upstream, before treatment	5.74	2011-2012 reporting year: Discontinued A1SW0006 due to the low concentrations observed in results from the previous reporting year.
A1SW0007	ISRA Performance	BMP Subarea	Outfall 009	CM-11 downstream (pre-filter fabric over weir boards) - OLD	5.83	2011-2012 reporting year: Discontinued A1SW0007 due to the low concentrations observed in results from the previous reporting year.
A1SW0007-A	ISRA Performance	BMP Subarea	Outfall 009	CM-11 downstream (post-filter fabric over weir boards)	5.83	*See description for A1SW0007.*
A1SW0009	ISRA Performance	BMP Subarea	Outfall 009	CM-9 downstream-underdrain outlet (pre-A1LF asphalt removal, pre-filter fabric over weir boards) - OLD	10.2	2013-2014 reporting year: Discontinued ISRA performance monitoring at A1SW0009 and was replaced by BMP monitoring location A1BMP0003.
A1SW0009-A	ISRA Performance	BMP Subarea	Outfall 009	CM-9 downstream-underdrain outlet (post-A1LF asphalt removal, pre-filter fabric over weir boards) - OLD	10.2	*See description for A1SW0009.*
A1SW0009-B	ISRA Performance	BMP Subarea	Outfall 009	CM-9 downstream-underdrain outlet (post-filter fabric over weir boards, post-A1LF asphalt removal) - OLD	10.2	*See description for A1SW0009.*
A1SW0009-C (A1BMP0003)	ISRA Performance	BMP Subarea	Outfall 009	CM-9 downstream-underdrain outlet (post-	10.2	*See description for A1SW0009.*

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
				perforated pipe and upper basin installed)		
A2BMP0001	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	A2LF drainage west	2.2	2017-2018 reporting year: Discontinued A2BMP0001 due to persistent lack of sampleable flow.
A2BMP0002	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	A2LF drainage east	3.2	2017-2018 reporting year: Discontinued A2BMP0002 due to persistent lack of sampleable flow.
A2BMP0003	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	A2 u/s of ND confluence	103	2014-2015 reporting year: Discontinued A2BMP003 as the location had been monitored for three years and sufficient data had been collected.
A2BMP0004	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Helipad culvert outlet	9.0	2012-2013 reporting year: Discontinued A2BMP0004 as it was determined the upstream Helipad monitoring location (EVBMP0002) provided sufficient data.
A2BMP0005	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	A2 u/s of CM-1 confluence	43.3	2014-2015 reporting year: Discontinued A2BMP005 as the location had been monitored for three years and sufficient data had been collected.
A2BMP0008	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Well 13 Road Runoff, north side	0.98	n/a
A2BMP0009	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Well 13 Road Runoff, east of OF0009 autosamplers	0.48	n/a
A2BMP0010	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Well 13 Road Runoff, west side	1.9	2017-2018 reporting year: Discontinued A2BMP0010 due to persistent lack of sampleable flow.
A2BMP0011	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Well 13 and Area 2 Road Runoff	0.10	n/a

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
A2SW0002	ISRA Performance	BMP Subarea	Outfall 009	CM-1 effluent (pre-filter fabric over weir boards) - OLD	43	2012-2013 reporting year: Discontinued ISRA performance monitoring at A2SW0002 as it had been monitored for three years. Monitoring continued at co-located BMP monitoring location A2BMP0007.
A2SW0002-A (A2BMP0007)	ISRA Performance	BMP Subarea	Outfall 009	CM-1 effluent (post-filter fabric over weir boards)	43	*See description for A2SW0002.*
A2SW0003	ISRA Performance	Background	Outfall 009	A2LF1 upstream	0.02	2012-2013 reporting year: Discontinued ISRA performance monitoring at A2LF-1 locations as they had been monitored for three years.
A2SW0004	ISRA Performance	BMP Subarea	Outfall 009	A2 downstream	0.02	2012-2013 reporting year: Discontinued ISRA performance monitoring at A2LF-1 locations as they had been monitored for three years.
APBMP0001	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Road runoff to ashpile culvert inlet, pre-ELV improvements – OLD	3.6	n/a
APBMP0001-A	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Area II road runoff, post-ELV stormwater improvements	0.26	n/a
APSW0001	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1A upstream	0.19	2012-2013 reporting year: Discontinued ISRA performance monitoring at APSW0001 as it had been monitored for two years.
APSW0002	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1A downstream	0.24	2012-2013 reporting year: Discontinued ISRA performance monitoring at APSW0002 as it had been monitored for two years.
APSW0003	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1D upstream	0.19	2012-2013 reporting year: Discontinued ISRA performance

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						monitoring at APSW0003 as it had been monitored for two years.
APSW0004	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1D downstream	0.75	2012-2013 reporting year: Discontinued ISRA performance monitoring at APSW0004 as it had been monitored for two years.
APSW0005	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1F upstream	0.06	2012-2013 reporting year: Discontinued ISRA performance monitoring at APSW0005 as it had been monitored for two years.
APSW0006	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1F (pre-ISRA excavation) - OLD	0.12	2011-2012 reporting year: Discontinued APSW0006 as monitoring at APSW0013 was considered sufficient for downstream monitoring.
APSW0006-A	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1F (post-ISRA excavation)	0.12	*See description for APSW0006.*
APSW0007	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1B upstream	8.6	ISRA program completed
APSW0008	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1C-2 upstream	0.1	ISRA program completed
APSW0009	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1ABC downstream	21	ISRA program completed
APSW0011	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1ABCD downstream	28	ISRA program completed
APSW0012	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1E-3 upstream	0.25	ISRA program completed
APSW0013 (APBMP0002)	ISRA Performance	BMP Subarea	Outfall 009	AP downstream	33.1	2013-2014 reporting year: Discontinued co-located monitoring locations APSW0013/APBMP0002 following installation of the ELV treatment BMP and was replaced by APSW0014.

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
APSW0014	ISRA Performance	BMP Subarea	Outfall 009	AP/STP-1ABCDE downstream	29.3	ISRA program completed
B1BMP0001 (B1SW0010)	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	B1 media filter inlet (pre-media filter installation)	8.6	2011-2012 reporting year: Co-located monitoring locations B1SW0010/B1BMP0001 was replaced with B1SW0014, following installation of the B1 Media Filter.
B1BMP0001-A (B1SW0010-A)	Existing BMP Performance	BMP Subarea	Outfall 009	B1 media filter inlet (post-media filter installation), before treatment	8.6	*See description for B1BMP0001.*
B1BMP0003 (B1BMP0002)	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Upper parking lot / road runoff to B1 area culvert inlet	8.6	2011-2012 reporting year: B1BMP0002 was replaced with monitoring location B1BMP0003, following the installation of the B1 Retention Basin. 2016-2017 reporting year: Discontinued monitoring at B1BMP0003 as it has been replaced by the addition of two influent locations to monitor sheet flow from the upper lot and main road culvert (B1BMP0010 and B1BMP0009, respectively) and one effluent monitoring location at the underdrains (B1BMP0011).
B1BMP0004 (B1BMP0004-5, B1SW0015)	Existing BMP Performance	BMP Subarea	Outfall 009	B1 media filter inlet north, before treatment	6.7	2012-2013 reporting year: Discontinued ISRA performance monitoring at B1SW0015 as it had been monitored for two years and sufficient data had been collected to show a general decrease in downstream results. 2016-2017 reporting year: Discontinued B1 media filter

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						monitoring at B1BMP0004 and B1BMP0004-5 because positive performance has been demonstrated with respect to improving water quality over a representative distribution of storm depths and intensities.
B1BMP0005 (B1BMP0004-5, B1SW0011, B1SW0013)	Existing BMP Performance	BMP Subarea	Outfall 009	B1 media filter inlet south, before treatment	0.37	2011-2012 reporting year: B1SW0011 was replaced with B1SW0013, following the reconfiguration of the B1 Retention Basin discharge pipe. 2012-2013 reporting year: Discontinued ISRA performance monitoring at B1SW0013 as that location had been monitored for two years and sufficient data had been collected to show a general decrease in downstream results. 2016-2017 reporting year: Discontinued B1 media filter monitoring at B1BMP0005 and B1BMP0004-5 because positive performance has been demonstrated with respect to improving water quality over a representative distribution of storm depths and intensities.
B1BMP0007	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	B1, vegetated channel	50.6	2016-2017 reporting year: Discontinued vegetated channel monitoring at B1BMP0007, downstream of the B1 storm drain, since sufficient data has been collected and no notable water quality

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						improvements have been demonstrated.
B1BMP0008	Existing BMP Performance	BMP Subarea	Outfall 009	B1 storm drain culvert outlet	43.2	2016-2017 reporting year: Discontinued vegetated channel monitoring at B1BMP0008, downstream of the B-1 storm drain, since sufficient data has been collected and no notable water quality improvements have been demonstrated.
B1BMP0009	Existing BMP Performance	BMP Subarea	Outfall 009	Upper Lot Media Filter – Road Culvert Influent	2.5	n/a
B1BMP0010	Existing BMP Performance	BMP Subarea	Outfall 009	Upper Lot Media Filter – Parking Lot Influent	2.4	n/a
B1BMP0011	Existing BMP Performance	BMP Subarea	Outfall 009	Upper Lot Media Filter - Effluent	5.1	n/a
B1SW0002	ISRA Performance	BMP Subarea	Outfall 009	Woolsey Canyon Road Runoff, before treatment	5.7	2012-2013 reporting year: Discontinued ISRA performance monitoring at B1 Area locations as they had been monitored for two years and sufficient data had been collected to show a general decrease in downstream results.
B1SW0003	ISRA Performance	Background	Outfall 009	B1 upstream	0.04	2012-2013 reporting year: Discontinued ISRA performance monitoring at B1 Area locations as they had been monitored for two years and sufficient data had been collected to show a general decrease in downstream results.
B1SW0004	ISRA Performance	BMP Subarea	Outfall 009	B1 downstream (pre-ISRA excavation) - OLD	0.08	2012-2013 reporting year: Discontinued ISRA performance monitoring at B1 Area locations as they

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						had been monitored for two years and sufficient data had been collected to show a general decrease in downstream results.
B1SW0004-A	ISRA Performance	BMP Subarea	Outfall 009	B1 downstream (post-ISRA excavation)	0.08	*See description for B1SW0004.*
B1SW0005	ISRA Performance	BMP Subarea	Outfall 009	B1 downstream (pre-ISRA excavation) - OLD	0.12	2012-2013 reporting year: Discontinued ISRA performance monitoring at B1 Area locations as they had been monitored for two years and sufficient data had been collected to show a general decrease in downstream results.
B1SW0005-A	ISRA Performance	BMP Subarea	Outfall 009	B1 downstream (post-ISRA excavation)	0.12	*See description for B1SW0005.*
B1SW0006	ISRA Performance	BMP Subarea	Outfall 009	B1 downstream (pre-ISRA excavation) - OLD	0.38	2012-2013 reporting year: Discontinued ISRA performance monitoring at B1 Area locations as they had been monitored for two years and sufficient data had been collected to show a general decrease in downstream results.
B1SW0006-A	ISRA Performance	BMP Subarea	Outfall 009	B1 downstream (post-ISRA excavation)	0.38	*See description for B1SW0006.*
B1SW0007	ISRA Performance	BMP Subarea	Outfall 009	B1 downstream	0.41	2012-2013 reporting year: Discontinued ISRA performance monitoring at B1 Area locations as they had been monitored for two years and sufficient data had been collected to show a general decrease in downstream results.
B1SW0008	ISRA Performance	BMP Subarea	Outfall 009	B1 upstream	0.47	2012-2013 reporting year: Discontinued ISRA performance

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						monitoring at B1 Area locations as they had been monitored for two years and sufficient data had been collected to show a general decrease in downstream results.
B1SW0009	ISRA Performance	BMP Subarea	Outfall 009	B1 downstream	0.62	2012-2013 reporting year: Discontinued ISRA performance monitoring at B1 Area locations as they had been monitored for two years and sufficient data had been collected to show a general decrease in downstream results.
B1SW0012	ISRA Performance	BMP Subarea	Outfall 009	B1 north road runoff, before treatment	0.25	2011-2012 reporting year: Discontinued B1SW0012 as this location was slightly upstream of B1SW002 and it was determined that only one monitoring location was needed.
B1SW0014	ISRA Performance	BMP Subarea	Outfall 009	B1 culvert effluent (no media filter) - OLD	8.2	2012-2013 reporting year: B1SW0014 was replaced by monitoring location B1BMP0006.
B1SW0014-A	ISRA Performance	BMP Subarea	Outfall 009	B1 media filter effluent (pre-media filter reconstruction) - OLD	8.6	*See description for B1SW0014.*
B1SW0014-B	ISRA Performance	BMP Subarea	Outfall 009	B1 media filter effluent (post-media filter reconstruction) - OLD	8.6	*See description for B1SW0014.*
B1SW0014-C (B1BMP0006)	ISRA Performance	BMP Subarea	Outfall 009	B1 media filter effluent (post-media filter reconstruction, post-curb cuts)	8.6	*See description for B1SW0014.* 2016-2017 reporting year: Discontinued B1 media filter monitoring at B1BMP0006 and B1BMP0004-5 because positive performance has been demonstrated

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						with respect to improving water quality over a representative distribution of storm depths and intensities.
BGBMP0001 (A2BMP0006, A2SW0007)	Existing BMP Performance	Background	Outfall 009	Background - CM-1 upstream east tributary, before treatment	39.3	2011-2012 reporting year: Discontinued BGBMP0001 based on a review of results from the previous reporting year for background monitoring locations on Sage Ranch and finding these to be sufficient data for the program. 2012-2013 reporting year: Discontinued A2SW0007 as it had been monitored for two years and sufficient data had been collected. Monitoring continued at co-located BMP monitoring location A2BMP0006.
BGBMP0002 (LXSW0003)	Subarea for BMP Siting Analysis	Background	Outfall 009	Background - CM-3 upstream, before treatment	16.8	2017-2018 reporting year: BGBMP0002 was discontinued and replaced by LXBMP0011.
BGBMP0003	Subarea for BMP Siting Analysis	Background	Outfall 009	Background - Sage Ranch near LOX	16.8	2012-2013 reporting year: Monitoring at all remaining background locations was discontinued as sufficient data had been collected but has been reinstated since the 2014/15 monitoring period.
BGBMP0004 (EPNDSW05)	Subarea for BMP Siting Analysis	Background	Outfall 009	Background - Sage Ranch near CM-5	81.1	2012-2013 reporting year: Monitoring at all remaining background locations was discontinued as sufficient data had been collected but has been reinstated since the 2014/15 monitoring period.
BGBMP0005 (EPNDSW07)	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Sage Ranch near entrance	29.8	n/a

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
BGBMP0006 (A2SW0006)	Subarea for BMP Siting Analysis	Background	Outfall 009	Background - CM-1 upstream east tributary (ponded footprint), before treatment	39.3	During the 2010-2011 reporting year, co-located monitoring location A2SW0006/BGBMP0006 was observed to be in ponded water. These monitoring locations were discontinued and replaced by A2SW0007/BGBMP0001 added further upstream.
BGBMP0007 (LXSW0001)	Subarea for BMP Siting Analysis	Background	Outfall 009	Background - CM-3 upstream, before treatment	16.8	During the 2010-2011 reporting year, co-located monitoring locations LXSW0001/BGBMP0007 were observed to be in ponded water. These monitoring locations were discontinued and replaced by LXSW0003/BGBMP0002 added further upstream.
CABMP0001	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 001	Driveway downgradient of hydrogen gas storage tank	2.2	n/a
CABMP0002	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 001	Driveway downgradient of hydrogen gas facility buildings	0.59	n/a
CABMP0003	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 001	Road runoff downstream of hydrogen gas facility	1.0	n/a
EPNDSW01	Special Studies	BMP Subarea	Outfall 009	Northern Drainage above confluence with Area II drainage	432.7	n/a
EPNDSW02	Special Studies	BMP Subarea	Outfall 009	Area II drainage above confluence with Northern Drainage	100.0	n/a
EPNDSW03	Special Studies	BMP Subarea	Outfall 009	Northern Drainage downstream of LOX	370.3	n/a
EPNDSW04	Special Studies	BMP Subarea	Outfall 009	Northern Drainage downstream of box culvert	270.4	n/a

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
EPNDSW06	Special Studies	BMP Subarea	Outfall 009	Northern Drainage downstream of IEL stormdrain outlet discharge	84.5	n/a
EVBMP0001	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	ELV culvert inlet (helipad road gutter) - OLD	7.4	EVBMP001 was discontinued at the start of the 2012-2013 reporting year and was replaced by monitoring locations EVBMP0004 and EVBMP0005. Location was re-instated at the start of the 2013-2014 reporting year to monitor overflow from the ELV treatment BMP retention basin during extended rain events.
EVBMP0001-A	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	ELV culvert inlet (helipad road and ELV ditch, composite)	7.4	n/a
EVBMP0002	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Helipad (pre-sandbag berms) - OLD	4.1	n/a
EVBMP0002-A	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Helipad (post-sandbag berms) - OLD	4.1	n/a
EVBMP0002-B	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Helipad (post-sandbag berms raised, post-drainage holes in asphalt)	9.1	n/a
EVBMP0003 (A2SW0001)	Existing BMP Performance	BMP Subarea	Outfall 009	CM-1 upstream west, pre-ELV improvements, before treatment - OLD	4.9	2012-2013 reporting year: Discontinued ISRA performance monitoring at A2SW0001 as it had been monitored for three years. Monitoring continued at co-located BMP monitoring location EVBMP0003.
EVBMP0003-A	Existing BMP Performance	BMP Subarea	Outfall 009	CM-1 upstream west, post-ELV improvements, before treatment	1.4	n/a

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
EVBMP0004	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	2012-2013 Lower Helipad Road	2.5	2013-2014 reporting year: Discontinued EVBMP0004 following installation of the ELV treatment BMP.
EVBMP0005	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	2012-2013 ELV drainage ditch (pre-ELV-1C ISRA) - OLD	11.0	2013-2014 reporting year: Discontinued EVBMP0005 following installation of the ELV treatment BMP.
EVBMP0005-A	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	2012-2013 ELV drainage ditch (post-ELV-1C ISRA)	3.3	*See description for EVBMP0005.*
EVBMP0006	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	2012-2013 Area II Road near ELV ditch	8.2	2013-2014 reporting year: Discontinued EVBMP0006 following installation of the ELV treatment BMP.
EVBMP0007	Existing BMP Performance	BMP Subarea	Outfall 009	Influent to ELV sedimentation, before treatment	6.6	n/a
EVBMP0008	Existing BMP Performance	BMP Subarea	Outfall 009	Effluent from ELV treatment BMP	6.6	n/a
EVBMP0009	Existing BMP Performance	BMP Subarea	Outfall 009	Influent to ELV media filter, before treatment	6.6	n/a
EVBMP0010	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Area 2 Road Runoff, SD inlet on north side of road	0.13	n/a
HZBMP0001 (HZSW0007)	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 008	Happy Valley downstream (pre-improvements) - OLD	21.4	2012-2013 reporting year: Discontinued HZSW0007 as all OF008 ISRA performance monitoring locations had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results. Monitoring continued at the co-located BMP monitoring location HZBMP0001. 2014-2015 reporting year: Discontinued HZBMP0001 as the

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						location had been monitored for four years.
HZBMP0001-A	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 008	Happy Valley downstream (post-improvements)	20.4	*See description for HZBMP0001.*
HZBMP0002 (HZSW0004)	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 008	DRG downstream	23.2	2011-2012 reporting year: Discontinued HZBMP0002. Location monitored the CYN/DRG drainage along with HZBMP0003. Results for the 2010-2011 reporting year for both locations were below NPDES permit limits, therefore it was determined that only one location was needed to monitor this drainage. Monitoring continued at the ISRA performance monitoring location HZSW0004. 2012-2013 reporting year: Discontinued HZSW0004 as all OF008 ISRA performance monitoring locations had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZBMP0003 (HZSW0003)	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 008	DRG downstream (furthest downstream)	29.6	2012-2013 reporting year: Discontinued HZSW0003 as all OF008 ISRA performance monitoring locations had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results. Monitoring

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						continued at the co-located BMP monitoring location HZBMP0003. 2014-2015 reporting year: Discontinued HZBMP0003 as the location had been monitored for four years.
HZSW0001	ISRA Performance	BMP Subarea	Outfall 008	Happy Valley downstream	<29.0	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0002	ISRA Performance	BMP Subarea	Outfall 008	Happy Valley downstream	<29.0	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0005	ISRA Performance	BMP Subarea	Outfall 008	DRG upstream	21.0	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0006	ISRA Performance	Background	Outfall 008	CYN upstream	NA	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						collected to show a general decrease in downstream results.
HZSW0008	ISRA Performance	Background	Outfall 008	Background - Happy Valley upstream	NA	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0009	ISRA Performance	BMP Subarea	Outfall 008	Happy Valley downstream	0.20	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0010	ISRA Performance	BMP Subarea	Outfall 008	Happy Valley downstream	2.2	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0011	ISRA Performance	Background	Outfall 008	Background - Happy Valley upstream	0.10	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0012	ISRA Performance	Background	Outfall 008	Background - Happy Valley upstream	0.40	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0013	ISRA Performance	BMP Subarea	Outfall 008	Happy Valley downstream	0.30	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0014	ISRA Performance	BMP Subarea	Outfall 008	Happy Valley upstream	0.10	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0015	ISRA Performance	BMP Subarea	Outfall 008	Happy Valley downstream	0.40	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0016	ISRA Performance	BMP Subarea	Outfall 008	Happy Valley downstream	4.8	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0018	ISRA Performance	BMP Subarea	Outfall 008	Happy Valley downstream	1.4	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0019	ISRA Performance	BMP Subarea	Outfall 008	CYN downstream	2.6	2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
HZSW0020 (HZSW0017)	ISRA Performance	Background	Outfall 008	Background - Happy Valley upstream	0.20	2011-2012 reporting year: HZSW0017 was replaced by HZSW0020 which was placed upstream of a disturbed soil area and silt fence. 2012-2013 reporting year: Discontinued monitoring at all OF008 ISRA performance monitoring locations as they had been monitored for three years and sufficient data had been collected to show a general decrease in downstream results.
ILBMP0001	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Lower parking lot 24" storm drain bypass	30.2	n/a
ILBMP0002	Existing BMP Performance	BMP Subarea	Outfall 009	Road runoff to CM-9, before treatment	2.2	n/a
ILBMP0003	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	A1LF parking lot - OLD	0.97	2011-2012 reporting year: Discontinued ILBMP0003 based on results from the previous reporting year below the NPDES permit limits and was replaced with A1BMP002 (co-located with A1SW004) further upstream.

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
ILBMP0004	Existing BMP Performance	BMP Subarea	Outfall 009	Western Concrete Swale (B1436 Southern Detention Bioswale Influent)	0.92	n/a
ILBMP0005 (ILBMP0005-7)	Existing BMP Performance	BMP Subarea	Outfall 009	Downstream (B1436 Southern Detention Bioswale)	15.6	2017-2018 reporting year: Discontinued monitoring at ILBMP0005-7 due to the discontinuation of monitoring at ILBMP0007.
ILBMP0006	Existing BMP Performance	BMP Subarea	Outfall 009	Upstream (B1436 Northern Detention Bioswale)	2.6	2017-2018 reporting year: Discontinued monitoring at ILBMP0006 due to sufficient data having been collected at this site.
ILBMP0007 (ILBMP0005-7)	Existing BMP Performance	BMP Subarea	Outfall 009	Northern Detention Bioswale Effluent	2.6	2017-2018 reporting year: Discontinued monitoring at ILBMP0007 due to sufficient data having been collected at this site.
ILBMP0008	Existing BMP Performance	BMP Subarea	Outfall 009	Eastern Concrete Swale (B1436 Southern Detention Bioswale influent)	13.3	n/a
ILSW0001	ISRA Performance	BMP Subarea	Outfall 009	IEL-3 upstream	NA/small	2012-2013 reporting year: Discontinued ISRA performance monitoring at IEL-1 as it had been monitored for two years.
ILSW0002	ISRA Performance	BMP Subarea	Outfall 009	IEL-3 downstream (pre-ISRA excavation) - OLD	0.03	2012-2013 reporting year: Discontinued ISRA performance monitoring at IEL-1 as it had been monitored for two years.
ILSW0002-A	ISRA Performance	BMP Subarea	Outfall 009	IEL-1 downstream (post-ISRA excavation)	NA/small	*See description for ILSW0002.*
ILSW0003	ISRA Performance	BMP Subarea	Outfall 009	IEL-2 upstream	1.2	ISRA program completed
ILSW0004	ISRA Performance	BMP Subarea	Outfall 009	IEL-2 downstream (pre-ISRA excavation) - OLD	1.2	ISRA program completed

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
ILSW0004-A	ISRA Performance	BMP Subarea	Outfall 009	IEL-2 downstream (post-ISRA excavation)	1.2	ISRA program completed
ILSW0005	ISRA Performance	BMP Subarea	Outfall 009	IEL-3 upstream	0.76	ISRA program completed
ILSW0006	ISRA Performance	BMP Subarea	Outfall 009	IEL-3 downstream (pre-ISRA excavation) - OLD	0.86	ISRA program completed
ILSW0006-A	ISRA Performance	BMP Subarea	Outfall 009	IEL-3 downstream (post-ISRA excavation)	0.86	ISRA program completed
ILSW0007	ISRA Performance	BMP Subarea	Outfall 009	IEL-2 upstream (2014-2015 reporting year)	0.03	ISRA program completed
ILSW0008	ISRA Performance	BMP Subarea	Outfall 009	IEL-2 downstream (2014-2015 reporting year)	0.11	ISRA program completed
LFSW0001	ISRA Performance	Background	Outfall 009	CTLI upstream	0.03	2012-2013 reporting year: Discontinued ISRA performance monitoring at CTLI as it had been monitored for two years.
LFSW0002	ISRA Performance	BMP Subarea	Outfall 009	CTLI downstream (pre-ISRA excavation) - OLD	1.4	2012-2013 reporting year: Discontinued ISRA performance monitoring at CTLI as it had been monitored for two years.
LFSW0002-A	ISRA Performance	BMP Subarea	Outfall 009	CTLI downstream (post-ISRA excavation)	1.4	*See description for LFSW0002.*
LPBMP0001	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Lower lot sheetflow (pre-gravel bag berms) - OLD	2.3	2012-2013 reporting year: Discontinued LPBMP0001 following the installation of the Lower Parking Lot BMP.
LPBMP0001-A	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	Lower lot sheetflow (post-gravel bag berms)	2.7	*See description for LPBMP0001.*
LPBMP0002	Existing BMP Performance	BMP Subarea	Outfall 009	Lower parking lot influent to cistern, before treatment	29.9	n/a
LPBMP0003	Existing BMP Performance	BMP Subarea	Outfall 009	Lower parking lot sediment basin outlet, before treatment	29.9	n/a

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
LPBMP0004	Existing BMP Performance	BMP Subarea	Outfall 009	Lower parking lot biofilter outlet	29.9	n/a
LXBMP0001	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	LOX west - OLD	3.8	2011-2012 reporting year: LXBMP0001 was replaced by monitoring location LXBMP0004, following installation of the LOX sandbag berm.
LXBMP0002	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	LOX mid - OLD	9.1	2011-2012 reporting year: LXBMP0002 was replaced by monitoring location LXBMP0005, following installation of the LOX sandbag berm.
LXBMP0003	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	LOX east tributary - OLD	21.3	2011-2012 reporting year: LXBMP0003 was replaced by monitoring location LXBMP0006, following installation of the LOX sandbag berm.
LXBMP0004	Existing BMP Performance	BMP Subarea	Outfall 009	LOX southwest downstream of sandbag berm	11.7	2012-2013 reporting year: LXBMP0004 was discontinued and replaced by LXBMP0007 following the installation of the slope drains at the LOX sandbag berm.
LXBMP0005	Existing BMP Performance	BMP Subarea	Outfall 009	LOX southeast downstream of sandbag berm	11.7	2012-2013 reporting year: LXBMP0005 was discontinued and replaced by LXBMP0008 following installation of the slope drains at the LOX sandbag berm.
LXBMP0006 (LXSW0010)	Subarea for BMP Siting Analysis	BMP Subarea	Outfall 009	LOX east, runoff along dirt road	0.28	2016-2017 reporting year: LXBMP0006 has been temporarily discontinued until remediation begins, since sufficient data has otherwise been collected.
LXBMP0007	Existing BMP Performance	BMP Subarea	Outfall 009	LOX, inlet to western slope drain	11.7	2016-2017 reporting year: LXBMP0007 has been temporarily discontinued until remediation begins, since sufficient data has otherwise been collected.
LXBMP0008	Existing BMP Performance	BMP Subarea	Outfall 009	LOX, inlet to central slope drain	11.7	2016-2017 reporting year: LXBMP0008 has been temporarily discontinued until

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
						remediation begins, since sufficient data has otherwise been collected.
LXBMP0009 (LXSW0009)	Existing BMP Performance	BMP Subarea	Outfall 009	LOX, inlet to eastern slope drain	11.7	2016-2017 reporting year: LXBMP0009 has been temporarily discontinued until remediation begins, since sufficient data has otherwise been collected.
LXBMP0010	Existing BMP Performance	BMP Subarea	Outfall 009	Service Area Road BMP – Road Runoff Influent to CM-3	0.25	n/a
LXBMP0011 (BGBMP0002, LXSW0003)	Existing BMP Performance	Background	Outfall 009	CM-3 Undeveloped Hillside Runoff	16.3	2011-2012 reporting year: Discontinued LXSW0003 due to the low concentrations observed in results from the previous reporting year. Monitoring continued at BGBMP0002 as a background location. 2012-2013 reporting year: Discontinued BGBMP0002 as sufficient data had been collected at all remaining background locations.
LXBMP0012	Existing BMP Performance	BMP Subarea	Outfall 009	CM-3 Effluent	17	n/a
LXSW0002	ISRA Performance	BMP Subarea	Outfall 009	CM-3 downstream (pre-filter fabric over weir boards) - OLD	16.8	2011-2012 reporting year: Discontinued LXSW0002 due to the low concentrations observed in results from the previous reporting year.
LXSW0002-A	ISRA Performance	BMP Subarea	Outfall 009	CM-3 downstream (post-filter fabric over weir boards)	16.8	*See description for LXSW0002.*
Outfall 001**	NPDES	NPDES	Outfall 001	NPDES Outfall 001	305.9	n/a
Outfall 008**	NPDES	NPDES	Outfall 008	NPDES Outfall 008	62.0	n/a

Site Identifier (Co-location)	Subcategory	Prioritization Category	Watershed	Description	Approximate Upstream Drainage Area (ac)	Reason for Discontinuation
Outfall 009**	NPDES	NPDES	Outfall 009	NPDES Outfall 009	536	n/a

Notes

- Gray text indicates historic subarea monitoring locations that have been discontinued.
- (**) NPDES outfall monitoring data are included in this analysis for comparison and method testing purposes only. New stormwater controls are not being contemplated at these locations.

Legend

- Treatment BMPs
- Completed ISRA Area
- Administrative Boundary
- Watershed 009
- Drainage
- Storm Drain
- Untreated Drainage Area

Treated Drainage Area

- B1 Media Filter
- Biofilter
- CM-1
- CM-2
- CM-3
- CM-4
- CM-5
- CM-6
- CM-8
- CM-9
- CM-10
- CM-11
- CM-12
- Detention Bioswales
- ELV Treatment BMP
- Helipad BMP
- LOX BMP
- Upper Lot Media Filter

0 395 790 1,580 Feet

Attachment 4
Treated Drainage Areas

Santa Susana Field Laboratory
Ventura County, CA

August 2018

Date: 7/10/2018, Path: P:\GIS\Projects\Boeing\SSFL\2018 LA04B902 Ranking Memo\Attachment-4 2018 Priority Sites.mxd, User: SLuell

Geosyntec

N

Road Runoff Inlet to CM-1
Helipad Berms and Pumps
Road Runoff Inlet to CM-3
LOX BMP
CM-5
CM-12
Biofilter
B1 Media Filter
Detention Basin
CM-10
CM-11
Upper Lot Media Filter
CM-1
CM-2
CM-4
CM-6
CM-8
CM-9
Sedimentation Basin
CM-7
ELV Treatment BMP
CM-3
Administrative Area Inlet Filters
Detention Bioswales

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

Attachment 5. Ranking Analysis Approach Methodology

Particulate Strength Calculation Approach

Particulate strength (PS) is computed as total COC concentration minus dissolved COC concentration divided by TSS concentration, or the estimated particulate COC mass per mass of suspended solids. Some of the dissolved metal data are not available (e.g., ISRA monitoring program does not include analyses for dissolved metals at ISRA sample locations); therefore, procedures were established to make assumptions in lieu of missing information.

For example, to obtain PS estimates for the subareas without filtered metals results, filtered concentrations were estimated by assuming that the filtered fraction for each sample was equal to the average filtered fraction at Outfall 008 or 009 (no background samples have been taken at Outfall 001 as of the 2017/2018 reporting year), and then applied to the subarea depending on the respective watershed in which the subarea is located.

The established procedures also address situations where total, dissolved, or TSS results are not detected (ND, below the detection limit as reported by the analytical laboratory). Table 1 summarizes the procedures that were followed for the PS calculation analysis, given the data limitations described in Section 2 of the BMP Ranking Analysis Memo. It was not possible to calculate PS for sample events in which TSS or the total POC concentration was not available.

Table 1. Methods used in determining particulate strength.

Measurement Result			PS Calculation Approach
Total	**Dissolved**	**TSS**	
Det	Det	Det	Compute PS normally
Det	Det	ND	Compute PS with TSS detection limit
Det	ND	ND	Compute PS with TSS DLs & dissolved DLs if dissolved DL is < 30% of the total result. Otherwise, estimate the dissolved concentration by multiplying the total concentration by the average dissolved fraction from the respective watershed.
ND	ND	ND	Report PS result as "ND"
ND	ND	Det	Report PS result as "ND"
ND	Det	Det	Report PS result as "ND"
Det	ND	Det	Assume DL for dissolved concentration to get PS if dissolved DL is < 30% of the total result. Otherwise, estimate the dissolved concentration by multiplying the total concentration by the average dissolved fraction from the respective watershed.
ND	Det	ND	Report PS result as "ND"
ND	Null	ND	Report PS result as "ND"
ND	Null	Det	Report PS result as "ND"
Det	Null	Det	Estimate the dissolved concentration by multiplying the total concentration by the average dissolved fraction from the respective watershed.
Det	Null	ND	Compute PS with TSS DL. Estimate the dissolved concentration by multiplying the total concentration by the average dissolved fraction from the respective watershed.

Notes

- Det = Detected, a measured result was obtained
- Null = Not sampled, measurement not taken
- The 30% threshold for determination of the dissolved value to use in the PS calculations was selected based on best professional judgment.
- ND = non-detected measurement result – the POC was not detected. Detection limits in these cases are often used to determine the range of possible particulate strengths. In 'PS Calculation Approach' column, ND encompasses all situations

where the particulate strength either reflects a non-detect in the concentration~~,~~ or is non-determinate for other reasons. This distinction is used in all particulate strength columns throughout the rest of this report.

The following example calculation demonstrates the method for a theoretical sampling point (X) located in Outfall 009:

TSS_X = 100 mg/L

Total Pb_X = 10 µg/L

Dissolved Pb_X = Sample not collected, so value estimated based on Table 5 = 10 µg/L * 0.18 = 1.8 µg/L

Estimated PS_X = (10 µg/L – 1.8 µg/L) / 100 mg/L = 8.2 µg/L / 100 mg/L = 82 mg/kg

Subarea Ranking Analysis Approach

The two-tiered method for determining the potential BMP subarea weighting factor helps identify significant differences between sets having different numbers of "critical" observations ("m", defined as the sum of the number of results exceeding either the permit limit or the 95th percentile stormwater background[1]) and different numbers of total observations ("n", defined as the number of particulate strength results plus the number of concentration results). This allows a statistically-based weighting factor to be applied to each subarea for each COC to reflect the number of observations simultaneously with the number of critical observations. As an example, a location having 20 critical observations out of 20 total observations has more confidence compared to a location only having 3 critical observations out of 3 total observations. The larger number of total observations results in a greater confidence of the findings. Similarly, if only 1 out of 10 observations are critical, that subarea has less confidence in a critical determination compared to a subarea that has 8 out of 10 critical observations. The weighting factors for small sample sets used in this part of the analysis are summarized in Table 2.

Table 2. Weighting Factors for Small Sample Sets (WF, %) (divided by 100 for use in the ranking analyses)

Total Number of Observations (n)	Total Number of Critical Values in Data Set (m)													
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1	50													
2	50	75												
3	50	50	87											
4	31	50	69	94										
5	19	50	50	81	97									
6	11	34	50	66	89	98								
7	6	23	50	50	77	94	99							
8	4	14	36	50	64	86	98	99						
9	2	9	25	50	50	75	96	98	99					
10	1	5	17	38	50	63	83	95	99	99				
11	1	3	11	27	50	50	73	89	97	99	99			
12	0	2	7	19	39	50	63	81	93	98	99	99		
13	0	1	5	13	29	50	50	71	87	95	99	99	99	
14	0	1	3	9	21	40	50	61	79	91	97	99	99	99
15	0	0	2	6	15	30	50	50	70	85	94	98	99	99

[1] The 95th percentile threshold was recommended by the Panel based on best professional judgment as well as a review of relevant surface water regulations and guidance (WWE, 2011, attached as Appendix D).

Where the total number of observations was greater than 15[2] and the number of critical values in the dataset was greater than 14, the weighting factor (WF) was computed as the unadjusted value of the cumulative distribution function (CDF) of a binomial distribution with p = 0.5:

$$WF = \sum_{i=0}^{m} \binom{n}{i} p^i (1-p)^{n-i}$$

Where,

P = 0.5

$n = n_C + n_{PS}$, where

n_C = Number of concentration sample results

n_{PS} = Number of PS results

$m = m_C + m_{PS,}$, where

m_C = Number of concentrations sample results that exceed the Permit Limits

m_{PS} = Number of PS results that exceed the 95th percentile stormwater background PS results threshold

Comparing potential BMP subarea monitoring datasets with a combination of stormwater background and permit limit thresholds allows for the accounting of both the size of the dataset (number of samples) and the number of samples that are above a stormwater background threshold, resulting in a more robust and defensible weight for ranking potential BMP subareas based on need for treatment that can be reevaluated in the future as the available data sets grow.

Table 3 contains an example which demonstrates the multi-constituent score calculation method for a theoretical monitoring location. As shown in Table 3, the ranking analysis method calculates a single score for each POC for each potential BMP subarea and background subarea. The highest score across all metals at a single subarea is assumed representative of the multi-constituent "metals score" for each subarea. The highest score between TCDD TEQ and 2,3,7,8-TCDD at a single subarea is assumed representative of the multi-constituent "dioxin score" for each subarea. A multi-constituent score is then calculated as the average of the maximum metal and dioxin WF values. The TSS weighting factor and score are the same.

[2] This situation only occurs for Outfalls 008 and 009 which have several years of NPDES monitoring data available and are included here for method testing and results comparison purposes only (i.e., treatment controls are not being contemplated at these locations). The large sample sizes at these locations exceed the statistical capability of the methods used to determine the weighting factor. In future BMP subarea ranking analysis reports, this can be corrected by an adjustment that has been recommended by Dr. Pitt.

Table 3. Example Weighting Factor (WF) and Multi-Constituent Score Calculation

	Subarea X									
	Metals						**Dioxins**			
	TPb		**TCu**		**TCd**		**TCDD**		**2,3,7,8-TCDD**	**TSS**
Calculation Step	**>PL**	**>95%B**	**>PL**	**>95%B**	**>PL**	**>95%B**	**>PL**	**>95%B**	**>95%B**	**>95%B**
Sample 1	**Y**	N	N	N	N	N	N	N	N	N
Sample 2	N	N	N	N	N	N	N	N	**Y**	N
Sample 3	**Y**	N	**Y**	N	N	N	**Y**	N	N	N
Sample 4	**Y**	**Y**	N	N	N	N	--	--	N	**Y**
Sample 5	N	--	N	--	N	N	--	--	N	N
Sample 6	N	--	**Y**	--	N	N	--	--	--	N
# Y / # samples	3/6	1/4	2/6	0/4	0/6	0/6	1/3	0/3	1/5	1/6
(sum Y) / (sum n)	4/10		2/10		0/12		1/6		1/5	1/6
WF	0.38		0.05		0		0.11		0.19	0.11
Max WF	0.38						0.19			0.11
Multi Pollutant Score	0.29									0.11
Exceeds Both PL&B?	**Y**		N		N		N		NA	NA

Notes

>PL = greater than Permit Limit concentration, >95%B = greater than 95th percentile stormwater background particulate strength (or concentration for TSS), **Y** = yes, N = no, WF = weighting factor, -- = no data.

Attachment 6

Summary of Results by Subarea

Notes:
All median and maximum values in µg/L except TSS, which is in mg/L.
2,3,7,8-TCDD is without permit limits; however, any detection of 2,3,7,8-TCDD is reflected as an exceedance in the N>PL column.

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
A1BMP0001	1	Cadmium	5	--	0.480	0.510	0	4	--	9.32	50.0	3	0.25	no
	2	TCDD TEQ	5	--	8.80e-10	5.62e-07	1	5	--	4.00e-08	5.62e-04	1	0.05	yes
	3	2,3,7,8-TCDD	5	5	<2.30e-06	<4.40e-06	0	5	5	<1.05e-04	<3.10e-03	1	0.01	no
	5	Copper	5	--	4.20	5.30	0	5	--	90.9	300	0	0	no
	5	Lead	5	2	0.280	2.50	0	5	2	>37.6	>198	0	0	no
	5	Total Suspended Solids	5	--	11.0	22.0	--	0	--	--	--	0	0	no
A1BMP0002	1	Total Suspended Solids	16	3	10.5	320	--	0	--	--	--	0	0.04	no
	4	2,3,7,8-TCDD	8	8	<7.00e-07	<3.60e-06	0	8	8	<5.30e-04	<7.20e-04	0	0	no
	4	Cadmium	15	--	0.250	0.960	0	1	--	0.700	0.700	0	0	no
	4	Copper	16	--	4.40	20.0	2	16	--	140	>2,000	3	0	yes
	4	Lead	16	3	0.795	11.0	3	16	3	78.7	224	0	0	no
	4	TCDD TEQ	8	--	1.33e-08	2.43e-07	2	8	--	2.57e-06	>2.09e-05	0	0	no
A1BMP0002-A	1	Total Suspended Solids	12	--	8.45	320	--	0	--	--	--	0	0.07	no
	2	TCDD TEQ	11	3	2.03e-08	3.97e-06	5	11	3	1.87e-07	8.44e-04	1	0.03	yes
	4.5	2,3,7,8-TCDD	11	11	<6.80e-07	<4.70e-06	0	11	11	<8.95e-05	<5.49e-03	1	0	no
	4.5	Cadmium	12	4	0.350	1.40	0	9	4	>0.428	<34.0	4	0	no
	4.5	Copper	12	--	8.20	15.0	2	6	--	35.4	164	0	0	no
	4.5	Lead	12	7	<1.00	15.0	2	12	7	<504	<504	1	0	yes
A1BMP0004	1	Lead	6	--	5.45	13.0	4	6	--	150	397	2	0.50	yes
	2	TCDD TEQ	6	1	1.84e-08	2.04e-06	3	6	1	4.48e-07	1.13e-04	1	0.19	yes
	4.5	2,3,7,8-TCDD	6	6	<4.30e-07	<7.20e-07	0	6	6	<1.67e-05	<9.74e-05	0	0	no
	4.5	Cadmium	6	5	<0.250	0.280	0	6	5	<0.0	>0.822	0	0	no
	4.5	Copper	6	--	4.05	6.70	0	6	--	72.0	107	0	0	no
	4.5	Total Suspended Solids	6	--	35.5	43.0	--	0	--	--	--	0	0	no
A1SW0002	1	Total Suspended Solids	10	1	3.00	82.0	--	0	--	--	--	0	0.01	no
	4	2,3,7,8-TCDD	0	--	--	--	0	0	--	--	--	0	0	no
	4	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	4	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	4	Lead	10	1	0.580	11.0	3	10	1	96.4	261	0	0	no
	4	TCDD TEQ	0	--	--	--	0	0	--	--	--	0	0	no
A1SW0003	3.5	2,3,7,8-TCDD	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Lead	10	2	0.285	7.00	1	10	2	148	219	0	0	no
	3.5	TCDD TEQ	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Total Suspended Solids	10	2	5.50	33.0	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
A1SW0005	1	Total Suspended Solids	10	1	11.5	100	--	0	--	--	--	0	0.05	no
	3	2,3,7,8-TCDD	5	5	<6.50e-07	<3.80e-06	0	5	5	<1.30e-04	<9.50e-04	1	0.01	no
	3	Cadmium	10	2	0.130	0.430	0	1	--	2.86	2.86	1	0.01	no
	3	TCDD TEQ	5	--	5.50e-09	4.46e-08	1	5	--	1.18e-06	>4.46e-05	0	0.01	no
	5.5	Copper	10	--	4.30	11.0	0	9	--	89.9	>1,570	1	0	no
	5.5	Lead	10	1	0.605	15.0	2	10	1	68.3	>233	0	0	no
A1SW0006	3.5	2,3,7,8-TCDD	12	12	<5.40e-07	<2.80e-06	0	12	12	<1.47e-04	<9.33e-04	2	0	no
	3.5	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Lead	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	TCDD TEQ	12	2	5.93e-09	7.48e-07	4	12	2	8.98e-07	3.94e-05	0	0	no
	3.5	Total Suspended Solids	12	2	3.50	19.0	--	0	--	--	--	0	0	no
A1SW0007	3.5	2,3,7,8-TCDD	12	12	<6.90e-07	<1.80e-05	0	12	12	<3.80e-04	<1.30e-03	3	0	no
	3.5	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Lead	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	TCDD TEQ	12	--	4.51e-09	2.04e-06	4	12	--	3.00e-06	1.02e-03	1	0	yes
	3.5	Total Suspended Solids	12	3	2.50	24.0	--	0	--	--	--	0	0	no
A1SW0009-A	1	Lead	1	--	9.10	9.10	1	1	--	584	584	1	0.75	yes
	2	TCDD TEQ	1	--	1.80e-07	1.80e-07	1	1	--	1.64e-05	1.64e-05	0	0.50	no
	4.5	2,3,7,8-TCDD	1	1	<2.60e-06	<2.60e-06	0	1	1	<2.36e-04	<2.36e-04	0	0	no
	4.5	Cadmium	1	1	<0.100	<0.100	0	0	--	--	--	0	0	no
	4.5	Copper	1	--	7.90	7.90	0	1	--	262	262	0	0	no
	4.5	Total Suspended Solids	1	--	11.0	11.0	--	0	--	--	--	0	0	no
A1SW0009-B	1	TCDD TEQ	5	--	1.84e-07	3.21e-06	5	5	--	2.91e-06	1.69e-04	1	0.63	yes
	2	Lead	6	--	12.1	36.0	4	6	--	112	706	1	0.39	yes
	3	Total Suspended Solids	6	--	33.5	450	--	0	--	--	--	0	0.34	no
	5	2,3,7,8-TCDD	5	5	<9.20e-07	<8.50e-06	0	5	5	<2.73e-05	<7.73e-05	0	0	no
	5	Cadmium	6	4	<0.200	0.390	0	0	--	--	--	0	0	no
	5	Copper	6	--	7.95	22.0	1	6	--	78.7	240	0	0	no
A1SW0009-C	1	TCDD TEQ	11	3	7.23e-08	4.56e-06	7	11	3	3.21e-06	3.51e-04	1	0.14	yes
	2	Total Suspended Solids	11	1	5.50	180	--	0	--	--	--	0	0.01	no
	4.5	2,3,7,8-TCDD	11	11	<7.10e-07	<1.13e-05	0	11	11	<1.29e-04	<4.54e-03	1	0	no
	4.5	Cadmium	11	11	<0.250	<0.500	0	11	11	<0.0	<1.39	0	0	no
	4.5	Copper	11	--	4.80	16.0	1	9	--	127	271	0	0	no
	4.5	Lead	11	1	0.950	12.0	1	11	1	>129	>932	2	0	yes
A2BMP0002	1	2,3,7,8-TCDD	1	1	<3.40e-06	<3.40e-06	0	1	1	<1.13e-03	<1.13e-03	1	0.50	no
	4	Cadmium	1	1	<0.100	<0.100	0	1	1	<0.0	<0.0	0	0	no
	4	Copper	1	--	2.40	2.40	0	1	--	133	133	0	0	no
	4	Lead	1	--	0.290	0.290	0	1	--	>68.2	>68.2	0	0	no
	4	TCDD TEQ	1	--	1.10e-11	1.10e-11	0	1	--	3.67e-09	3.67e-09	0	0	no
	4	Total Suspended Solids	1	--	3.00	3.00	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
A2BMP0003	1	Total Suspended Solids	8	1	15.5	1,400	--	0	--	--	--	0	0.14	no
	2	TCDD TEQ	8	1	6.82e-08	1.20e-05	4	8	1	8.04e-07	1.42e-03	1	0.11	yes
	4.5	2,3,7,8-TCDD	8	8	<1.30e-06	<2.90e-06	0	8	8	<4.72e-05	<3.14e-04	0	0	no
	4.5	Cadmium	8	6	<0.200	1.00	0	8	6	<0.0	>0.643	0	0	no
	4.5	Copper	8	--	3.55	28.0	1	6	--	20.9	66.7	0	0	no
	4.5	Lead	8	--	1.38	68.0	2	8	--	62.4	>108	0	0	no
A2BMP0004	1	Total Suspended Solids	3	--	31.0	130	--	0	--	--	--	0	0.50	no
	2	TCDD TEQ	3	--	5.71e-08	7.16e-07	2	3	--	1.84e-06	5.51e-06	0	0.34	no
	3	Lead	3	--	4.20	10.0	1	3	--	75.2	121	0	0.11	no
	5	2,3,7,8-TCDD	3	3	<1.40e-06	<2.10e-06	0	3	3	<4.52e-05	<1.31e-04	0	0	no
	5	Cadmium	3	2	<0.100	0.160	0	3	2	<0.0	>0.155	0	0	no
	5	Copper	3	--	6.70	7.80	0	3	--	47.7	161	0	0	no
A2BMP0005	1	TCDD TEQ	4	--	3.30e-07	1.88e-05	4	4	--	4.86e-06	2.19e-04	1	0.64	yes
	2	Total Suspended Solids	4	--	66.5	86.0	--	0	--	--	--	0	0.31	no
	3	Lead	4	--	4.45	11.0	1	4	--	60.1	119	0	0.04	no
	5	2,3,7,8-TCDD	4	4	<1.60e-06	<2.73e-06	0	4	4	<3.79e-05	<6.67e-05	0	0	no
	5	Cadmium	4	3	<0.250	<0.250	0	4	3	<0.0	>0.176	0	0	no
	5	Copper	4	--	4.90	8.70	0	4	--	38.0	50.0	0	0	no
A2BMP0008	1	Lead	2	--	286	465	2	2	--	407	510	2	0.94	yes
	2	Total Suspended Solids	2	--	864	1,520	--	0	--	--	--	0	0.75	no
	3	TCDD TEQ	2	--	1.13e-06	1.37e-06	2	2	--	3.57e-06	6.56e-06	0	0.50	no
	5	2,3,7,8-TCDD	2	2	<1.18e-05	<1.18e-05	0	2	2	<7.76e-06	<7.76e-06	0	0	no
	5	Cadmium	2	--	1.35	2.12	0	2	--	1.73	>2.14	0	0	no
	5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
A2BMP0009	1	Total Suspended Solids	6	--	50.5	915	--	0	--	--	--	0	0.34	no
	2.5	Lead	6	--	3.83	31.8	2	6	--	70.8	247	0	0.02	no
	2.5	TCDD TEQ	6	--	1.44e-08	1.80e-06	2	6	--	1.48e-07	1.48e-05	0	0.02	no
	5	2,3,7,8-TCDD	6	6	<1.49e-06	<3.07e-06	0	6	6	<1.90e-05	<1.10e-04	0	0	no
	5	Cadmium	6	2	0.234	0.340	0	5	2	>0.0367	1.10	0	0	no
	5	Copper	3	2	<0.140	7.38	0	1	--	10.5	10.5	0	0	no
A2BMP0010	1	Total Suspended Solids	5	--	16.0	130	--	0	--	--	--	0	0.50	no
	4	2,3,7,8-TCDD	5	5	<4.84e-07	<9.17e-07	0	5	5	<2.38e-05	<1.69e-04	0	0	no
	4	Cadmium	5	4	<0.128	<0.250	0	5	4	<0.0	>0.165	0	0	no
	4	Copper	4	3	<0.140	4.60	0	1	--	137	137	0	0	no
	4	Lead	5	--	1.37	5.17	0	5	--	93.8	168	0	0	no
	4	TCDD TEQ	5	1	3.40e-09	8.14e-09	0	5	1	2.61e-08	2.04e-06	0	0	no
A2BMP0011	1	Total Suspended Solids	8	--	27.5	118	--	0	--	--	--	0	0.04	no
	2	TCDD TEQ	8	1	4.12e-08	4.32e-06	4	8	1	1.23e-06	6.86e-05	0	0.04	no
	3	Lead	8	--	3.96	13.0	3	8	--	125	>198	0	0.01	no
	5	2,3,7,8-TCDD	8	8	<8.06e-07	<4.45e-06	0	8	8	<4.70e-05	<4.15e-04	0	0	no
	5	Cadmium	8	8	<0.128	<0.250	0	8	8	<0.0	<0.0	0	0	no
	5	Copper	3	1	2.74	5.80	0	1	--	69.8	69.8	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
A2SW0002	1	TCDD TEQ	16	--	7.20e-08	1.02e-05	10	16	--	6.94e-06	5.14e-04	3	0.19	yes
	4	2,3,7,8-TCDD	16	15	<1.10e-06	<4.00e-06	1	16	15	<2.22e-04	<6.20e-04	0	0	no
	4	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	4	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	4	Lead	16	4	1.50	39.0	4	16	4	147	>917	3	0	yes
	4	Total Suspended Solids	16	3	8.50	610	--	0	--	--	--	0	0	no
A2SW0002-A	1	TCDD TEQ	15	--	1.89e-08	4.83e-05	7	15	--	2.24e-06	6.36e-04	4	0.10	yes
	4	2,3,7,8-TCDD	15	14	<8.20e-07	<7.60e-06	1	15	14	<1.02e-04	<3.48e-04	0	0	no
	4	Cadmium	11	10	<0.128	<0.250	0	10	9	<0.0	>2.78	1	0	no
	4	Copper	8	2	2.60	6.80	0	6	--	75.0	>450	0	0	no
	4	Lead	15	1	2.00	14.0	2	15	1	130	538	3	0	yes
	4	Total Suspended Solids	15	3	8.10	175	--	0	--	--	--	0	0	no
APBMP0001	1	Lead	2	--	18.8	31.0	2	2	--	370	635	1	0.69	yes
	2	TCDD TEQ	2	--	5.23e-07	6.28e-07	2	2	--	9.77e-06	1.08e-05	0	0.50	no
	4.5	2,3,7,8-TCDD	2	2	<9.80e-07	<9.80e-07	0	2	2	<2.04e-05	<2.04e-05	0	0	no
	4.5	Cadmium	2	--	0.210	0.300	0	2	--	0.525	>0.789	0	0	no
	4.5	Copper	2	--	6.60	9.90	0	2	--	45.9	62.5	0	0	no
	4.5	Total Suspended Solids	2	--	53.0	58.0	--	0	--	--	--	0	0	no
APBMP0001-A	1	Total Suspended Solids	5	--	120	4,290	--	0	--	--	--	0	0.81	no
	2	Lead	5	--	15.1	131	4	5	--	44.7	773	1	0.50	yes
	3.5	Copper	5	--	16.0	86.0	3	5	--	60.0	1,070	1	0.38	yes
	3.5	TCDD TEQ	5	--	4.70e-08	1.08e-06	4	5	--	1.85e-07	1.40e-05	0	0.38	no
	5	Cadmium	5	2	0.129	2.81	0	5	2	>0.143	<13.6	1	0.01	no
	6	2,3,7,8-TCDD	5	5	<2.72e-06	<4.53e-06	0	5	5	<1.82e-05	<4.19e-05	0	0	no
APSW0014	1	Total Suspended Solids	2	--	58.5	82.0	--	0	--	--	--	0	0.50	no
	2.5	Lead	2	--	5.75	7.29	1	2	--	73.7	84.7	0	0.31	no
	2.5	TCDD TEQ	2	--	2.80e-07	5.54e-07	1	2	--	7.95e-06	1.58e-05	0	0.31	no
	5	2,3,7,8-TCDD	2	2	<4.34e-06	<4.34e-06	0	2	2	<1.24e-04	<1.24e-04	0	0	no
	5	Cadmium	2	1	<0.703	0.703	0	0	--	--	--	0	0	no
	5	Copper	2	--	9.64	11.0	0	2	--	75.7	114	0	0	no
B1BMP0001	1	Total Suspended Solids	3	--	270	650	--	0	--	--	--	0	0.87	no
	2	Lead	3	--	11.0	15.0	3	3	--	31.2	53.2	0	0.50	no
	3.5	Copper	3	--	16.0	27.0	2	3	--	22.8	49.6	0	0.34	no
	3.5	TCDD TEQ	3	--	4.83e-08	6.83e-07	2	3	--	1.79e-07	1.05e-06	0	0.34	no
	5.5	2,3,7,8-TCDD	3	3	<3.20e-06	<8.80e-06	0	3	3	<1.35e-05	<1.50e-05	0	0	no
	5.5	Cadmium	2	--	0.355	0.540	0	2	--	0.186	>0.253	0	0	no
B1BMP0003	1	TCDD TEQ	23	1	9.09e-07	1.35e-05	19	23	1	1.69e-05	5.63e-04	7	0.85	yes
	2	Total Suspended Solids	23	4	33.0	110	--	0	--	--	--	0	0.02	no
	4.5	2,3,7,8-TCDD	23	23	<1.10e-06	<6.30e-06	0	23	23	<3.10e-05	<6.30e-03	1	0	no
	4.5	Cadmium	23	15	<0.250	<0.500	0	23	15	<0.0	<10.0	2	0	no
	4.5	Copper	23	--	7.30	21.0	6	22	--	102	688	1	0	yes
	4.5	Lead	23	1	2.70	8.90	6	23	1	>60.6	>177	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
B1BMP0004	1	**TCDD TEQ**	21	--	4.05e-07	4.00e-04	20	21	--	2.52e-05	2.50e-02	6	0.96	yes
	4	**2,3,7,8-TCDD**	21	21	<1.10e-06	<1.00e-05	0	21	21	<4.15e-05	<7.44e-04	0	0	no
	4	**Cadmium**	21	14	<0.250	<0.500	0	20	14	<0.0	<15.6	2	0	no
	4	**Copper**	21	--	5.40	9.00	0	21	--	66.7	>170	0	0	no
	4	**Lead**	21	--	4.50	9.60	8	21	--	>119	495	1	0	yes
	4	**Total Suspended Solids**	21	2	27.0	170	--	0	--	--	--	0	0	no
B1BMP0005	1	**TCDD TEQ**	26	3	1.95e-07	2.60e-05	15	26	3	1.26e-05	>1.98e-03	8	0.24	yes
	4	**2,3,7,8-TCDD**	26	23	<2.10e-06	<1.00e-05	3	26	23	<5.88e-05	<1.78e-03	1	0	yes
	4	**Cadmium**	26	20	<0.250	<0.250	0	22	17	<0.0	<10.0	1	0	no
	4	**Copper**	26	--	2.85	35.0	1	23	--	58.2	694	1	0	yes
	4	**Lead**	26	3	1.10	9.60	1	26	3	42.8	196	0	0	no
	4	**Total Suspended Solids**	26	2	16.0	170	--	0	--	--	--	0	0	no
B1BMP0007	1	**TCDD TEQ**	12	--	1.08e-07	1.24e-06	10	12	--	5.15e-06	3.75e-05	0	0.27	no
	4	**2,3,7,8-TCDD**	12	12	<5.80e-07	<4.53e-06	0	12	12	<3.63e-05	<2.40e-04	0	0	no
	4	**Cadmium**	12	12	<0.250	<0.500	0	12	12	<0.0	<10.0	2	0	no
	4	**Copper**	12	--	4.65	9.10	0	11	--	71.4	119	0	0	no
	4	**Lead**	12	--	2.70	4.60	0	12	--	74.9	155	0	0	no
	4	**Total Suspended Solids**	12	2	30.5	43.0	--	0	--	--	--	0	0	no
B1BMP0008	1	**TCDD TEQ**	2	--	3.30e-07	5.43e-07	2	2	--	9.75e-06	1.23e-05	0	0.50	no
	4	**2,3,7,8-TCDD**	2	2	<4.10e-07	<4.10e-07	0	2	2	<2.40e-05	<2.40e-05	0	0	no
	4	**Cadmium**	2	2	<0.250	<0.250	0	2	2	<0.0	<0.0	0	0	no
	4	**Copper**	2	--	5.90	7.20	0	2	--	190	302	0	0	no
	4	**Lead**	2	--	3.40	4.60	0	2	--	116	>177	0	0	no
	4	**Total Suspended Solids**	2	--	42.3	75.0	--	0	--	--	--	0	0	no
B1BMP0009	1	**TCDD TEQ**	8	--	2.61e-06	1.12e-05	8	8	--	2.11e-04	9.37e-04	5	1.00	yes
	2	**Total Suspended Solids**	8	--	14.5	110	--	0	--	--	--	0	0.04	no
	3	**Copper**	8	--	8.65	34.0	2	8	--	107	592	1	0.01	yes
	5	**2,3,7,8-TCDD**	8	8	<4.10e-07	<7.10e-07	0	8	8	<3.67e-05	<1.00e-04	0	0	no
	5	**Cadmium**	8	7	<0.250	0.830	0	8	7	<0.0	>0.953	0	0	no
	5	**Lead**	8	--	1.70	12.0	1	8	--	95.1	>180	0	0	no
B1BMP0010	1	**TCDD TEQ**	10	--	4.03e-07	5.09e-06	9	10	--	1.03e-04	8.61e-04	5	0.98	yes
	4	**2,3,7,8-TCDD**	10	10	<3.40e-07	<1.00e-06	0	10	10	<5.31e-05	<1.96e-04	0	0	no
	4	**Cadmium**	10	10	<0.250	<0.500	0	10	10	<0.0	<5.81	1	0	no
	4	**Copper**	10	--	3.95	12.0	0	9	--	130	355	0	0	no
	4	**Lead**	10	3	0.845	2.80	0	10	3	69.4	<294	1	0	no
	4	**Total Suspended Solids**	10	--	6.10	43.0	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
B1BMP0011	1	TCDD TEQ	2	--	1.42e-06	2.11e-06	2	2	--	2.08e-04	3.64e-04	1	0.69	yes
	4	2,3,7,8-TCDD	2	2	<4.20e-07	<4.20e-07	0	2	2	<4.66e-05	<4.66e-05	0	0	no
	4	Cadmium	2	2	<0.250	<0.250	0	2	2	<0.0	<0.0	0	0	no
	4	Copper	2	--	6.65	9.70	0	2	--	86.0	86.2	0	0	no
	4	Lead	2	--	0.835	1.10	0	2	--	62.4	>69.3	0	0	no
	4	Total Suspended Solids	2	--	9.90	14.0	--	0	--	--	--	0	0	no
B1SW0002	2	Lead	2	--	6.80	12.0	1	2	--	180	282	1	0.50	yes
	2	TCDD TEQ	2	1	<2.34e-05	2.34e-05	1	2	1	<2.13e-04	2.13e-04	1	0.50	yes
	2	Total Suspended Solids	2	--	57.0	110	--	0	--	--	--	0	0.50	no
	5	2,3,7,8-TCDD	2	2	<8.00e-06	<8.00e-06	0	2	2	<5.00e-04	<5.00e-04	0	0	no
	5	Cadmium	2	--	0.170	0.240	0	0	--	--	--	0	0	no
	5	Copper	2	--	6.65	10.0	0	2	--	167	301	0	0	no
B1SW0008	1	TCDD TEQ	2	--	1.21e-05	2.24e-05	2	2	--	2.00e-04	3.93e-04	1	0.69	yes
	2	Total Suspended Solids	2	--	168	280	--	0	--	--	--	0	0.50	no
	4.5	2,3,7,8-TCDD	2	2	<9.80e-07	<9.80e-07	0	2	2	<1.72e-05	<1.72e-05	0	0	no
	4.5	Cadmium	2	1	<0.220	<0.500	0	0	--	--	--	0	0	no
	4.5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	4.5	Lead	0	--	--	--	0	0	--	--	--	0	0	no
B1SW0014-A	1.5	Lead	1	--	6.90	6.90	1	1	--	60.9	60.9	0	0.50	no
	1.5	TCDD TEQ	1	--	2.64e-07	2.64e-07	1	1	--	3.30e-06	3.30e-06	0	0.50	no
	4.5	2,3,7,8-TCDD	1	1	<1.90e-06	<1.90e-06	0	1	1	<2.38e-05	<2.38e-05	0	0	no
	4.5	Cadmium	1	1	<0.100	<0.100	0	0	--	--	--	0	0	no
	4.5	Copper	1	--	5.90	5.90	0	1	--	26.9	26.9	0	0	no
	4.5	Total Suspended Solids	1	--	80.0	80.0	--	0	--	--	--	0	0	no
B1SW0014-B	1	TCDD TEQ	3	--	3.05e-07	5.89e-07	3	3	--	1.08e-05	2.18e-05	0	0.50	no
	2	Lead	4	--	2.70	6.70	1	4	--	56.1	66.6	0	0.04	no
	4.5	2,3,7,8-TCDD	3	3	<3.90e-06	<5.10e-06	0	3	3	<9.62e-05	<1.89e-04	0	0	no
	4.5	Cadmium	4	4	<0.100	<0.200	0	0	--	--	--	0	0	no
	4.5	Copper	4	--	3.75	4.10	0	4	--	38.1	49.0	0	0	no
	4.5	Total Suspended Solids	4	--	36.5	71.0	--	0	--	--	--	0	0	no
B1SW0014-C	1	TCDD TEQ	19	--	1.18e-07	3.73e-06	14	19	--	4.68e-06	3.73e-04	2	0.21	yes
	4	2,3,7,8-TCDD	19	19	<4.60e-07	<7.62e-06	0	19	19	<3.44e-05	<1.52e-03	1	0	no
	4	Cadmium	19	19	<0.250	<0.500	0	19	19	<0.0	<22.7	1	0	no
	4	Copper	19	--	3.20	6.60	0	16	--	60.0	408	0	0	no
	4	Lead	19	--	1.90	8.90	1	19	--	76.0	192	0	0	no
	4	Total Suspended Solids	19	--	15.0	77.0	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
BGBMP0001	3.5	2,3,7,8-TCDD	9	9	<7.63e-07	<2.60e-06	0	9	9	<1.22e-04	<8.70e-04	0	0	no
	3.5	Cadmium	9	8	<0.128	0.160	0	9	8	<0.0	>2.89	1	0	no
	3.5	Copper	7	2	2.30	3.60	0	4	--	93.7	314	0	0	no
	3.5	Lead	9	3	0.530	1.49	0	8	2	54.2	232	0	0	no
	3.5	TCDD TEQ	9	2	1.08e-11	8.61e-08	1	9	2	1.81e-09	1.49e-05	0	0	no
	3.5	Total Suspended Solids	9	1	7.10	18.0	--	0	--	--	--	0	0	no
BGBMP0002	1	Total Suspended Solids	4	--	20.5	750	--	0	--	--	--	0	0.31	no
	2	Cadmium	3	3	<0.100	<0.200	0	3	3	<0.0	<5.26	1	0.11	no
	3	Copper	4	--	1.60	19.0	1	3	--	23.9	38.2	0	0.06	no
	4.5	Lead	4	--	1.30	64.0	1	4	--	53.6	85.0	0	0.04	no
	4.5	TCDD TEQ	4	2	<6.00e-10	1.02e-07	1	4	2	<1.20e-07	1.36e-07	0	0.04	no
	6	2,3,7,8-TCDD	4	4	<1.80e-06	<3.40e-06	0	4	4	<1.55e-04	<1.92e-04	0	0	no
BGBMP0003	1.5	2,3,7,8-TCDD	5	5	<1.90e-06	<4.70e-06	0	5	5	<1.90e-04	<9.40e-04	1	0.01	no
	1.5	TCDD TEQ	5	3	<1.00e-12	3.32e-07	1	5	3	<2.00e-10	6.26e-06	0	0.01	no
	4.5	Cadmium	5	5	<0.100	<0.200	0	5	5	<0.0	<1.89	0	0	no
	4.5	Copper	5	--	3.00	4.70	0	4	--	86.4	125	0	0	no
	4.5	Lead	5	1	0.690	2.80	0	5	1	>49.1	<141	0	0	no
	4.5	Total Suspended Solids	5	2	5.00	53.0	--	0	--	--	--	0	0	no
BGBMP0004	1	TCDD TEQ	8	--	5.12e-07	1.29e-06	6	8	--	5.57e-05	>2.25e-03	2	0.60	yes
	2	Total Suspended Solids	8	1	12.3	240	--	0	--	--	--	0	0.04	no
	4.5	2,3,7,8-TCDD	8	8	<5.80e-07	<4.00e-06	0	8	8	<2.35e-04	<4.46e-04	0	0	no
	4.5	Cadmium	8	8	<0.250	<0.250	0	8	8	<0.0	<0.417	0	0	no
	4.5	Copper	8	--	2.00	6.60	0	5	--	47.1	>566	1	0	no
	4.5	Lead	8	5	<0.500	7.60	1	8	5	<666	<666	1	0	yes
BGBMP0005	2	Copper	2	--	8.20	14.0	1	1	--	6.30	6.30	0	0.50	no
	2	Lead	2	--	6.92	13.0	1	1	--	11.3	11.3	0	0.50	no
	2	Total Suspended Solids	2	--	410	810	--	0	--	--	--	0	0.50	no
	4.5	2,3,7,8-TCDD	2	1	<3.80e-07	<3.90e-06	1	2	1	<4.69e-07	<3.55e-04	0	0.31	no
	4.5	TCDD TEQ	2	--	1.14e-06	2.27e-06	1	2	--	1.40e-06	2.81e-06	0	0.31	no
	6	Cadmium	2	1	<0.270	0.270	0	1	1	<0.0	<0.0	0	0	no
BGBMP0006	1	Total Suspended Solids	7	1	3.00	250	--	0	--	--	--	0	0.06	no
	2	TCDD TEQ	7	--	1.56e-08	2.45e-07	2	7	--	2.33e-06	>2.45e-04	1	0.03	yes
	3	Lead	7	1	1.50	17.0	1	7	1	72.9	>1,060	1	0.01	yes
	5	2,3,7,8-TCDD	7	7	<6.20e-07	<1.80e-06	0	7	7	<2.50e-05	<6.20e-04	0	0	no
	5	Cadmium	1	1	<0.100	<0.100	0	1	1	<0.0	<0.0	0	0	no
	5	Copper	1	--	2.90	2.90	0	1	--	5.56	5.56	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
BGBMP0007	1	Lead	7	--	1.00	16.0	1	7	--	70.6	289	1	0.01	yes
	4	2,3,7,8-TCDD	7	7	<8.10e-07	<5.40e-06	0	7	7	<1.83e-04	<3.17e-04	0	0	no
	4	Cadmium	6	6	<0.100	<0.100	0	2	2	<0.0	<0.0	0	0	no
	4	Copper	7	--	1.50	7.50	0	7	--	70.1	182	0	0	no
	4	TCDD TEQ	7	3	1.10e-11	9.64e-09	0	7	3	1.83e-09	3.54e-07	0	0	no
	4	Total Suspended Solids	7	--	7.00	39.0	--	0	--	--	--	0	0	no
CABMP0001	1	Lead	1	--	94.8	94.8	1	1	--	285	285	1	0.75	yes
	3.5	Cadmium	1	--	1.50	1.50	0	1	--	3.98	3.98	1	0.50	no
	3.5	Copper	1	--	21.0	21.0	1	1	--	48.4	48.4	0	0.50	no
	3.5	TCDD TEQ	1	--	6.12e-06	6.12e-06	1	1	--	1.87e-05	1.87e-05	0	0.50	no
	3.5	Total Suspended Solids	1	--	327	327	--	0	--	--	--	0	0.50	no
	6	2,3,7,8-TCDD	1	1	<1.12e-06	<1.12e-06	0	1	1	<3.43e-06	<3.43e-06	0	0	no
CABMP0002	3	Cadmium	1	--	1.80	1.80	0	1	--	3.62	3.62	1	0.50	no
	3	Copper	1	--	16.6	16.6	1	1	--	33.1	33.1	0	0.50	no
	3	Lead	1	--	68.7	68.7	1	1	--	147	147	0	0.50	no
	3	TCDD TEQ	1	--	2.25e-07	2.25e-07	1	1	--	4.94e-07	4.94e-07	0	0.50	no
	3	Total Suspended Solids	1	--	455	455	--	0	--	--	--	0	0.50	no
	6	2,3,7,8-TCDD	1	1	<9.80e-07	<9.80e-07	0	1	1	<2.15e-06	<2.15e-06	0	0	no
CABMP0003	1	Lead	1	--	62.0	62.0	1	1	--	282	282	1	0.75	yes
	3	Cadmium	1	--	0.690	0.690	0	1	--	>2.60	>2.60	1	0.50	no
	3	TCDD TEQ	1	--	6.29e-06	6.29e-06	1	1	--	2.91e-05	2.91e-05	0	0.50	no
	3	Total Suspended Solids	1	--	216	216	--	0	--	--	--	0	0.50	no
	5.5	2,3,7,8-TCDD	1	1	<1.13e-06	<1.13e-06	0	1	1	<5.23e-06	<5.23e-06	0	0	no
	5.5	Copper	1	--	12.1	12.1	0	1	--	41.5	41.5	0	0	no
EPNDSW01	1	TCDD TEQ	9	--	1.96e-07	3.40e-06	6	9	--	3.49e-05	3.09e-04	2	0.41	yes
	2	Lead	9	3	2.20	10.0	2	9	3	181	<666	2	0.02	yes
	4.5	2,3,7,8-TCDD	9	8	<3.00e-07	4.90e-07	1	9	8	<2.56e-05	<3.02e-04	0	0	no
	4.5	Cadmium	1	1	<0.250	<0.250	0	1	1	<0.0	<0.0	0	0	no
	4.5	Copper	1	--	5.70	5.70	0	1	--	206	206	0	0	no
	4.5	Total Suspended Solids	9	1	8.80	27.0	--	0	--	--	--	0	0	no
EPNDSW02	1	TCDD TEQ	5	--	6.23e-07	1.30e-06	4	5	--	6.85e-05	>1.77e-03	2	0.63	yes
	2	Lead	5	4	<0.500	2.10	0	5	4	<101	<666	1	0.01	no
	4.5	2,3,7,8-TCDD	5	5	<2.10e-07	<5.10e-07	0	5	5	<7.66e-05	<3.96e-04	0	0	no
	4.5	Cadmium	1	1	<0.250	<0.250	0	1	1	<0.0	<0.0	0	0	no
	4.5	Copper	1	--	2.60	2.60	0	1	--	57.1	57.1	0	0	no
	4.5	Total Suspended Solids	5	1	4.70	19.0	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
EPNDSW03	1	TCDD TEQ	9	--	5.47e-07	1.47e-06	7	9	--	6.43e-05	5.47e-04	3	0.76	yes
	2	Lead	9	2	1.70	7.80	1	9	2	270	<706	5	0.12	yes
	4.5	2,3,7,8-TCDD	9	9	<2.00e-07	<5.00e-07	0	9	9	<3.82e-05	<4.00e-04	0	0	no
	4.5	Cadmium	1	1	<0.250	<0.250	0	1	1	<0.0	<0.0	0	0	no
	4.5	Copper	1	--	7.50	7.50	0	1	--	235	235	0	0	no
	4.5	Total Suspended Solids	9	2	6.80	27.0	--	0	--	--	--	0	0	no
EPNDSW04	1	TCDD TEQ	9	--	3.84e-07	6.59e-06	7	9	--	>2.14e-05	>9.09e-04	2	0.59	yes
	2	Lead	9	--	2.40	6.60	2	9	--	275	>1,260	4	0.12	yes
	4.5	2,3,7,8-TCDD	9	8	<2.80e-07	7.30e-07	1	9	8	<8.52e-05	<7.60e-04	0	0	no
	4.5	Cadmium	1	1	<0.250	<0.250	0	1	1	<0.0	<0.0	0	0	no
	4.5	Copper	1	--	8.30	8.30	0	1	--	259	259	0	0	no
	4.5	Total Suspended Solids	9	2	5.40	32.0	--	0	--	--	--	0	0	no
EPNDSW06	1	TCDD TEQ	9	--	2.55e-07	9.15e-06	8	9	--	1.27e-05	1.66e-04	2	0.76	yes
	2	Total Suspended Solids	9	--	19.0	230	--	0	--	--	--	0	0.09	no
	4.5	2,3,7,8-TCDD	9	6	<4.20e-07	7.40e-07	3	9	6	<3.02e-05	1.30e-04	0	0	no
	4.5	Cadmium	1	1	<0.250	<0.250	0	1	1	<0.0	<0.0	0	0	no
	4.5	Copper	1	--	8.00	8.00	0	1	--	155	155	0	0	no
	4.5	Lead	9	--	3.30	19.0	2	9	--	100	233	0	0	no
EVBMP0001-A	1	TCDD TEQ	12	1	8.16e-08	2.11e-04	9	12	1	4.14e-06	3.51e-03	3	0.58	yes
	2	Total Suspended Solids	12	--	34.0	480	--	0	--	--	--	0	0.07	no
	4.5	2,3,7,8-TCDD	12	11	<2.10e-06	2.20e-05	1	12	11	<7.10e-05	<6.19e-04	0	0	no
	4.5	Cadmium	12	8	<0.250	0.410	0	12	8	<0.0	>0.646	0	0	no
	4.5	Copper	10	--	3.65	15.0	1	7	--	27.1	60.0	0	0	no
	4.5	Lead	12	1	3.65	41.0	4	12	1	96.2	320	1	0	yes
EVBMP0002	1	TCDD TEQ	6	--	4.40e-07	2.53e-06	6	6	--	4.82e-05	5.78e-04	3	0.93	yes
	2	Lead	6	--	3.35	26.0	1	5	--	284	1,090	3	0.27	yes
	3	Total Suspended Solids	6	--	12.0	120	--	0	--	--	--	0	0.11	no
	4	Cadmium	6	1	0.155	0.280	0	6	1	1.30	30.0	2	0.02	no
	5	Copper	6	--	4.60	13.0	0	5	--	121	600	1	0.01	no
	6	2,3,7,8-TCDD	6	6	<2.40e-06	<4.00e-06	0	6	6	<1.46e-04	<2.00e-03	1	0	no
EVBMP0002-A	1	TCDD TEQ	5	--	3.75e-08	6.95e-08	3	5	--	6.15e-07	6.95e-06	0	0.17	no
	2	Lead	5	--	3.80	4.80	0	5	--	194	344	1	0.01	no
	4.5	2,3,7,8-TCDD	5	5	<1.10e-06	<5.30e-06	0	5	5	<9.17e-05	<1.57e-04	0	0	no
	4.5	Cadmium	5	4	<0.100	0.130	0	5	4	<0.0	>0.714	0	0	no
	4.5	Copper	5	--	3.60	7.70	0	3	--	44.3	150	0	0	no
	4.5	Total Suspended Solids	5	--	12.0	61.0	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
EVBMP0002-B	1	TCDD TEQ	10	--	1.14e-07	2.84e-06	8	10	--	9.73e-06	>2.84e-04	1	0.41	yes
	2	Lead	10	--	3.44	27.9	2	10	--	180	640	3	0.02	yes
	3	Total Suspended Solids	10	3	12.0	151	--	0	--	--	--	0	0.01	no
	5	2,3,7,8-TCDD	10	10	<6.84e-07	<9.16e-06	0	10	10	<5.26e-05	<2.38e-04	0	0	no
	5	Cadmium	10	8	<0.128	0.425	0	10	8	<0.0	<10.0	1	0	no
	5	Copper	8	--	4.35	9.12	0	6	--	84.4	>150	0	0	no
EVBMP0003	1	TCDD TEQ	18	--	2.26e-06	1.74e-05	17	18	--	3.16e-05	5.15e-04	5	0.93	yes
	2	Lead	18	--	9.15	55.0	13	18	--	219	664	7	0.80	yes
	3	Total Suspended Solids	18	--	36.0	890	--	0	--	--	--	0	0.24	no
	5	2,3,7,8-TCDD	18	15	<3.20e-06	<7.40e-06	3	18	15	<1.19e-04	<3.83e-04	0	0	no
	5	Cadmium	9	2	0.180	0.730	0	9	2	>0.561	>2.33	0	0	no
	5	Copper	9	--	7.00	24.0	1	9	--	80.0	167	0	0	no
EVBMP0003-A	1	TCDD TEQ	13	--	1.80e-07	9.93e-06	10	13	--	5.22e-06	5.22e-04	2	0.42	yes
	4	2,3,7,8-TCDD	13	13	<1.24e-06	<4.15e-06	0	13	13	<8.78e-05	<2.82e-04	0	0	no
	4	Cadmium	13	13	<0.128	<0.250	0	10	10	<0.0	<0.0	0	0	no
	4	Copper	9	1	4.26	9.00	0	8	--	45.1	154	0	0	no
	4	Lead	13	--	1.97	9.00	1	13	--	85.1	>181	0	0	no
	4	Total Suspended Solids	13	--	19.0	59.0	--	0	--	--	--	0	0	no
EVBMP0004	1	Lead	3	--	6.80	7.30	3	3	--	328	419	2	0.89	yes
	2	TCDD TEQ	3	--	1.52e-08	2.07e-06	1	3	--	7.59e-07	5.05e-05	0	0.11	no
	4.5	2,3,7,8-TCDD	3	3	<4.30e-07	<5.70e-07	0	3	3	<2.15e-05	<3.80e-05	0	0	no
	4.5	Cadmium	3	3	<0.100	<0.100	0	3	3	<0.0	<0.0	0	0	no
	4.5	Copper	3	--	3.00	5.40	0	3	--	127	150	0	0	no
	4.5	Total Suspended Solids	3	--	20.0	41.0	--	0	--	--	--	0	0	no
EVBMP0005	1	TCDD TEQ	2	--	8.61e-07	1.25e-06	2	2	--	3.90e-05	>4.76e-05	0	0.50	no
	4	2,3,7,8-TCDD	2	2	<6.00e-07	<6.00e-07	0	2	2	<6.00e-05	<6.00e-05	0	0	no
	4	Cadmium	2	1	<0.180	0.180	0	2	1	<1.95	1.95	0	0	no
	4	Copper	2	--	6.60	9.00	0	2	--	72.1	>110	0	0	no
	4	Lead	2	--	3.05	3.10	0	2	--	148	>250	0	0	no
	4	Total Suspended Solids	2	1	<41.0	41.0	--	0	--	--	--	0	0	no
EVBMP0006	2.5	Copper	1	--	15.0	15.0	1	1	--	33.5	33.5	0	0.50	no
	2.5	Lead	1	--	12.0	12.0	1	1	--	54.0	54.0	0	0.50	no
	2.5	TCDD TEQ	1	--	5.54e-06	5.54e-06	1	1	--	2.77e-05	2.77e-05	0	0.50	no
	2.5	Total Suspended Solids	1	--	200	200	--	0	--	--	--	0	0.50	no
	5.5	2,3,7,8-TCDD	1	1	<7.90e-07	<7.90e-07	0	1	1	<3.95e-06	<3.95e-06	0	0	no
	5.5	Cadmium	1	--	0.470	0.470	0	1	--	1.80	1.80	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
EVBMP0007	1	TCDD TEQ	10	--	2.16e-08	3.92e-06	4	10	--	1.64e-06	1.78e-04	1	0.02	yes
	4	2,3,7,8-TCDD	10	10	<1.57e-06	<8.07e-06	0	10	10	<1.50e-04	<8.00e-04	0	0	no
	4	Cadmium	10	8	<0.128	0.251	0	8	7	<0.0	>2.55	1	0	no
	4	Copper	9	2	5.63	17.2	1	6	--	113	253	0	0	no
	4	Lead	10	--	3.55	50.2	2	10	--	172	3,810	2	0	yes
	4	Total Suspended Solids	10	--	14.5	66.0	--	0	--	--	--	0	0	no
EVBMP0008	3.5	2,3,7,8-TCDD	13	13	<1.18e-06	<5.22e-06	0	13	13	<7.47e-05	<2.23e-04	0	0	no
	3.5	Cadmium	13	12	<0.128	<0.250	0	12	11	<0.0	>0.114	0	0	no
	3.5	Copper	11	3	2.40	5.33	0	7	--	21.4	48.8	0	0	no
	3.5	Lead	13	--	1.26	3.67	0	13	--	47.2	133	0	0	no
	3.5	TCDD TEQ	13	1	5.91e-09	1.01e-07	1	13	1	1.95e-07	2.66e-06	0	0	no
	3.5	Total Suspended Solids	13	--	15.0	144	--	0	--	--	--	0	0	no
EVBMP0009	3.5	2,3,7,8-TCDD	11	11	<1.26e-06	<5.64e-06	0	11	11	<2.97e-04	<3.16e-03	2	0	no
	3.5	Cadmium	11	11	<0.128	<0.128	0	10	10	<0.0	<0.0	0	0	no
	3.5	Copper	9	3	2.90	9.95	0	5	--	52.6	395	0	0	no
	3.5	Lead	11	--	1.12	3.48	0	11	--	200	489	3	0	no
	3.5	TCDD TEQ	11	--	9.31e-09	4.74e-08	2	11	--	>2.55e-06	7.76e-06	0	0	no
	3.5	Total Suspended Solids	11	1	3.40	47.0	--	0	--	--	--	0	0	no
EVBMP0010	1	Total Suspended Solids	3	--	174	247	--	0	--	--	--	0	0.87	no
	2.5	Lead	3	--	18.1	24.9	2	3	--	99.8	>108	0	0.34	no
	2.5	TCDD TEQ	3	--	2.40e-07	1.29e-06	2	3	--	9.72e-07	7.70e-06	0	0.34	no
	5	2,3,7,8-TCDD	3	3	<8.04e-07	<6.12e-06	0	3	3	<4.33e-06	<3.52e-05	0	0	no
	5	Cadmium	3	1	0.305	0.337	0	3	1	>0.172	>0.231	0	0	no
	5	Copper	1	--	0.916	0.916	0	1	--	>4.46	>4.46	0	0	no
HZBMP0001	1	Total Suspended Solids	13	--	140	600	--	0	--	--	--	0	0.50	no
	4	2,3,7,8-TCDD	12	11	<2.10e-06	<3.10e-06	1	12	11	<6.13e-05	<9.70e-04	1	0	yes
	4	Cadmium	6	4	<0.200	0.600	0	6	4	<0.0	>0.833	0	0	no
	4	Copper	13	--	5.70	15.0	1	13	--	33.3	1,160	1	0	yes
	4	Lead	13	1	2.10	19.0	2	13	1	24.9	<131	0	0	no
	4	TCDD TEQ	12	4	3.35e-09	1.56e-05	3	12	4	5.11e-08	2.60e-05	0	0	no
HZBMP0002	1	2,3,7,8-TCDD	4	4	<2.40e-06	<5.60e-06	0	4	4	<2.40e-03	<5.60e-03	3	0.36	no
	2	Copper	4	--	1.80	2.30	0	2	--	317	>600	1	0.11	no
	3	Lead	4	2	<0.650	0.900	0	4	2	<57.5	>380	1	0.04	no
	5	Cadmium	4	4	<0.100	<0.100	0	4	4	<0.0	<0.0	0	0	no
	5	TCDD TEQ	4	3	<1.00e-12	6.50e-12	0	4	3	<1.00e-09	6.50e-09	0	0	no
	5	Total Suspended Solids	4	2	<1.00	12.0	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
HZBMP0003	1	Total Suspended Solids	15	4	9.00	840	--	0	--	--	--	0	0.02	no
	2	Cadmium	7	6	<0.100	<0.250	0	7	6	<0.0	>13.5	2	0.01	no
	4.5	2,3,7,8-TCDD	15	15	<1.00e-06	<6.07e-06	0	15	15	<1.05e-04	<2.40e-03	2	0	no
	4.5	Copper	15	--	2.00	19.0	1	13	--	53.0	3,450	3	0	yes
	4.5	Lead	15	7	0.400	19.0	2	15	7	10.9	>335	1	0	yes
	4.5	TCDD TEQ	15	4	2.90e-11	5.43e-06	4	15	4	>4.50e-09	>5.43e-04	1	0	yes
HZSW0005	3.5	2,3,7,8-TCDD	1	1	<4.00e-07	<4.00e-07	0	1	1	<8.00e-05	<8.00e-05	0	0	no
	3.5	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Lead	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	TCDD TEQ	1	--	5.58e-09	5.58e-09	0	1	--	1.12e-06	1.12e-06	0	0	no
	3.5	Total Suspended Solids	1	--	5.00	5.00	--	0	--	--	--	0	0	no
HZSW0008	3.5	2,3,7,8-TCDD	1	1	<6.20e-07	<6.20e-07	0	1	1	<2.21e-05	<2.21e-05	0	0	no
	3.5	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Lead	1	--	0.400	0.400	0	1	--	9.38	9.38	0	0	no
	3.5	TCDD TEQ	1	--	2.13e-09	2.13e-09	0	1	--	7.59e-08	7.59e-08	0	0	no
	3.5	Total Suspended Solids	1	--	28.0	28.0	--	0	--	--	--	0	0	no
HZSW0011	1	Copper	2	--	2.70	3.00	0	2	--	424	670	1	0.31	no
	4	2,3,7,8-TCDD	2	2	<5.20e-06	<5.20e-06	0	2	2	<8.67e-04	<8.67e-04	0	0	no
	4	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	4	Lead	0	--	--	--	0	0	--	--	--	0	0	no
	4	TCDD TEQ	2	--	3.52e-09	7.02e-09	0	2	--	1.76e-06	3.51e-06	0	0	no
	4	Total Suspended Solids	2	--	4.00	6.00	--	0	--	--	--	0	0	no
HZSW0012	3.5	2,3,7,8-TCDD	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Lead	1	1	<0.200	<0.200	0	1	1	<18.8	<18.8	0	0	no
	3.5	TCDD TEQ	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Total Suspended Solids	1	--	7.00	7.00	--	0	--	--	--	0	0	no
HZSW0014	3.5	2,3,7,8-TCDD	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Copper	3	--	6.40	7.90	0	3	--	40.8	136	0	0	no
	3.5	Lead	3	--	3.10	3.70	0	3	--	29.1	93.4	0	0	no
	3.5	TCDD TEQ	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Total Suspended Solids	3	--	61.0	70.0	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
HZSW0020	1.5	Lead	2	--	9.65	14.0	2	2	--	85.7	121	0	0.50	no
	1.5	Total Suspended Solids	2	--	72.5	76.0	--	0	--	--	--	0	0.50	no
	4.5	2,3,7,8-TCDD	2	2	<2.60e-06	<2.60e-06	0	2	2	<3.42e-05	<3.42e-05	0	0	no
	4.5	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	4.5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	4.5	TCDD TEQ	2	--	4.53e-09	5.04e-09	0	2	--	6.23e-08	6.63e-08	0	0	no
ILBMP0001	1	TCDD TEQ	32	--	1.82e-07	3.38e-05	27	32	--	1.22e-05	6.78e-04	7	0.73	yes
	4	2,3,7,8-TCDD	32	30	<1.30e-06	<1.20e-05	2	32	30	<5.20e-05	<8.78e-04	1	0	yes
	4	Cadmium	32	12	0.335	1.30	0	29	11	>1.30	47.5	13	0	no
	4	Copper	32	--	11.0	35.0	10	27	--	111	725	2	0	yes
	4	Lead	32	--	3.65	19.0	14	32	--	110	710	3	0	yes
	4	Total Suspended Solids	32	--	27.0	330	--	0	--	--	--	0	0	no
ILBMP0002	1	Lead	23	--	9.80	82.0	16	22	--	349	1,020	13	0.98	yes
	2	TCDD TEQ	23	--	1.49e-06	2.55e-05	20	23	--	2.27e-05	7.22e-04	6	0.85	yes
	4.5	2,3,7,8-TCDD	23	22	<5.80e-07	<6.99e-06	1	23	22	<1.83e-05	<2.75e-04	0	0	no
	4.5	Cadmium	23	17	<0.250	1.10	0	23	17	<0.0	3.48	2	0	no
	4.5	Copper	23	--	8.00	59.0	4	21	--	66.7	266	0	0	no
	4.5	Total Suspended Solids	23	--	25.0	1,800	--	0	--	--	--	0	0	no
ILBMP0003	1	2,3,7,8-TCDD	4	4	<1.70e-06	<6.70e-06	0	4	4	<2.10e-04	<1.68e-03	1	0.04	no
	4	Cadmium	4	4	<0.100	<0.100	0	4	4	<0.0	<0.0	0	0	no
	4	Copper	4	--	3.90	4.80	0	3	--	100.0	267	0	0	no
	4	Lead	3	--	0.860	0.920	0	2	--	83.9	132	0	0	no
	4	TCDD TEQ	4	--	2.50e-09	2.69e-08	0	4	--	6.25e-07	8.95e-06	0	0	no
	4	Total Suspended Solids	4	--	4.00	10.0	--	0	--	--	--	0	0	no
ILBMP0004	1	TCDD TEQ	16	--	1.94e-06	1.50e-05	16	16	--	3.47e-05	6.80e-04	3	0.89	yes
	4	2,3,7,8-TCDD	16	14	<3.00e-07	2.50e-06	2	16	14	<7.32e-06	1.14e-04	0	0	no
	4	Cadmium	16	10	<0.250	1.20	0	16	10	<0.0	>31.7	1	0	no
	4	Copper	16	--	8.65	19.0	2	16	--	101	327	0	0	no
	4	Lead	16	--	3.20	11.0	2	16	--	55.8	349	1	0	yes
	4	Total Suspended Solids	16	--	47.0	170	--	0	--	--	--	0	0	no
ILBMP0005	1	TCDD TEQ	19	1	7.11e-08	7.87e-06	11	19	1	5.70e-06	1.36e-03	2	0.04	yes
	4	2,3,7,8-TCDD	19	19	<2.60e-07	<8.40e-07	0	19	19	<4.44e-05	<2.28e-04	0	0	no
	4	Cadmium	19	17	<0.250	0.290	0	17	15	<0.0	>6.32	1	0	no
	4	Copper	19	--	12.0	27.0	7	17	--	180	1,200	2	0	yes
	4	Lead	19	3	1.40	3.00	0	19	3	>100	>279	1	0	no
	4	Total Suspended Solids	19	--	7.00	24.0	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
ILBMP0006	1	TCDD TEQ	8	1	1.82e-08	1.35e-06	4	8	1	1.27e-06	>1.04e-03	2	0.23	yes
	4	2,3,7,8-TCDD	8	8	<4.10e-07	<7.50e-07	0	8	8	<7.00e-05	<2.83e-04	0	0	no
	4	Cadmium	8	8	<0.250	<0.500	0	8	8	<0.0	<7.81	1	0	no
	4	Copper	8	--	2.25	13.0	0	6	--	166	>2,130	1	0	no
	4	Lead	8	2	0.755	2.60	0	8	2	63.1	>985	1	0	no
	4	Total Suspended Solids	8	1	4.90	32.0	--	0	--	--	--	0	0	no
ILBMP0007	1	Copper	19	--	21.0	53.0	15	14	--	935	9,050	8	0.99	yes
	4	2,3,7,8-TCDD	19	18	<4.20e-07	3.30e-06	1	19	18	<8.25e-05	<5.50e-04	0	0	no
	4	Cadmium	19	19	<0.250	<1.30	0	14	14	<0.0	<132	3	0	no
	4	Lead	19	3	1.10	2.50	0	19	3	>100	>641	3	0	no
	4	TCDD TEQ	19	8	1.90e-10	3.12e-05	6	19	8	2.11e-08	5.03e-03	2	0	yes
	4	Total Suspended Solids	19	--	6.20	36.0	--	0	--	--	--	0	0	no
ILBMP0008	1	TCDD TEQ	18	--	5.76e-07	3.33e-05	18	18	--	1.23e-05	1.67e-03	4	0.93	yes
	2	Cadmium	18	--	0.720	6.80	1	18	--	10.8	23.8	13	0.12	yes
	3	Total Suspended Solids	18	--	30.5	220	--	0	--	--	--	0	0.02	no
	5	2,3,7,8-TCDD	18	18	<4.60e-07	<1.40e-06	0	18	18	<1.55e-05	<1.08e-04	0	0	no
	5	Copper	18	--	9.65	48.0	3	17	--	111	208	0	0	no
	5	Lead	18	--	5.30	25.0	9	17	--	119	>273	0	0	no
ILSW0003	1	Total Suspended Solids	2	--	52.5	83.0	--	0	--	--	--	0	0.50	no
	4	2,3,7,8-TCDD	0	--	--	--	0	0	--	--	--	0	0	no
	4	Cadmium	2	--	0.455	0.540	0	0	--	--	--	0	0	no
	4	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	4	Lead	2	--	2.80	3.50	0	2	--	65.1	112	0	0	no
	4	TCDD TEQ	0	--	--	--	0	0	--	--	--	0	0	no
ILSW0004-A	1	Total Suspended Solids	1	--	110	110	--	0	--	--	--	0	0.50	no
	4	2,3,7,8-TCDD	0	--	--	--	0	0	--	--	--	0	0	no
	4	Cadmium	1	--	0.350	0.350	0	0	--	--	--	0	0	no
	4	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	4	Lead	1	--	2.60	2.60	0	1	--	16.7	16.7	0	0	no
	4	TCDD TEQ	0	--	--	--	0	0	--	--	--	0	0	no
ILSW0007	3.5	2,3,7,8-TCDD	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Cadmium	1	--	0.290	0.290	0	0	--	--	--	0	0	no
	3.5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Lead	1	--	2.10	2.10	0	1	--	31.5	31.5	0	0	no
	3.5	TCDD TEQ	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Total Suspended Solids	1	--	47.0	47.0	--	0	--	--	--	0	0	no
ILSW0008	3.5	2,3,7,8-TCDD	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Cadmium	1	--	0.340	0.340	0	0	--	--	--	0	0	no
	3.5	Copper	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Lead	1	--	2.60	2.60	0	1	--	26.6	26.6	0	0	no
	3.5	TCDD TEQ	0	--	--	--	0	0	--	--	--	0	0	no
	3.5	Total Suspended Solids	1	--	69.0	69.0	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
LFSW0002-A	1.5	TCDD TEQ	3	--	8.38e-08	1.28e-05	2	3	--	1.27e-06	2.79e-04	1	0.50	yes
	1.5	Total Suspended Solids	3	--	66.0	87.0	--	0	--	--	--	0	0.50	no
	3	Lead	3	--	3.70	6.70	1	3	--	54.3	56.8	0	0.11	no
	5	2,3,7,8-TCDD	3	3	<2.40e-06	<8.80e-06	0	3	3	<3.64e-05	<1.01e-04	0	0	no
	5	Cadmium	0	--	--	--	0	0	--	--	--	0	0	no
	5	Copper	3	--	4.30	7.30	0	3	--	30.6	34.1	0	0	no
LPBMP0001	1.5	TCDD TEQ	2	--	2.17e-07	2.38e-07	2	2	--	2.96e-06	4.42e-06	0	0.50	no
	1.5	Total Suspended Solids	2	--	92.0	130	--	0	--	--	--	0	0.50	no
	4	Cadmium	2	--	0.315	0.480	0	2	--	1.64	>2.92	1	0.31	no
	4	Copper	2	--	9.25	14.0	1	2	--	76.3	91.5	0	0.31	no
	4	Lead	2	--	9.75	15.0	1	2	--	93.8	112	0	0.31	no
	6	2,3,7,8-TCDD	2	2	<5.20e-07	<5.20e-07	0	2	2	<9.63e-06	<9.63e-06	0	0	no
LPBMP0001-A	1	TCDD TEQ	6	--	4.88e-06	5.48e-05	6	6	--	1.91e-04	1.18e-03	3	0.93	yes
	2	Total Suspended Solids	6	--	37.5	180	--	0	--	--	--	0	0.34	no
	3	Copper	6	--	11.1	21.0	3	4	--	62.9	242	0	0.17	no
	4	Lead	6	--	2.55	32.0	2	6	--	114	172	0	0.02	no
	5.5	2,3,7,8-TCDD	6	6	<1.80e-06	<4.40e-06	0	6	6	<4.82e-05	<1.83e-04	0	0	no
	5.5	Cadmium	6	4	<0.100	0.350	0	5	4	<0.0	>1.39	0	0	no
LPBMP0002	1	TCDD TEQ	24	--	7.08e-07	1.32e-05	24	24	--	3.34e-05	1.67e-03	10	1.00	yes
	4	2,3,7,8-TCDD	24	22	<4.60e-07	<7.47e-06	2	24	22	<2.74e-05	<1.40e-04	0	0	no
	4	Cadmium	24	21	<0.250	0.750	0	23	20	<0.0	5.09	3	0	no
	4	Copper	24	--	10.0	32.0	7	21	--	100	370	0	0	no
	4	Lead	24	--	2.00	20.0	3	24	--	81.0	>220	0	0	no
	4	Total Suspended Solids	24	--	22.0	280	--	0	--	--	--	0	0	no
LPBMP0003	1	TCDD TEQ	24	--	2.39e-07	7.94e-06	21	24	--	1.13e-05	1.31e-03	3	0.56	yes
	4	2,3,7,8-TCDD	24	24	<4.00e-07	<9.64e-06	0	24	24	<2.25e-05	<3.01e-04	0	0	no
	4	Cadmium	24	21	<0.250	<0.500	0	23	20	<0.0	<7.81	1	0	no
	4	Copper	24	--	11.0	17.0	3	21	--	103	262	0	0	no
	4	Lead	24	--	1.75	8.50	3	23	--	>77.5	>189	0	0	no
	4	Total Suspended Solids	24	--	21.0	240	--	0	--	--	--	0	0	no
LPBMP0004	3.5	2,3,7,8-TCDD	25	25	<3.80e-07	<5.84e-06	0	25	25	<3.19e-05	<2.10e-04	0	0	no
	3.5	Cadmium	25	25	<0.250	<0.500	0	23	23	<0.0	<2.27	0	0	no
	3.5	Copper	25	--	9.20	14.0	2	25	--	142	465	0	0	no
	3.5	Lead	25	--	2.60	5.60	1	25	--	>108	432	2	0	yes
	3.5	TCDD TEQ	25	3	2.23e-08	7.74e-06	11	25	3	7.96e-07	1.06e-03	4	0	yes
	3.5	Total Suspended Solids	25	--	17.0	110	--	0	--	--	--	0	0	no
LXBMP0002	1.5	TCDD TEQ	2	--	7.63e-08	1.07e-07	2	2	--	2.24e-06	4.12e-06	0	0.50	no
	1.5	Total Suspended Solids	2	--	156	300	--	0	--	--	--	0	0.50	no
	3.5	Copper	2	--	9.65	14.0	1	2	--	45.8	63.6	0	0.31	no
	3.5	Lead	2	--	3.82	6.90	1	2	--	31.6	40.9	0	0.31	no
	5.5	2,3,7,8-TCDD	2	2	<5.10e-06	<5.10e-06	0	2	2	<4.64e-04	<4.64e-04	0	0	no
	5.5	Cadmium	2	1	<0.120	0.120	0	2	1	<0.0505	>0.0505	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
LXBMP0003	1	Total Suspended Solids	6	--	78.5	1,000	--	0	--	--	--	0	0.50	no
	2	TCDD TEQ	6	3	<4.35e-08	1.23e-07	3	6	3	<1.23e-07	1.51e-05	0	0.07	no
	3	Copper	6	--	3.85	20.0	1	5	--	17.9	2,970	1	0.03	yes
	5	2,3,7,8-TCDD	6	6	<8.80e-07	<8.30e-06	0	6	6	<3.61e-05	<2.93e-04	0	0	no
	5	Cadmium	6	4	<0.100	0.440	0	6	4	<0.0	>5.05	1	0	no
	5	Lead	6	1	0.810	18.0	1	6	1	13.8	>58.8	0	0	no
LXBMP0004	1	Total Suspended Solids	5	--	260	520	--	0	--	--	--	0	0.97	no
	2	Lead	5	--	8.80	14.0	5	5	--	44.3	102	0	0.50	no
	3.5	Copper	5	--	11.0	15.0	1	5	--	40.6	86.9	0	0.01	no
	3.5	TCDD TEQ	5	--	4.50e-10	1.72e-07	1	5	--	3.81e-09	5.54e-07	0	0.01	no
	5.5	2,3,7,8-TCDD	5	5	<2.30e-06	<6.00e-06	0	5	5	<1.52e-05	<2.31e-05	0	0	no
	5.5	Cadmium	5	1	0.120	0.190	0	5	1	>0.0774	>0.180	0	0	no
LXBMP0005	1	Total Suspended Solids	5	--	54.0	180	--	0	--	--	--	0	0.50	no
	2	TCDD TEQ	5	--	2.50e-10	4.59e-06	2	5	--	4.05e-09	2.30e-04	1	0.17	yes
	3	Lead	5	--	4.40	5.50	1	5	--	>31.5	>265	0	0.01	no
	5	2,3,7,8-TCDD	5	5	<1.50e-06	<7.30e-06	0	5	5	<4.05e-05	<9.00e-05	0	0	no
	5	Cadmium	5	3	<0.100	0.130	0	5	3	<0.0	>0.821	0	0	no
	5	Copper	5	--	8.40	12.0	0	5	--	59.3	435	0	0	no
LXBMP0006	1	Total Suspended Solids	5	--	40.0	1,300	--	0	--	--	--	0	0.19	no
	2	TCDD TEQ	5	3	<1.00e-12	5.63e-08	2	5	3	<7.14e-10	1.25e-06	0	0.05	no
	3.5	Copper	5	--	4.66	26.0	1	5	--	45.0	207	0	0.01	no
	3.5	Lead	5	--	1.63	24.0	1	5	--	50.7	106	0	0.01	no
	5.5	2,3,7,8-TCDD	4	4	<1.06e-06	<3.88e-06	0	4	4	<3.67e-05	<8.82e-05	0	0	no
	5.5	Cadmium	5	4	<0.128	0.400	0	5	4	<0.0	>0.231	0	0	no
LXBMP0007	1	Total Suspended Solids	1	--	115	115	--	0	--	--	--	0	0.50	no
	4	2,3,7,8-TCDD	1	1	<1.41e-06	<1.41e-06	0	1	1	<1.23e-05	<1.23e-05	0	0	no
	4	Cadmium	1	1	<0.128	<0.128	0	1	1	<0.0	<0.0	0	0	no
	4	Copper	1	--	9.84	9.84	0	1	--	69.8	69.8	0	0	no
	4	Lead	1	--	4.63	4.63	0	1	--	38.0	38.0	0	0	no
	4	TCDD TEQ	1	--	3.49e-09	3.49e-09	0	1	--	3.03e-08	3.03e-08	0	0	no
LXBMP0009	1	Total Suspended Solids	4	--	41.0	174	--	0	--	--	--	0	0.31	no
	2	Lead	5	--	2.67	6.24	1	4	--	39.0	44.2	0	0.02	no
	4.5	2,3,7,8-TCDD	4	4	<3.89e-06	<4.17e-06	0	4	4	<5.45e-05	<1.74e-04	0	0	no
	4.5	Cadmium	5	5	<0.128	<0.250	0	4	4	<0.0	<0.0	0	0	no
	4.5	Copper	5	--	6.56	12.2	0	4	--	72.9	104	0	0	no
	4.5	TCDD TEQ	4	--	2.70e-09	3.71e-09	0	4	--	8.68e-08	1.34e-07	0	0	no
LXBMP0010	1.5	Lead	1	--	6.60	6.60	1	1	--	>107	>107	0	0.50	no
	1.5	TCDD TEQ	1	--	7.83e-07	7.83e-07	1	1	--	1.37e-05	1.37e-05	0	0.50	no
	4.5	2,3,7,8-TCDD	1	1	<1.70e-07	<1.70e-07	0	1	1	<2.98e-06	<2.98e-06	0	0	no
	4.5	Cadmium	1	1	<0.250	<0.250	0	1	1	<0.0	<0.0	0	0	no
	4.5	Copper	1	--	3.70	3.70	0	1	--	52.5	52.5	0	0	no
	4.5	Total Suspended Solids	1	--	57.0	57.0	--	0	--	--	--	0	0	no

Location	Rank	COC	Concentration					Particulate Strength					Weight	Both Criteria Exceeded?
			Number of Samples	Number of NDs	Median	Maximum	N > PL	Number of PS	Number of NDs	Median PS	Maximum	N > 95th		
LXSW0002	1	**Total Suspended Solids**	9	2	4.00	190	--	0	--	--	--	0	0.02	no
	4	**2,3,7,8-TCDD**	8	8	<1.20e-06	<8.80e-06	0	8	8	<4.25e-04	<1.20e-03	2	0	no
	4	**Cadmium**	8	8	<0.100	<0.100	0	0	--	--	--	0	0	no
	4	**Copper**	9	--	1.80	13.0	0	9	--	219	1,580	3	0	no
	4	**Lead**	9	--	0.340	27.0	1	9	--	88.2	>198	0	0	no
	4	**TCDD TEQ**	9	3	1.21e-09	2.63e-05	2	9	3	3.02e-07	1.38e-04	1	0	yes
Outfall 001	1.5	**TCDD TEQ**	3	--	2.70e-07	3.23e-07	3	3	--	2.94e-06	3.41e-05	0	0.50	no
	1.5	**Total Suspended Solids**	3	--	110	120	--	0	--	--	--	0	0.50	no
	3	**Lead**	3	--	4.10	8.60	1	3	--	>70.8	72.9	0	0.11	no
	5	**2,3,7,8-TCDD**	3	3	<4.00e-07	<5.20e-07	0	3	3	<4.73e-06	<2.03e-05	0	0	no
	5	**Cadmium**	3	3	<0.250	<0.250	0	3	3	<0.0	<0.0	0	0	no
	5	**Copper**	3	--	5.50	11.0	0	2	--	41.6	67.3	0	0	no
Outfall 008	1	**Total Suspended Solids**	24	1	64.0	1,300	--	0	--	--	--	0	0.42	no
	4	**2,3,7,8-TCDD**	35	35	<8.98e-07	<4.70e-06	0	22	22	<1.50e-05	<1.49e-04	0	0	no
	4	**Cadmium**	35	17	0.0180	1.50	0	13	9	<0.0	>5.29	1	0	no
	4	**Copper**	36	1	5.10	18.0	2	23	--	43.1	183	0	0	no
	4	**Lead**	36	1	3.35	120	13	23	--	>47.8	91.7	0	0	no
	4	**TCDD TEQ**	36	5	1.49e-09	3.61e-06	8	23	4	1.91e-08	2.74e-06	0	0	no
Outfall 009	3.5	**2,3,7,8-TCDD**	81	78	<8.40e-07	3.43e-05	3	51	49	<8.85e-05	<1.70e-03	1	0	yes
	3.5	**Cadmium**	86	53	<0.250	9.20	1	38	27	<0.0	>33.0	2	0	yes
	3.5	**Copper**	86	--	4.18	39.0	3	51	--	>80.1	950	1	0	yes
	3.5	**Lead**	86	9	1.75	260	20	55	3	106	>1,000	6	0	yes
	3.5	**TCDD TEQ**	86	12	9.23e-09	5.70e-04	33	56	7	8.20e-07	2.10e-04	2	0	yes
	3.5	**Total Suspended Solids**	56	18	6.00	4,000	--	0	--	--	--	0	0	no

Appendix D: 2017/18 BMP Performance Analysis

Prepared for

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Appendix D: Best Management Practice (BMP) Performance Analysis

2017/18 Reporting Year

Prepared by

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Acronyms

ANOVA	Analysis of Variance
BMP	Best Management Practice
CA	California
CM	Culvert Modification
COC	Constituent of Concern
COV	Coefficient of Variation
DNQ	Detected not Quantified
ELV	Expendable Launch Vehicle
ENTS	Engineered Natural Treatment Systems
GIS	Geographic Information System
HDPE	High Density Polyethylene
ISRA	Interim Source Removal Action
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/L	milligram per liter
NASA	National Aeronautics and Space Administration
ND	Non-Detect
NPDES	National Pollutant Discharge Elimination System
POR	Period of Record
SSFL	Santa Susana Field Laboratory
SWMM	Storm Water Management Model
TCDD	Tetrachlorodibenzo-*p*-dioxin
TEQ	Toxic Equivalence
TSS	Total Suspended Solids

1 Introduction

The purpose of this memorandum is to evaluate the performance of existing treatment Best Management Practices (BMPs) in the Outfall 009 watershed of the Boeing Santa Susana Field Laboratory (Site). This is an update to the BMP performance analysis that is conducted annually, consistent with the *Site-Wide Stormwater Work Plan and 2014/15 Annual Report* ("2015 Work Plan") (Santa Susana Surface Water Expert Panel and Geosyntec Consultants, 2015). This memorandum incorporates 2017/2018 reporting year data into a dataset that initially began in December 2009. The National Pollutant Discharge Elimination System (NPDES) constituents of concern (COCs) addressed in this analysis include total suspended solids (TSS), total lead, total copper[1], and dioxins (TCDD TEQ, DNQ excluded, BAFs included). 2017/2018 data were collected to assess effectiveness of the culvert modification (CM) installations, upper lot media filter, lower parking lot sedimentation basin and biofilter (lower lot biofilter), ELV treatment BMP, and B1436 detention bioswales[2] (detention bioswales). This memorandum focuses on the performance of the BMPs listed above, which are located in Watershed 009. Although this memorandum currently only addresses BMPs in Watershed 009, Table 1 shows Permit Limits at all outfalls specified in the NPDES Permit for the aforementioned COCs, as context for goals for other potential BMPs constructed in other watersheds, if needed in the future.

Table 1. COC NPDES Permit Limits by Outfall

Outfall	NPDES Permit Limit			
	TSS (mg/L)	Total Lead (µg/L)	Total Copper (µg/L)[2]	Dioxins (µg/L)
001	45	5.2	14	2.80×10^{-8}
002	45	5.2	14	2.80×10^{-8}
003	-	5.2	13	2.80×10^{-8}
004	-	5.2	13	2.80×10^{-8}
005	-	5.2	13	2.80×10^{-8}
006	-	5.2	13	2.80×10^{-8}
007	-	5.2	13	2.80×10^{-8}
008	-	5.2	14	2.80×10^{-8}
009	-	5.2	13	2.80×10^{-8}
010	-	5.2	13	2.80×10^{-8}
011[1]	45	5.2	14	2.80×10^{-8}
018[1]	45	5.2	14	2.80×10^{-8}
019	45	5.2	14	2.80×10^{-8}
020	45	5.2	14	2.80×10^{-8}

[1] Benchmark

[2] Copper is not included as a pollutant of concern for the Outfall 009 watershed in the 2015 Work Plan

[1] Copper is not included as a pollutant of concern for the Outfall 009 watershed in the 2015 Work Plan. However, data for total copper are retained for the paired line plots.

[2] Includes both the northern and southern detention bioswales. However, only the southern detention bioswale was sampled in 2017/2018.

Relatively fewer BMP performance samples were collected during the 2017/2018 reporting year, as compared to previous reporting years. Following the 2016/2017 reporting year, it was decided that sampling would be reduced because of the recent slow-down in site activities particularly in the Outfall 009 watershed. Starting in 2017/2018, and until site activities increase, samples were only collected during two storm events per year at the upper lot media filter, southern detention bioswale, lower lot biofilter, CM-1 (influent-west and effluent), and the ELV Treatment BMP. It should be noted that there was lower than average total precipitation and a smaller number of storm events as compared to other reporting years. Long-term average annual rainfall at SSFL from the 1958/1959 reporting year through the 2017/2018 reporting year was 16.8 inches[3], compared to 9.75 inches recorded in the 2017/2018 reporting year[4]. Four rain events[5] occurred in the 2017/2018 reporting year, with three of these storms being sampled at one or more BMP monitoring sites[6]. This is compared with between five and 14 total rain events per year in prior reporting years 2009/2010 through 2016/2017.

Table 2 summarizes rainfall events in which data were collected for the 2009/2010 through 2017/2018 reporting years ('non sample collection events' represent precipitation events where samples were not collected). Not all BMPs had influent and effluent flows during each rain event.

Table 2. Sample Collection Event Rainfall Data Summary
(gray cells indicate dates that did not have complete data pairs sampled at treatment devices)

Date(s)	Average Intensity (in/hr)	Max Intensity (in/hr)	Event Total (in)	Event Duration (hrs)	Cumulative Rainfall for Sampled Events (in)	Number of BMP Subarea Monitoring Samples[1]
10/13/2009 - 10/14/2009	0.05	0.24	2.48	35	2.48	-
12/7/2009 - 12/13/2009	0.02	0.25	3.43	57	5.91	-
1/17/2010 – 1/22/2010	0.05	0.52	6.88	123	12.79	-
2/5/2010 – 2/6/2010	0.04	0.20	1.84	43	14.63	-
2/9/2010	0.01	0.17	0.20	3	14.83	-
2/19/2010	0.01	0.05	0.14	8	14.97	-
2/24/2010	0.01	0.03	0.12	12	15.09	-
2/27/2010	0.06	0.34	1.52	17	16.61	-
3/6/2010	0.02	0.13	0.38	11	16.99	-

[3] Data from the Simi Hills – Rocketdyne Lab gauge (Ventura County Watershed Protection District site 249) was used to determine annual rainfall from 1958/1959 through 2000/2001. However, rainfall data were not available at this gauge from 1977/1978 through 1984/1985. Data from the Area 4 gauge (which was moved to Area 1 on January 1, 2013) were used to determine annual rainfall from 2001/2002 through 2017/2018. This results in a period of record (POR) of 52 years.

[4] A water year is typically defined as October 1 through September 30. However, due to the reporting timeline for the Annual Report, reporting years have been defined as June 1 through May 31.

[5] A "rain event" is defined as greater than 0.1 inches of rainfall in a 24-hour period and preceded by at least 72 hours of dry weather.

[6] Monitoring occurs when rain events result in observable flow (and the maximum number of sampled events planned for the particular BMP has not been reached).

Date(s)	Average Intensity (in/hr)	Max Intensity (in/hr)	Event Total (in)	Event Duration (hrs)	Cumulative Rainfall for Sampled Events (in)	Number of BMP Subarea Monitoring Samples[1]
4/4/2010 - 4/5/2010	0.03	0.23	0.86	13	17.85	-
4/11/2010 - 4/12/2010	0.03	0.22	0.65	11	18.50	-
Non sample collection event total[2]			*0.89*			
Total for 2009/2010 reporting year			**19.39**			-
10/5/2010 - 10/6/2010	0.049	0.18	0.93	20	0.93	-
10/16/2010 - 10/25/2010	0.003	0.22	0.69	216	1.62	-
11/17/2010 - 11/21/2010	0.011	0.23	0.97	89	2.59	-
12/5/2010	0.018	0.09	0.41	10	3.0	-
12/17/2010 – 12/22/2010	0.054	0.37	7.22	131	10.22	-
12/25/2010 - 12/26/2010	0.030	0.22	0.57	9	10.79	-
12/29/2010	0.043	0.10	0.43	7	11.22	-
1/2/2011 - 1/3/2011	0.014	0.12	0.38	17	11.60	-
2/15/2011 – 2/20/2011	0.019	0.45	2.33	121	13.93	-
2/25/2011 - 2/26/2011	0.030	0.22	1.50	20	15.43	-
3/2/2011 - 3/3/2011	0.007	0.03	0.13	8	15.56	-
3/6/2011 - 3/7/2011	0.006	0.02	0.12	10	15.68	-
3/18/2011 - 3/27/2011	0.030	--	6.00	197	21.68	
5/15/2011 - 5/18/2011	0.009	0.08	0.67	76	22.35	-
Non sample collection event total[2]			*1.04*			
Total for 2010/2011 reporting year			**23.39**			**67**
10/5/2011	0.090	0.18	0.90	9	0.90	-
11/4/2011 - 11/6/2011	0.041	0.23	0.58	59	1.48	-
11/11/2011 - 11/12/2011	0.035	0.26	0.76	22	2.24	-
11/19/2011 - 11/21/2011	0.031	0.29	0.78	35	3.02	-
12/12/2011 - 12/17/2011	0.006	0.21	0.80	137	3.82	-
1/21/2012 – 1/23/2012	0.017	0.15	1.06	62	4.88	-
2/27/2012	--	--	0.00	--	4.88	-
3/16/2012 - 3/18/2012	0.052	0.31	1.51	29	6.39	-
3/25/2012 – 3/26/2012	0.079	0.51	2.12	21	8.51	-
4/10/2012 – 4/13/2012	0.034	0.36	2.37	64	10.88	-
4/23/2012 - 4/26/2012	0.003	0.09	0.26	80	11.14	-
Non sample collection event total[2]			*0.19*			
Total for 2011/2012 reporting year			**11.33**			**88**
11/14/2012 – 11/18/2012	0.010	0.36	0.99	99	0.99	-
11/28/2012 – 12/4/2012	0.011	0.12	1.49	139	2.48	-
12/12/2012 – 12/18/2012	0.005	0.07	0.68	129	3.16	-
12/22/2012 – 12/26/2012	0.013	0.18	1.13	87	4.29	-
1/23/2013 – 1/27/2013	0.020	0.18	1.78	89	6.07	-
2/8/2013 – 2/9/2013	0.008	0.07	0.12	15	6.19	-
2/19/2013	0.025	0.09	0.25	10	6.44	-

Date(s)	Average Intensity (in/hr)	Max Intensity (in/hr)	Event Total (in)	Event Duration (hrs)	Cumulative Rainfall for Sampled Events (in)	Number of BMP Subarea Monitoring Samples[1]
3/7/2013 – 3/8/2013	0.041	0.23	0.87	7	7.31	-
5/5/2013 - 5/6/2013	0.040	0.16	0.48	7	7.79	-
Non sample collection event total[2]			*0.31*			
Total for 2012/2013 reporting year			**8.10**			**29**
11/20/2013 – 11/21/2013	0.013	0.12	0.47	17	0.47	-
12/7/2013	0.070	0.09	0.28	4	0.75	-
2/6/2014 – 2/7/2014	0.015	0.15	0.28	16	1.03	-
2/26/2014 – 3/2/2014	0.052	0.47	4.62	89	5.65	-
4/1/2014 – 4/2/2014	0.008	0.14	0.22	28	5.87	-
Non sample collection event total[2]			*0.20*			
Total for 2013/2014 reporting year			**6.07**			**27**
10/31/2014 – 11/1/2014	0.045	0.33	0.36	8	0.36	-
11/30/2014 – 12/4/2014	0.033	0.40	3.20	97	3.56	-
12/11/2014 – 12/12/2014	N/A[3]	N/A[3]	2.62	N/A[3]	6.18	-
12/15/2014 – 12/17/2014	0.025	0.33	0.91	36	7.09	-
1/10/2015 – 1/11/2015	0.071	0.23	1.56	22	8.65	-
1/26/2015 – 1/27/2015	0.015	0.06	0.25	17	8.90	-
2/22/2015 – 2/23/2015	0.008	0.06	0.21	26	9.11	-
3/1/2015 – 3/3/2015	0.024	0.22	1.44	60	10.55	-
5/14/2015 – 5/15/2015	0.017	0.30	0.41	24	10.96	-
Non sample collection event total[2]			*0.26*			
Total for 2014/2015 reporting year			**11.22**			**17**
7/18/2015 – 7/19/2015	0.027	0.32	0.83	31	0.83	0
9/14/2015 – 9/15/2015	0.050	0.39	1.10	22	1.93	8
10/5/2015 – 10/6/2015	0.025	0.32	0.45	18	2.38	0
12/13/2015	0.055	0.06	0.11	2	2.49	0
12/19/2015 – 12/22/2015	0.008	0.08	0.52	65	3.01	6
1/5/2016 – 1/10/2016	0.030	0.60	3.87	129	6.88	29
1/18/2016 – 1/20/2016	0.005	0.02	0.20	40	7.08	0
1/31/2016	0.108	0.27	0.86	8	7.94	0
2/17/2016 – 2/18/2016	0.027	0.10	0.57	21	8.51	17
3/5/2016 – 3/7/2016	0.029	0.29	1.57	54	10.08	4
3/11/2016	0.088	0.34	0.44	5	10.52	15
4/7/2016 – 4/9/2016	0.010	0.10	0.52	52	11.04	16
5/6/2016	0.128	0.22	0.77	6	11.81	0
Non sample collection event total[2]			*0.16*			
Total for 2015/2016 reporting year			**11.97**			**113**
10/16/2016 – 10/17/2016[4]	0.008	0.05	0.22	28	0.22	0
10/28/2016 – 10/31/2016	0.006	0.16	0.41	68	0.63	5

Date(s)	Average Intensity (in/hr)	Max Intensity (in/hr)	Event Total (in)	Event Duration (hrs)	Cumulative Rainfall for Sampled Events (in)	Number of BMP Subarea Monitoring Samples[1]
11/20/2016 – 11/21/2016	0.024	0.18	0.53	22	1.16	3
11/26/2016	0.055	0.15	0.22	4	1.38	8
12/15/2016 – 12/16/2016	0.093	0.20	1.58	17	2.96	12
12/21/2016 – 12/24/2016	0.030	0.31	1.99	66	4.95	6
12/30/2016 – 12/31/2016	0.011	0.11	0.45	41	5.40	14
1/4/2017 – 1/13/2017	0.013	0.26	2.74	211	8.14	33
1/18/2017 – 1/23/2017	0.050	0.69	5.70	114	13.84	25
2/2/2017 – 2/11/2017	0.013	0.17	2.84	218	16.68	23
2/16/2017 – 2/21/2017	0.049	0.71	5.81	119	22.49	21
2/26/2017	0.022	0.05	0.20	9	22.69	0
3/21/2017 – 3/22/2017	0.028	0.07	0.36	13	23.05	0
4/7/2017 – 4/8/2017	0.024	0.08	0.17	7	23.22	0
Non sample collection event total[2]			0.13			
Total for 2016/2017 reporting year			**23.35**			**150**
1/8/2018 – 1/9/2018	0.068	0.37	2.78	41	2.78	11
2/26/2018 – 3/3/2018	0.015	0.15	1.66	109	4.44	10
3/10/2018 – 3/16/2018	0.012	0.30	1.92	155	6.36	0
3/21/2018 – 3/23/2018	0.059	0.45	2.94	50	9.30	15
Non sample collection event total[2]			0.45			
Total for 2017/2018 reporting year			**9.75**			**36**

[1] Includes total samples (influent, effluent, BMP subarea, background, etc.). Annual totals only are shown for early reporting years (as available), consistent with what was reported in past annual reports.

[2] Rainfall was measured, but not considered a rain event per the NPDES definition.

[3] Area I weather station malfunctioned during rain event, rainfall totals from Station 436 used but hourly rainfall not available.

[4] Rainfall from Station 436 was used for hour 3:00 on 10/16/2016 when the Area I station was off-line.

2 Overview

2.1 BMPs

Influent and effluent results for each BMP for the same storm event were compared to assess concentration reductions through the system. Although split samples were periodically collected and used for QA/QC purposes, only the primary samples were used in these analyses. For each of the **six CM sites** discussed herein[7], the number of paired samples per BMP[8] ranges from 10 to 29 pairs for TSS and 0 to 29 pairs for dioxins[9], copper[10], and lead[11] for 2011/2012 through 2017/2018. Two new CM paired samples[12] were collected during this reporting year, and it should be noted that sampling at B-1 ceased after the 2015/2016 reporting year due to sufficient data having been collected to quantify performance.

Performance data for the **lower lot biofilter** (construction of which was completed in 2013) were collected from three locations within the system (influent, effluent, and a mid-point sample at the sedimentation basin outlet before the media filter inlet) during two storm events in the 2017/2018 sampling year. As a result, there are 24 total sample pairs associated with this location to date, including one 2013/2014 biofilter effluent sample reflecting a blend of filtered underdrain flows and overflows that bypassed the filter media.

The **ELV treatment BMP**, implemented during the 2013/2014 reporting year, includes paired data from nine events prior to this past reporting year, and one event in 2017/2018. These data are shown in the paired line plots and statistical analyses in the following sections, though it should be noted that it is possible that the media bed for this system may have been flushing fines during the first sampling event in 2013/2014 since this was the first rain event it experienced. During this event, the ELV treatment BMP

[7] Includes CM-1, CM-3, CM-8, CM-9, CM-11, and B-1. CM-3 pre-2016/2017 was excluded from this analysis due to post-storm dry weather flows observed at the outlet between February 2010 and March 2011 when no flows were observed entering the culvert, suggesting subsurface inflows were contributing to effluent samples, thus limiting the meaningfulness of an influent-effluent comparison. However, the road runoff inlet to CM-3 was completed on May 5, 2017. Therefore, CM-3 road runoff data is included in this memorandum, but currently only includes a single influent result from one event in 2016/2017.

[8] Excluding CM-3 results, since pre-2016/2017 data were excluded from this analysis and only one influent sample was collected in 2016/2017.

[9] There are no data pairs for dioxins at CM-8. Excluding CM-8, the lowest number of data pairs is 11 (CM-11).

[10] There are no data pairs for copper at CM-8 and CM-11. Excluding CM-8 and CM-11, the lowest number of data pairs is four (CM-1).

[11] There are no data pairs for lead at CM-11. Excluding CM-11, the lowest number of data pairs is 10 (CM-8).

[12] CM-9 was sampled during three events in 2017/2018. However, only influent samples (no paired effluent sample) were collected during two of these three events. One paired sample was also collected at CM-1 during 2017/2018.

was also heavily loaded by sediments eroded from the denuded ELV channel prior to implementation of recent erosion control improvements.

The **B1436 detention bioswales**, which were constructed in December 2014, were sampled for the first time during the 2015/2016 reporting year[13]. The detention bioswales are intended to slow a portion of the flow draining to the lower lot biofilter until later during the events to take advantage of the biofilter additional treatment capacity at those later times. Some treatment is expected to be achieved in the bioswales, but the primary purpose is to slow the influent runoff to the lower lot biofilter and reduce flow that bypasses the lower lot biofilter during large storm events. Samples were collected at three locations at the southern detention bioswale, which includes two influent locations (results from both locations were flow-weighted [based on drainage area size and estimated imperviousness] to determine the influent concentrations) and the effluent. Paired influent and effluent performance data were collected during 14 events at the southern detention bioswale prior to the current reporting year, and two sample pairs were collected during 2017/2018. Samples were also collected at both the influent and effluent locations of the northern detention bioswale during eight events during the 2015/2016 and 2016/2017 reporting years. Sampling was discontinued at the northern detention bioswale after the 2016/2017 reporting year, as it was determined that sufficient data were collected.

The **upper lot media filter** was completed on May 16, 2017. Eight samples were collected during the 2016/2017 reporting year, but only at the influent location. Paired samples were collected for the first time at the upper lot media filter during 2017/2018 (for two events). The road runoff inlet to **CM-3** was also completed on May 5, 2017. No effluent samples were collected during the one post-construction event during 2016/2017, and no sample pairs were collected in 2017/2018, so an influent/effluent data pair has yet to be collected at this location.

2.2 Sampling

Influent grab samples are collected from flowing surface water upstream of the maximum extent of ponding at each CM as observed before that date.[14] All sampled CMs include a media filter and a slipline HDPE lining through existing galvanized corrugated metal culvert pipes with the exception of B-1, which is a media bed with no slipline element. Effluent grab samples at CM-1, CM-9, and B-1 are collected from the underdrain outlet (beginning in October 2011, rather than the culvert outlet), while other CM effluent grab samples are collected at the culvert outlets on the downstream side of the road, where the culvert pipes discharge to the Northern Drainage. Flows from the culvert outlets may represent treated runoff (via sedimentation and media filtration) and partially treated runoff (flowing through or over the weir boards); this is noted on the plots. At CM-3, the slipline HDPE pipes were inserted from both the influent and effluent sides and could not be sealed at the point where they meet, and subsurface flows through the road embankment are known to have entered the pipe during rain events from February 2010 through March 2011 because water was observed discharging from the HDPE pipe outlet when no

[13] The effluent of the northern detention bioswale (ILBMP0007) was sampled in the 2014/2015 reporting year (May 2015). However, a paired influent sample was not collected during this event.

[14] When the extent of ponding increased at the CM-1 and CM-3 culvert basins on December 22, 2010 during a heavy rainfall, the influent sample locations were moved upstream a sufficient distance to remain above the maximum ponded water footprint.

water was flowing into the inlet. Therefore, CM-3 performance cannot be reliably assessed due to this bypassing of the media filter and sampling at this site was discontinued after the 2010/2011 reporting year. However, sampling was initiated during this past reporting year after completion of the road runoff inlet and new sliplining, as previously described.

2.3 Drainage Areas

Several CM/media filter locations (CM-1, CM-9, CM-3, the B-1 media filter, and the upper lot media filter) and the southern detention bioswale have multiple influent drainage areas:

- CM-1 receives runoff from an eastern tributary that is considered to reflect background concentrations as well as a western tributary comprising paved road and ELV hillside runoff (ELV hillside runoff is only reflected in samples collected prior to November 2013);
- CM-9 receives runoff from the Area I Landfill (A1LF) and former Building 1324 parking lot (demolished Summer/Fall 2011), as well as the paved road to the east (Area II road);
- B-1 receives runoff from the north, comprised of paved road runoff, and the south, comprised of the upper B-1 ISRA areas, the sedimentation basin, and paved road runoff.
- The southern detention bioswale receives runoff discharged from the rock crib swale and the paved area adjacent to the detention bioswales (contractor laydown area).
- The upper lot media filter receives runoff from the south/southeast of the road, which is predominately comprised of the hillside, and the southwest (via the culvert), which consists of both the parking lot and hillside.
- CM-3 receives runoff from the hillside south of the road (including a clean soil borrow area at the top of the watershed), in addition to a small portion of the road runoff (after the road runoff inlet was completed in May 2017).

Influent locations used in the paired analyses were evaluated on a case by case basis, with similar sample dates taking precedence (between influent and effluent); in instances when two influent samples were available for the same effluent-sampling storm event, an impervious area-weighted average (used as an estimate of proportioned flowrate from each influent stream) was used to represent a single influent value.

Background monitoring sites at CM-1 (influent-east), CM-3, CM-8, and CM-11 receive runoff from drainage areas that do not include any known historic industrial activities, although the CM-3 drainage area does include a clean soil borrow area at the top of the watershed. Therefore, influent sample results at these four CM locations (not including CM-1 influent-west, or CM-3 road runoff) are of relatively good quality and considered reflective of "background" stormwater concentrations, making it difficult to achieve additional COC reductions through these CMs. These "background" CM locations were therefore statistically evaluated separately from the other CM locations. Sampling at these background CM locations was discontinued following the 2010/2011 reporting year, with the exception of the road runoff inlet to CM-3, which was completed in May 2017 and sampling was initiated again during the 2016/2017 reporting year. The road runoff diversion to CM-1 was constructed during 2017/2018.

The BMPs discussed in this memo and their respective drainage areas are shown in Table 3. While these areas are discussed specifically with respect to performance monitoring data, there are other areas of the SSFL site which are also addressed by BMPs, including CMs, asphalt removal, erosion control, and treatment control BMPs.

Table 3. BMP Sites and Drainage Areas

BMP	Drainage Area (acres)	Approximate Impervious Cover (%)
CM-1	52.8 (pre-ELV improvements) 43 (post-ELV improvements)	6.5 22
CM-3	16.8 0.25 (road runoff)	30 100
CM-8	2.6	36
CM-9	10.2	48
CM-11	5.7	26
B-1 Media Filter	8.6	53
ELV Treatment BMP	15.6 (Helipad plug in place) 6.6 (Helipad plug removed)	26 37
Lower Lot Biofilter	29.9[1]	53
Northern Detention Bioswale	2.6	50
Southern Detention Bioswale	14.2	
Upper Lot Media Filter	5.1	35

[1] A portion of the 24-inch stormdrain drainage area is diverted to the lower lot biofilter for treatment. As a result, the percent of runoff volume captured and treated from the smaller (approximately 11.7 acre) lower lot drainage area is greater than the percent of long-term runoff volume captured and treated from the larger (approximately 18.2 acre) 24-inch stormdrain drainage area. The average impervious cover of the smaller lower lot drainage area of 11.7 acres is 60%.

3 Paired Line Plots

The log-scale line plots presented in this section illustrate the changes in measured concentrations between influent and effluent sample pairs at each treatment BMP. Paired data were obtained from CM/media filter locations B-1, CM-1, CM-3 (road runoff), CM-8, CM-9, CM-11, and the upper lot media filter, the ELV treatment BMP, the lower lot biofilter, and the detention bioswales. Data are presented by constituent of concern (COC) in Figure 1 through Figure 51, where paired data measured during the same event are represented by two points (influent and effluent) connected by a line, and single sample results (where either an influent or effluent sample were not collected for a single event) are shown by single points without any connected line. Points and lines are shaded based on the sampling year during which they were collected, where black lines and points represent data from the most recent 2017/2018 reporting year and data from all previous reporting years are shown in gray. In addition, different symbology is used for different influent and effluent sample collection locations, as defined on each graph. Additionally, non-detect results are displayed as the detection limit. The detection limit may vary slightly from year to year, but the typical detection limit is also shown as a black dotted line. The statistical analyses of the datasets are presented in Section 4.

In addition to evaluating BMP performance, the monitoring data have also been used in the site selection evaluations for consideration for enhancements to selected CMs for improved performance in areas where the effluent remains problematic. This was the case at CM-9 based on previous year results, and upgradient improvements were added in 2013. Other examples of improvements include asphalt removal in the upper drainage area and filter fabric installation over the weir boards. For sites that were subject to such improvements impacting the quantity or quality of contributing runoff, separate graphs are shown for sample results that occurred before and after the improvements were made. At the B-1 media filter site, media washout was observed during initial sampling dates in the 2011/2012 reporting year. Results collected during this period were removed from the analysis. Additionally, samples were collected from the lower lot biofilter in 2012/2013 before the system was fully functional. These results were also removed from the analysis.

Monitoring data were first collected at the new ELV treatment BMP during the 2013/2014 reporting year; since that was the first rain event that the system experienced. The monitoring data reflect media fines being washed from the system. In addition, during the February/March 2014 storm event, a plug in the storm drain under Helipad Road resulted in high flows from the Helipad Road being routed to the ELV sump and treatment system. Additionally, inadequate erosion controls along the earthen ELV channel resulted in sediment filling the sump, and a power outage resulted in the sump pump turning off. The influent-effluent pollutant concentration reduction performance of the ELV Treatment BMP is not expected to be affected by these conditions; however, the fraction of runoff volume captured from the ELV drainage area during each storm is expected to be reduced due to these factors. Although no overflow events as described previously were observed during the 2014/2015 reporting year, this plug was not removed for any storm events. Samples collected in the 2017/2018 reporting year reflect overflow from behind the berm.

The B1436 detention bioswales were constructed in December of 2014, to provide detention of upper area paved area flows to increase the treatment capacity at the lower lot biofilter due to the longer duration of the flows. It was estimated in 2017 that the average volume pumped to the biofilter had increased from approximately 52,000 gallons per inch of rainfall to approximately 82,000 gallons per

inch of rainfall since the detention bioswales were constructed. Similarly, the estimated percentage of total annual runoff volume captured and treated (from both the 24-inch drain and the lower lot drainage areas) increased from 22% to 44% on average since the detention bioswales were constructed.

With regards to the line plots, the BMP effects on events having influent concentrations above the outfall Permit Limit is the most important performance criterion since those below the Permit Limit are already of acceptable quality and are generally considered to be at levels unlikely to be further reduced using typical stormwater controls, especially considering the conditions that have been experienced to date in terms of precipitation and watershed erosion. As with most stormwater quality controls, the water quality improvements are the most substantial when the influent concentrations are highest, due to “irreducible” low concentrations associated with media washout, resuspension of silts, etc..

These charts are included for general visual assessment purposes only; the statistical tests in later sections are used to make quantitative evaluations on BMP performance. It should be noted that these samples are all grab samples, and therefore highly variable in terms of water quality results, and may represent collection times that vary throughout the storm event hydrograph. Therefore, relatively large numbers of samples are needed to represent the varying conditions with reasonable statistical confidence and power.

Five CM effluent samples were collected during overflow/bypass conditions based on available field notes. These conditions are noted on the plots with red markers. No other sampling dates were noted as having overflows in the available field notes. In addition, observations of weir board overflows were collected starting in the 2011/2012 reporting year. It is unknown which prior samples, if any, were collected during overflow conditions. Sampling notes, which now more carefully track this information, have not noted any samples collected under overflow/bypass conditions since the 2011/2012 observations.

3.1 TSS Paired Line Plots

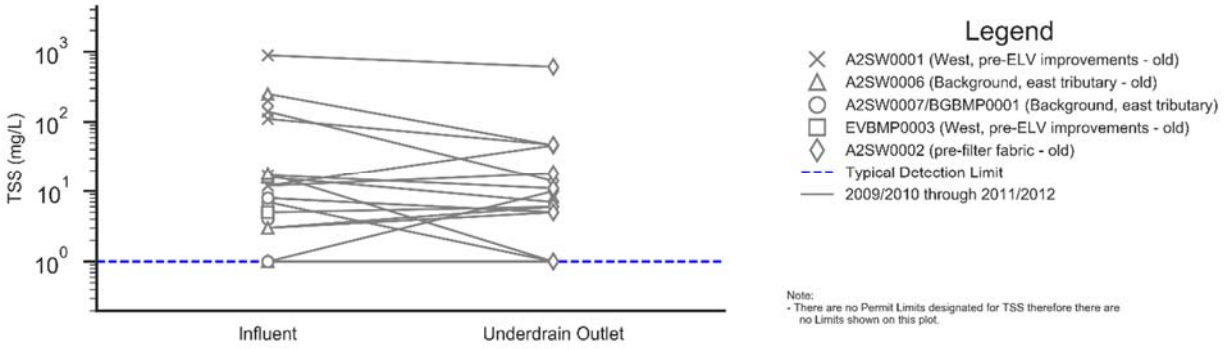

Figure 1. TSS at CM-1, pre filter fabric installation (filter fabric installed on 1/20/2012)

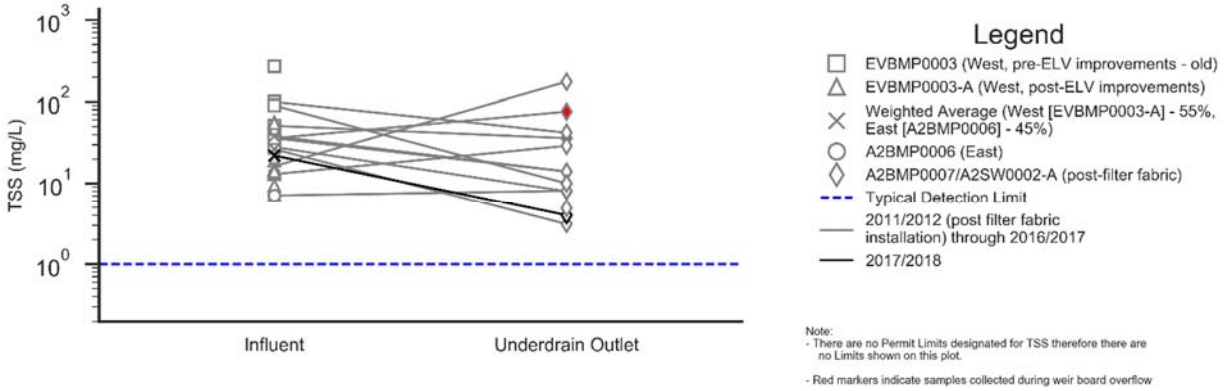

Figure 2. TSS at CM-1, post filter fabric installation (filter fabric installed on 1/20/2012)

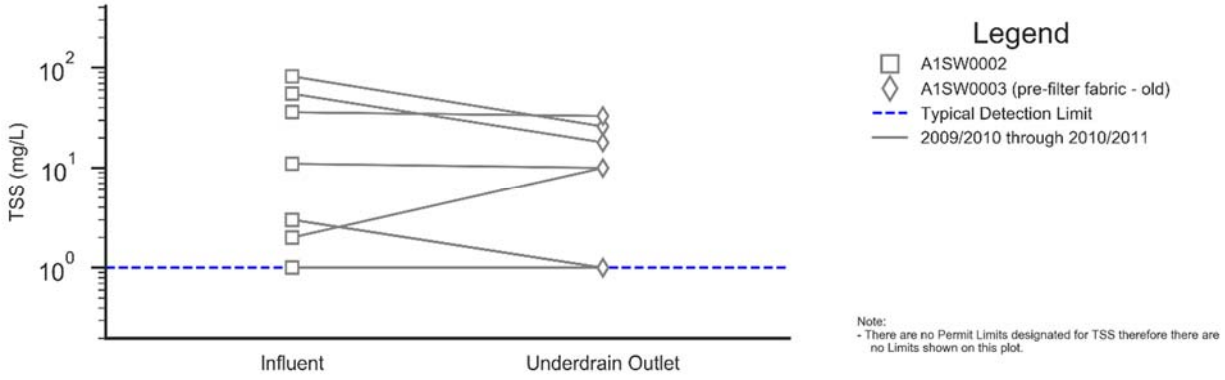

Figure 3. TSS at CM-8

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

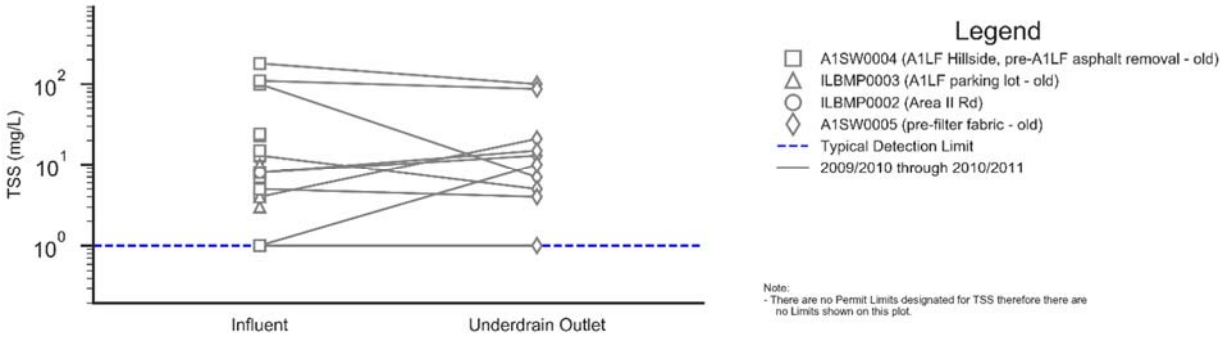

Figure 4. TSS at CM-9, pre improvements (removal of A1LF asphalt [9/1/2011] and addition of CM weir board filter fabric [1/20/2012])

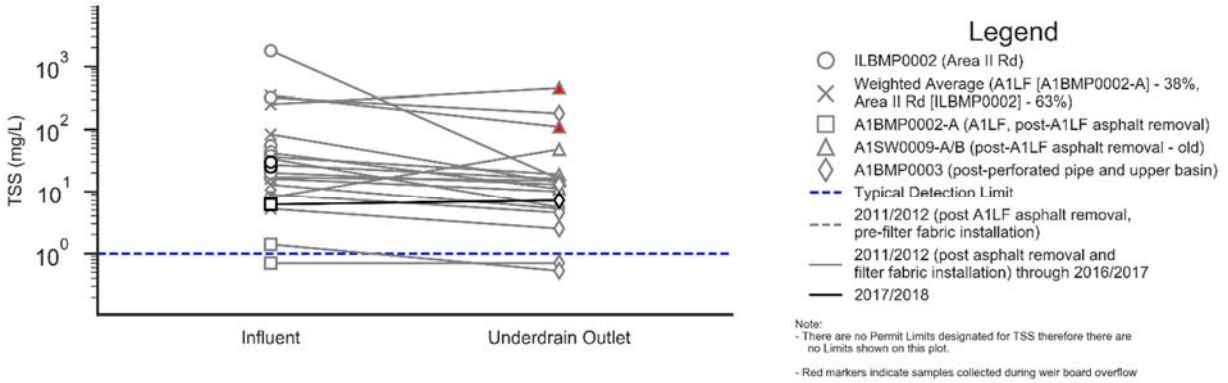

Figure 5. TSS at CM-9, post improvements (removal of A1LF asphalt [9/1/2011] and addition of CM weir board filter fabric [1/20/2012])

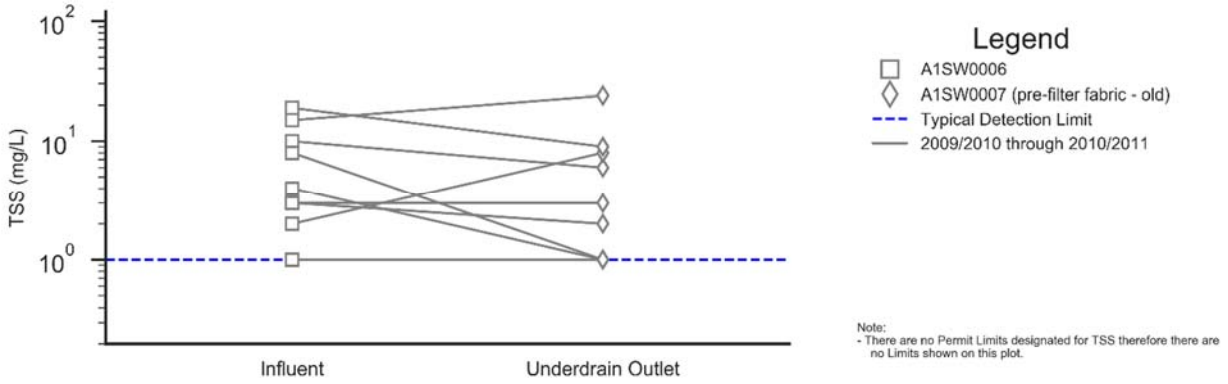

Figure 6. TSS at CM-11

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

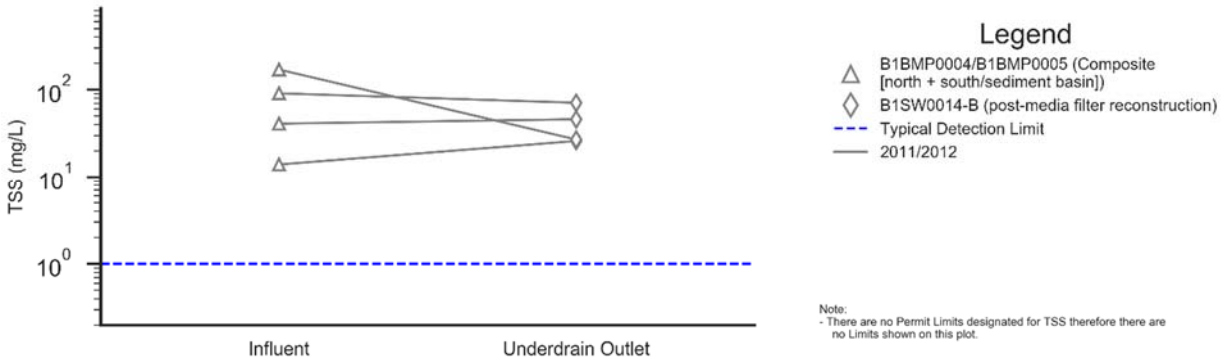

Figure 7. TSS at B-1 Media Filter (CM), pre curb cuts (curb cuts installed on 11/2/2012)

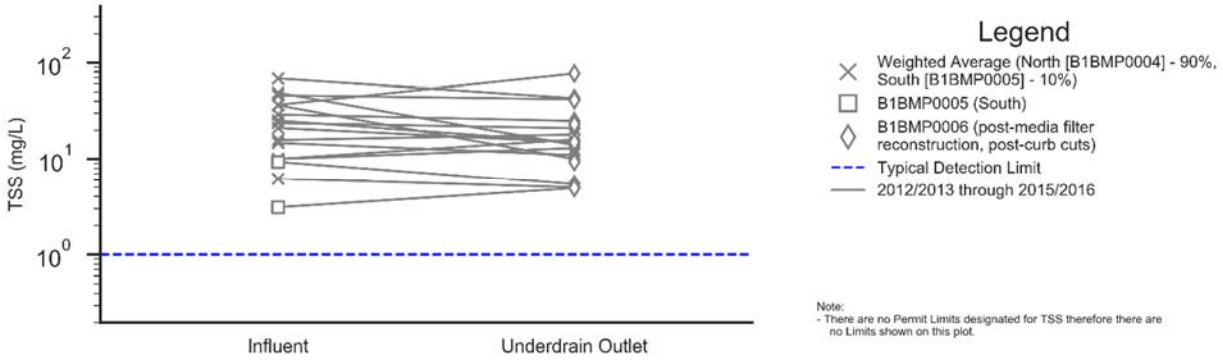

Figure 8. TSS at B-1 Media Filter (CM), post curb cuts (curb cuts installed on 11/2/2012)

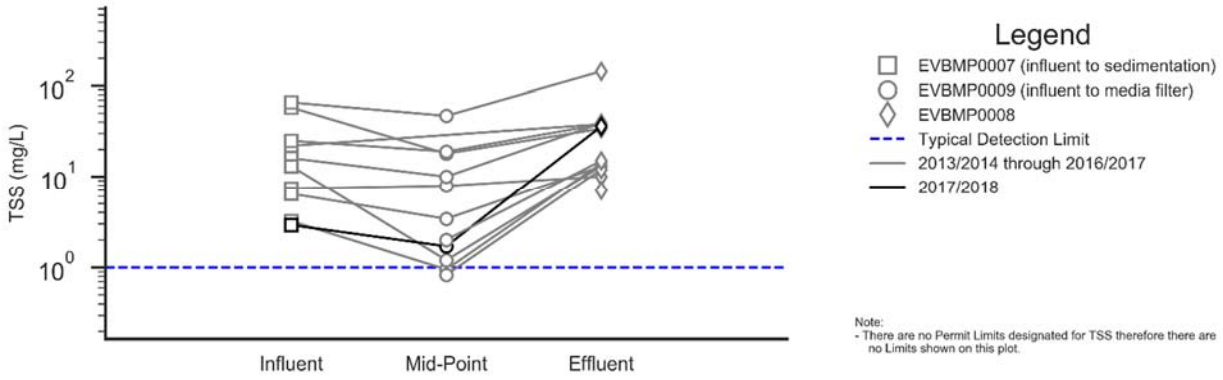

Figure 9. TSS at ELV Treatment BMP

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

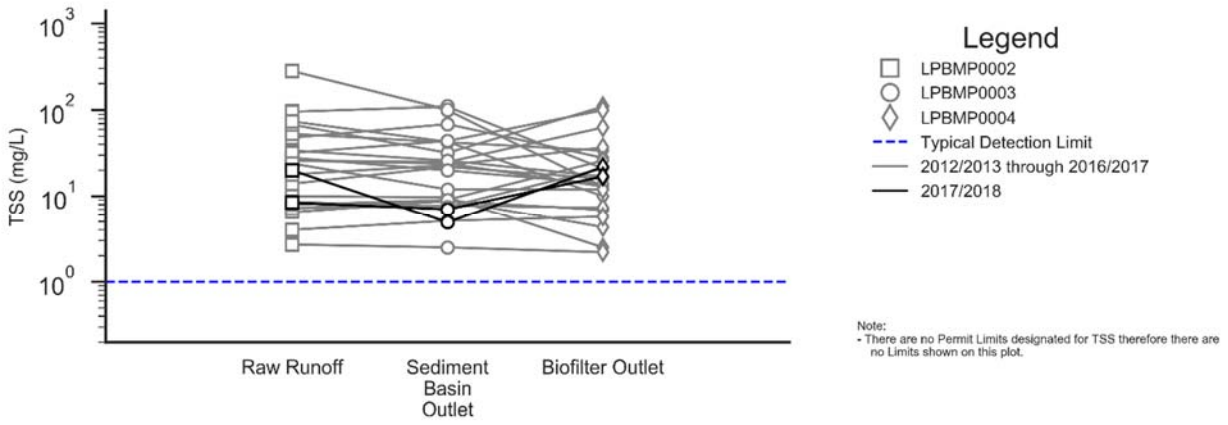

Figure 10. TSS at Lower Lot Biofilter[15]

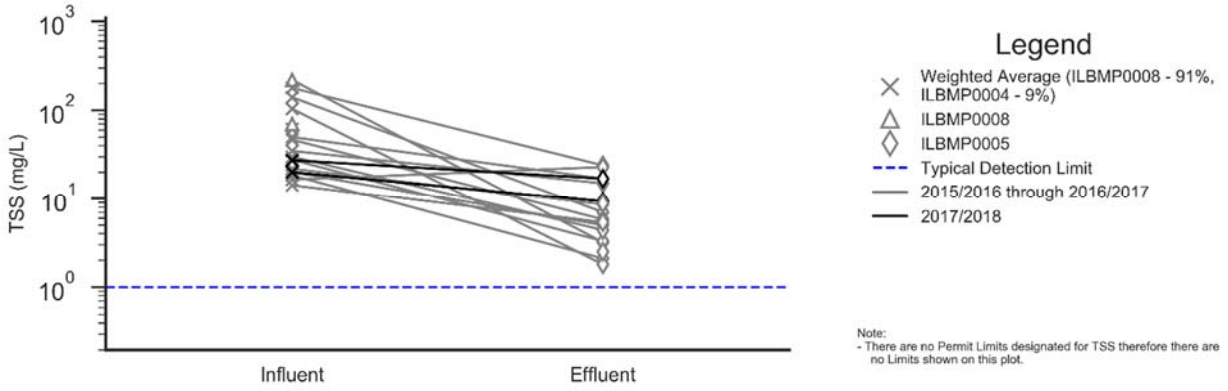

Figure 11. TSS at Southern Detention Bioswale

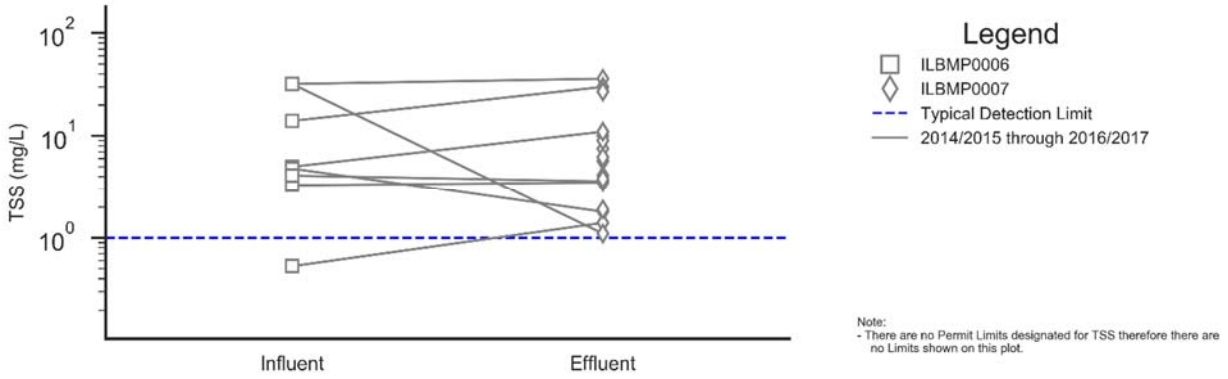

Figure 12. TSS at Northern Detention Bioswale

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

[15] A sample was not taken at the biofilter inlet (post-sedimentation basin) during the 2013/2014 sampling year due to the sample location being submerged and inaccessible. The biofilter outlet sample from the 2013/2014 reporting year reflects a mix of filtered underdrain flow and unfiltered overflow.

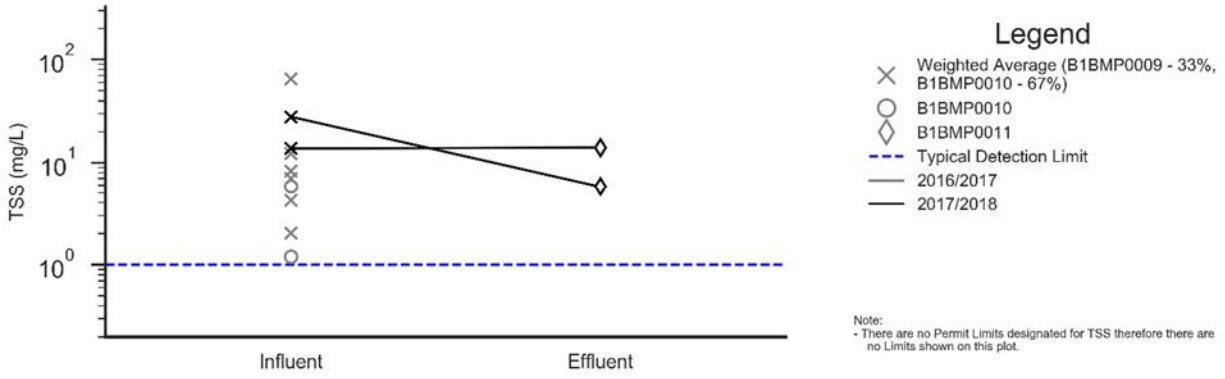

Figure 13. TSS at Upper Lot Media Filter

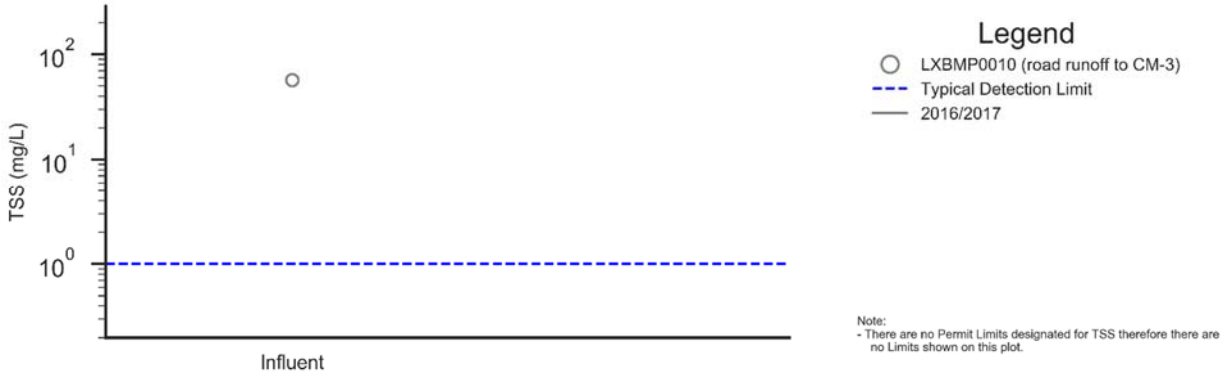

Figure 14. TSS at CM-3

3.2 Dioxins Paired Line Plots

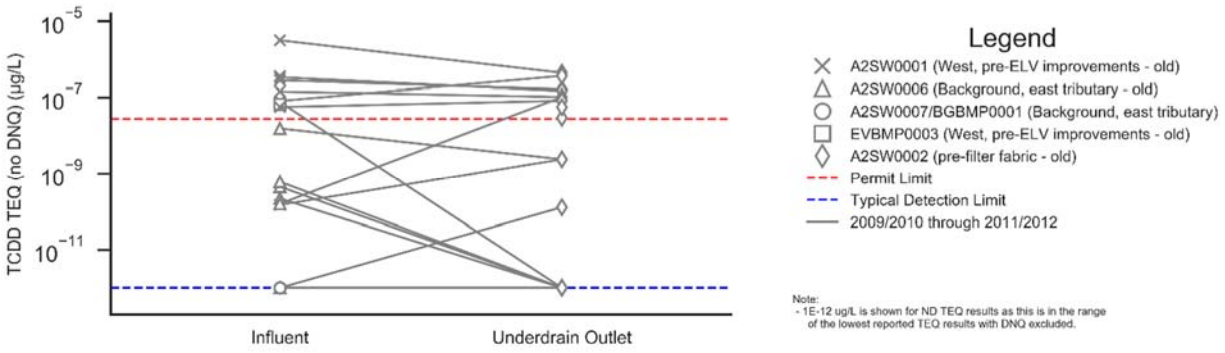

Figure 15. Dioxins at CM-1, pre filter fabric installation (filter fabric installed on 1/20/2012)

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

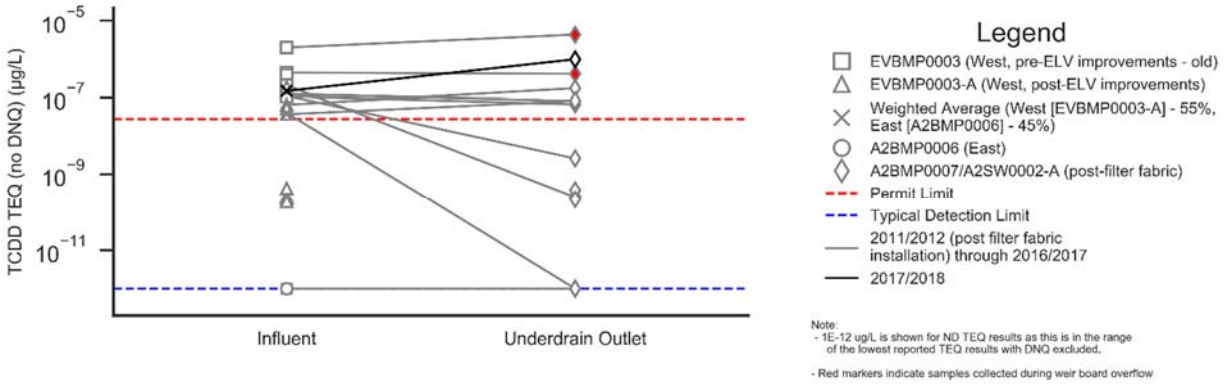

Figure 16. Dioxins at CM-1[16], post filter fabric installation (filter fabric installed on 1/20/2012)

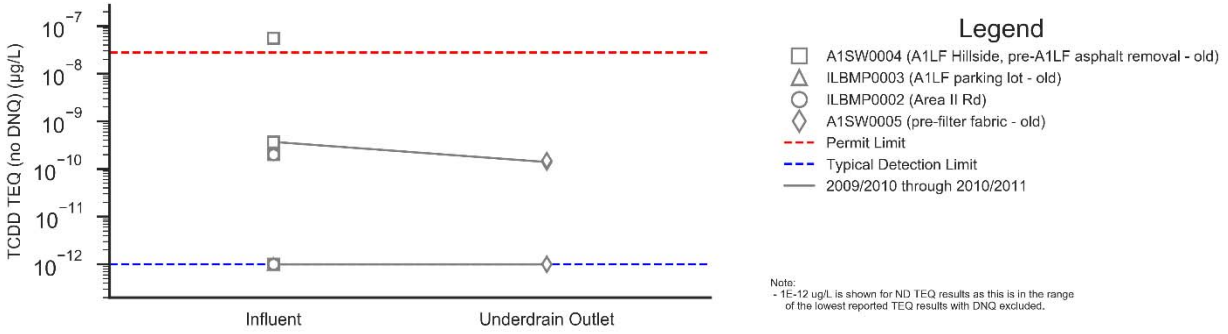

Figure 17. Dioxins at CM-9, pre improvements (removal of A1LF asphalt [9/1/2011] and addition of CM weir board filter fabric [1/20/2012])

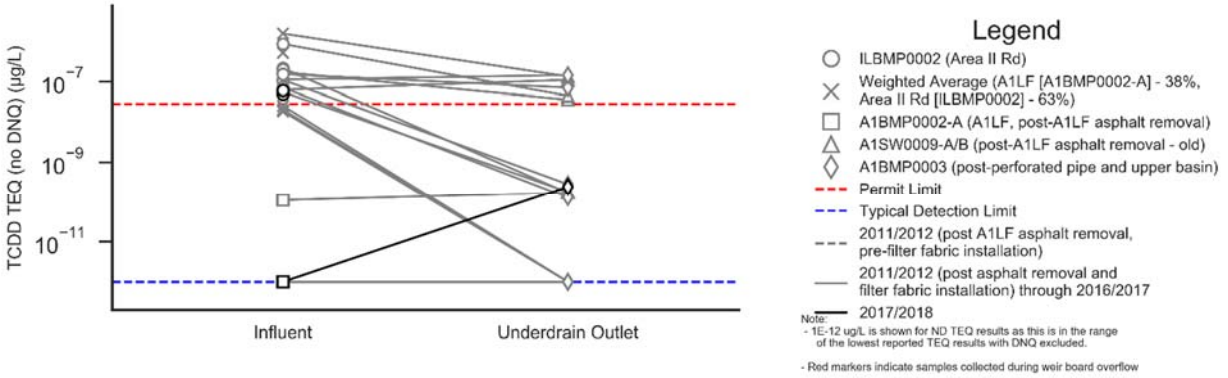

Figure 18. Dioxins at CM-9, post improvements (removal of A1LF asphalt [9/1/2011] and addition of CM weir board filter fabric [1/20/2012])

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

[16] A leaking seal was noted at CM-1 on 3/3/2017. It is unclear if this condition was present during the 2/17/2017 sample that resulted in an exceedance of permit limits for dioxins.

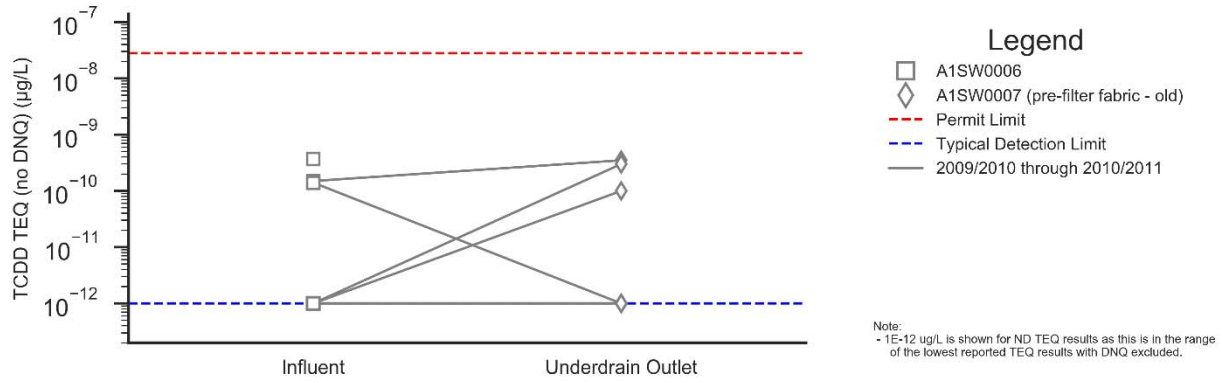

Figure 19. Dioxins at CM-11

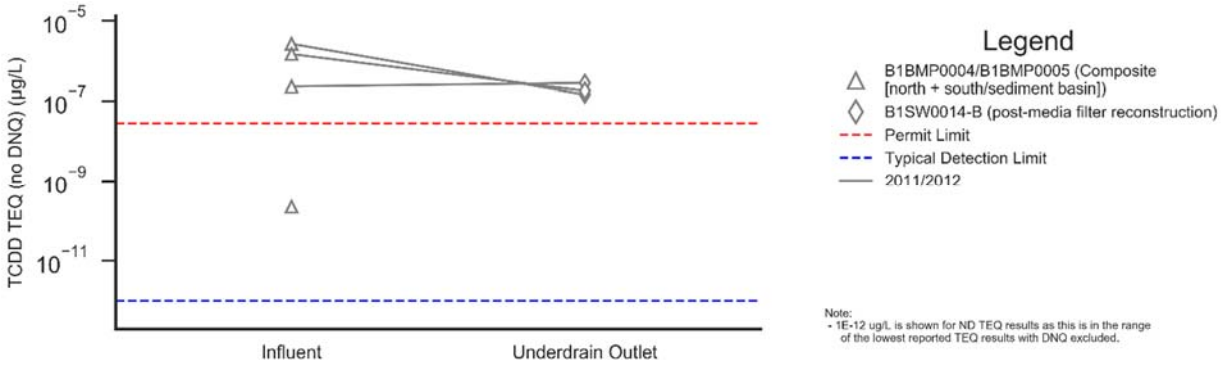

Figure 20. Dioxins at B-1 Media Filter (CM), pre curb cuts (curb cuts installed on 11/2/2012)

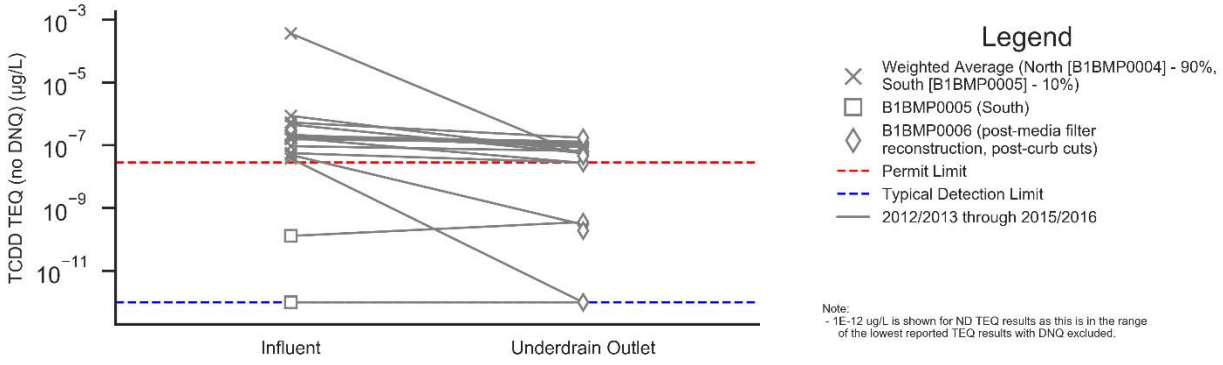

Figure 21. Dioxins at B-1 Media Filter (CM), post curb cuts (curb cuts installed on 11/2/2012)

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

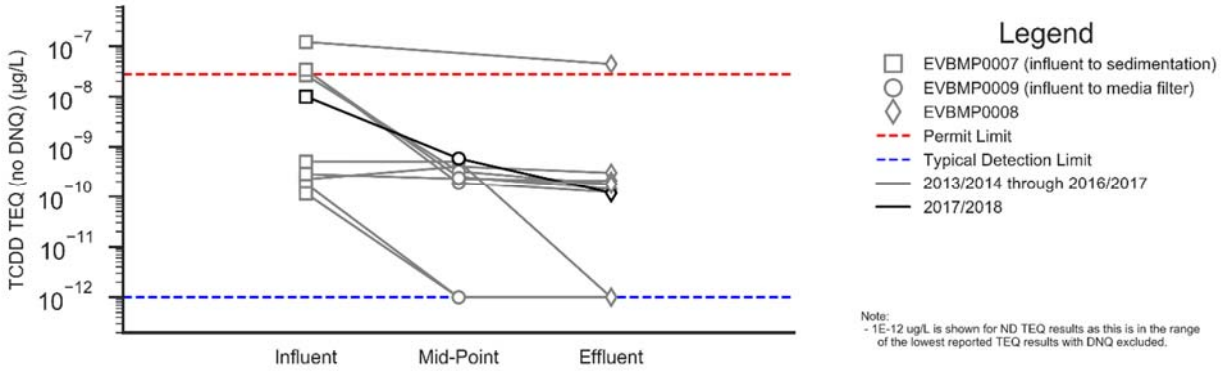

Figure 22. Dioxins at ELV Treatment BMP

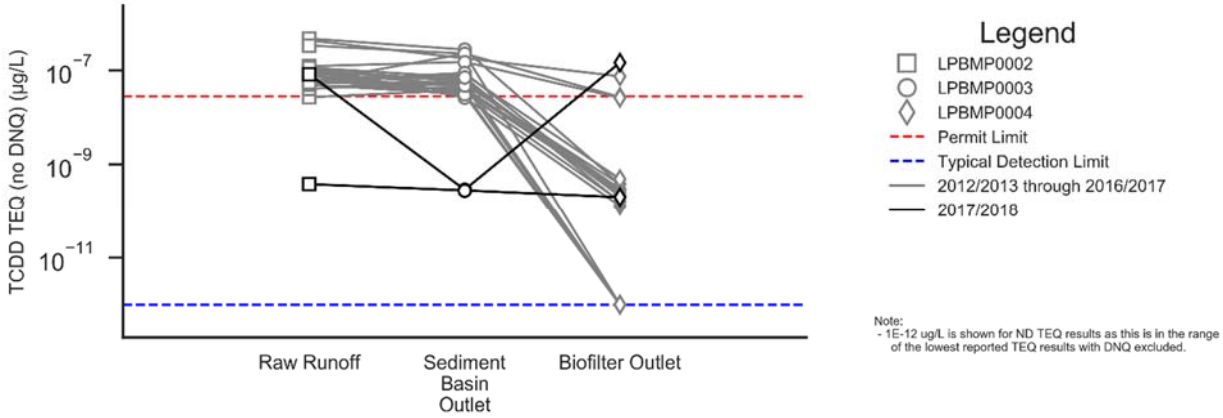

Figure 23. Dioxins at Lower Lot Biofilter[17]

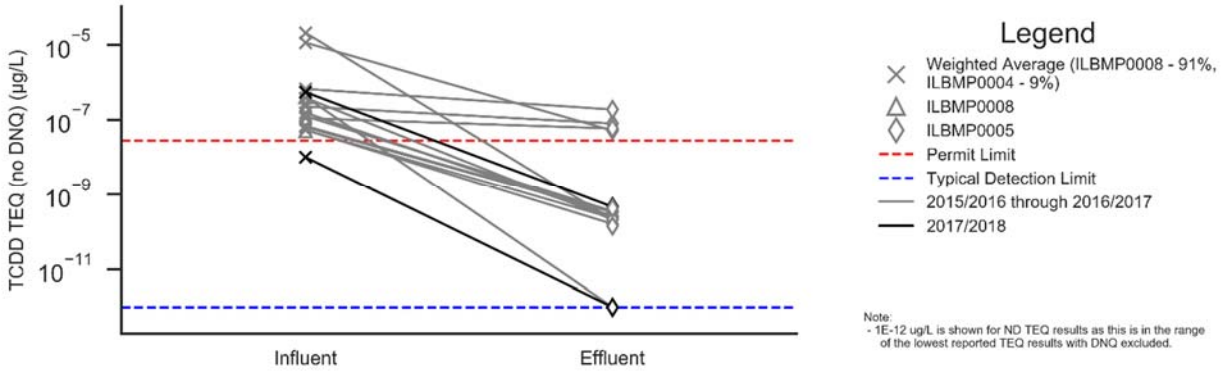

Figure 24. Dioxins at Southern Detention Bioswale

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

[17] Effluent result from the 1/8/18 - 1/9/18 event is not consistent with past performance observed from the biofilter, therefore the performance and effluent concentrations will be evaluated during subsequent monitoring events to make sure the biofilter is performing as designed.

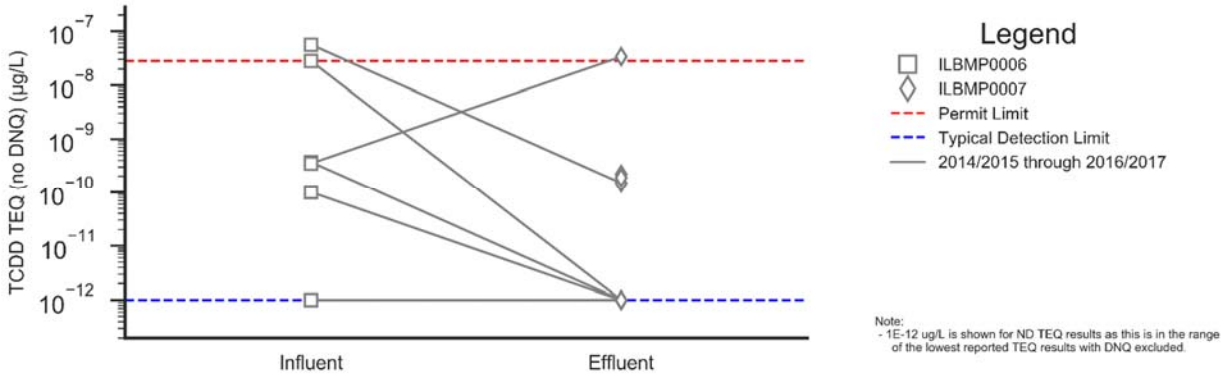

Figure 25. Dioxins at Northern Detention Bioswale

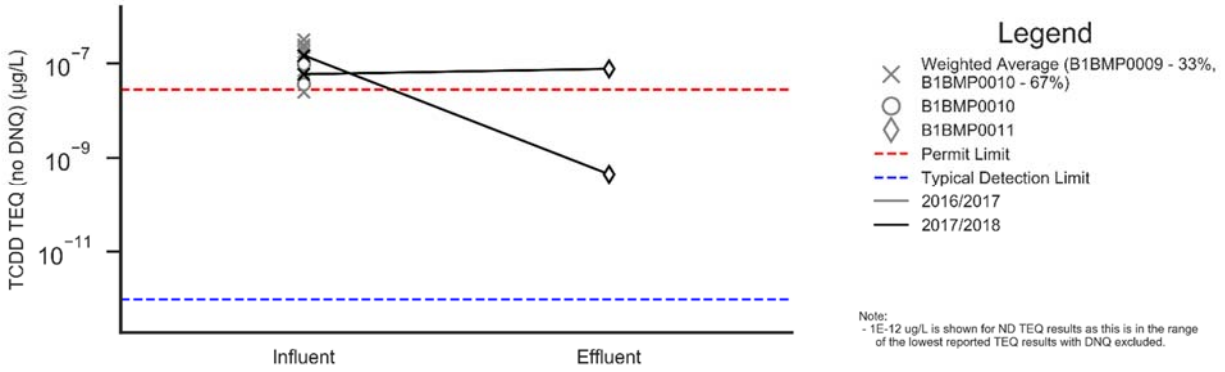

Figure 26. Dioxins at Upper Lot Media Filter

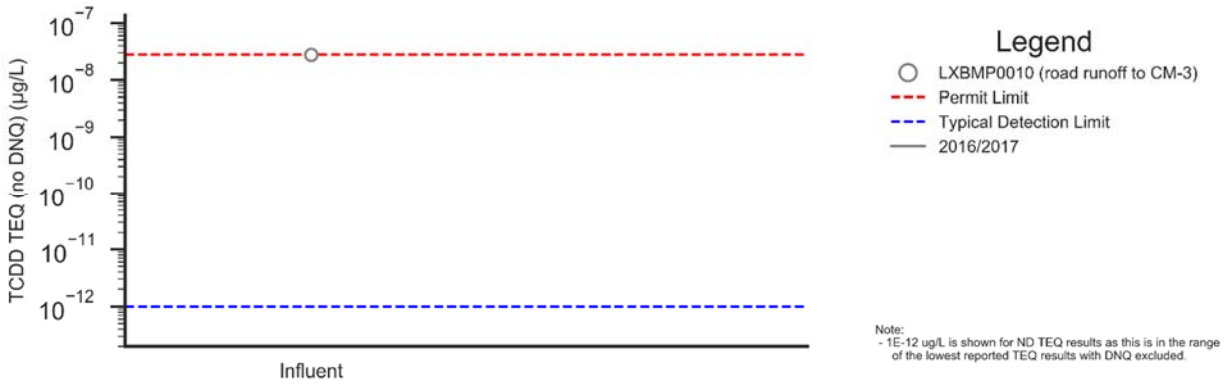

Figure 27. Dioxins at CM-3

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

3.3 Lead Paired Line Plots

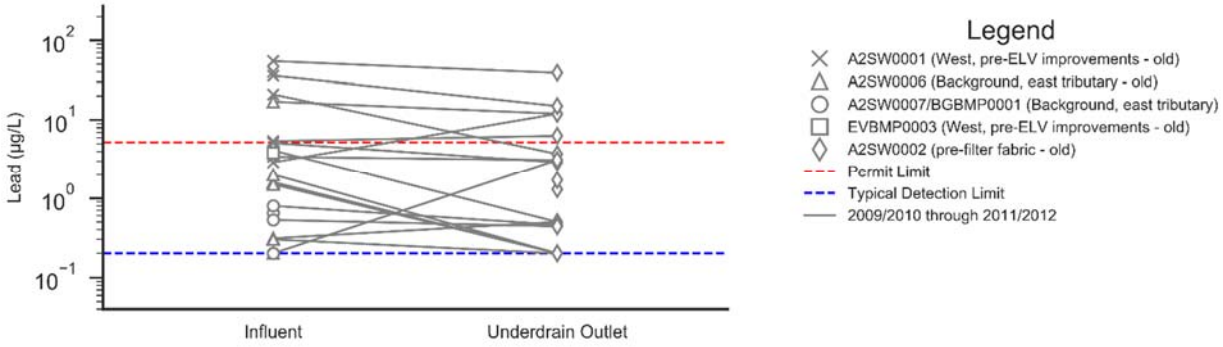

Figure 28. Lead at CM-1, pre filter fabric installation (filter fabric installed on 1/20/2012)

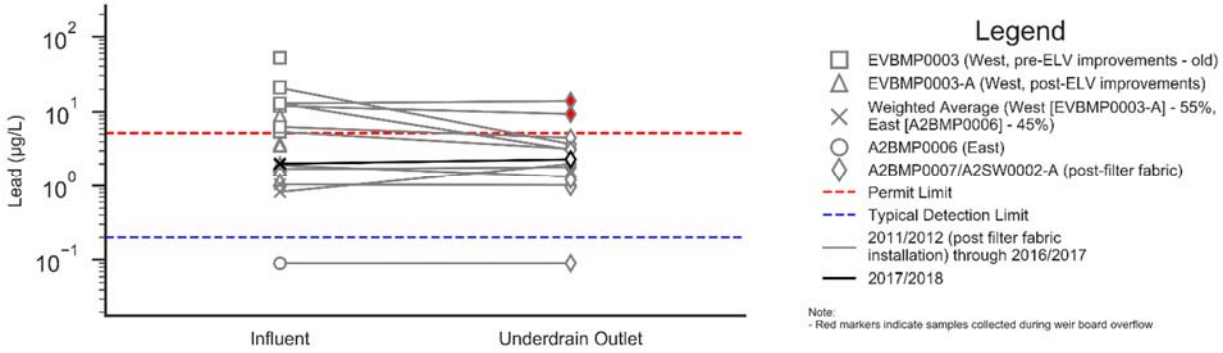

Figure 29. Lead at CM-1, post filter fabric installation (filter fabric installed on 1/20/2012)

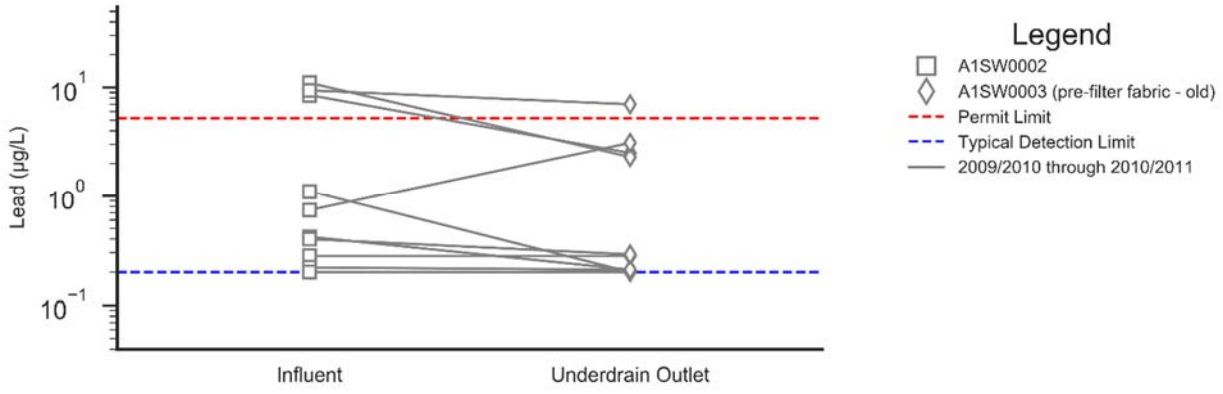

Figure 30. Lead at CM-8

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

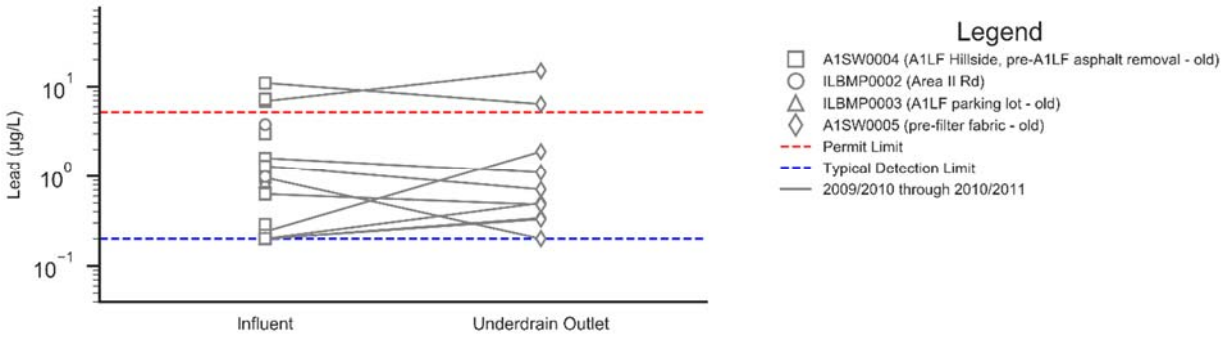

Figure 31. Lead at CM-9, pre improvements (removal of A1LF asphalt [9/1/2011] and addition of CM weir board filter fabric [1/20/2012])

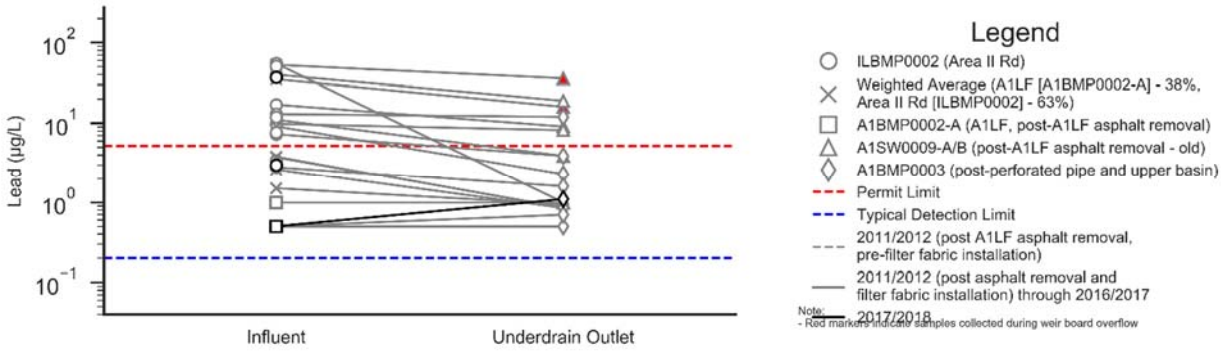

Figure 32. Lead at CM-9, post improvements (removal of A1LF asphalt [9/1/2011] and addition of CM weir board filter fabric [1/20/2012])

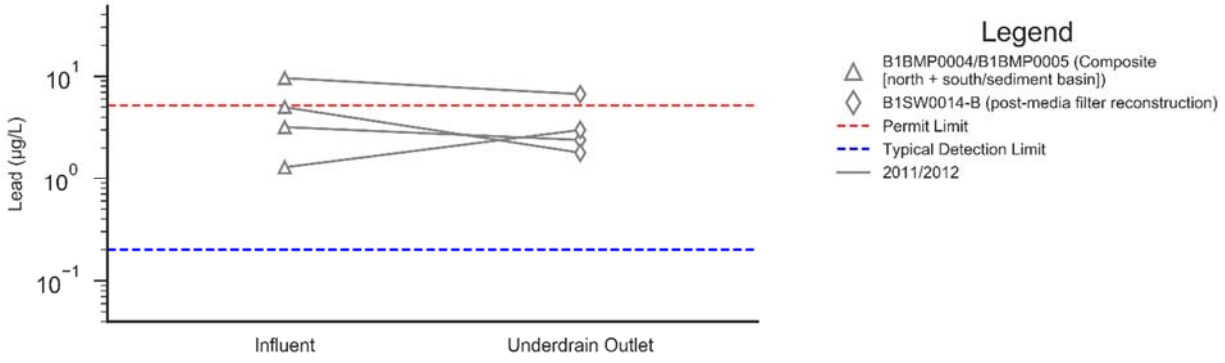

Figure 33. Lead at B-1 Media Filter (CM), pre curb cuts (curb cuts installed on 11/2/2012)

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

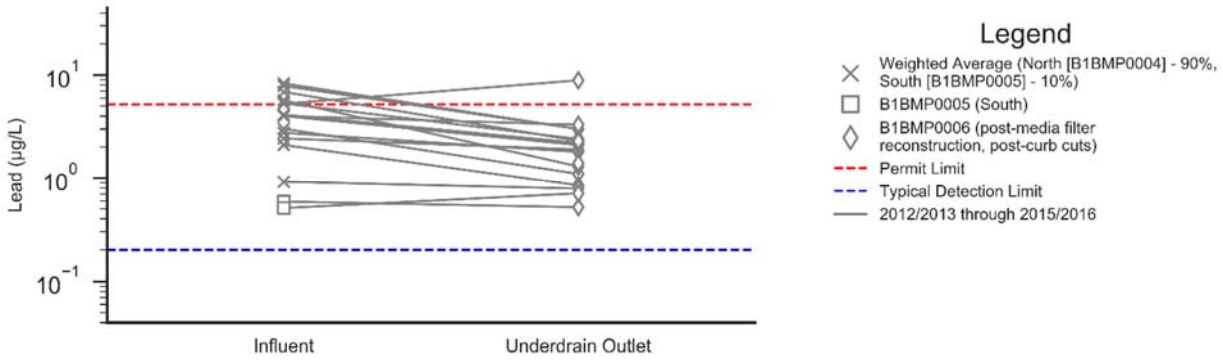

Figure 34. Lead at B-1 Media Filter (CM), post curb cuts (curb cuts installed on 11/2/2012)

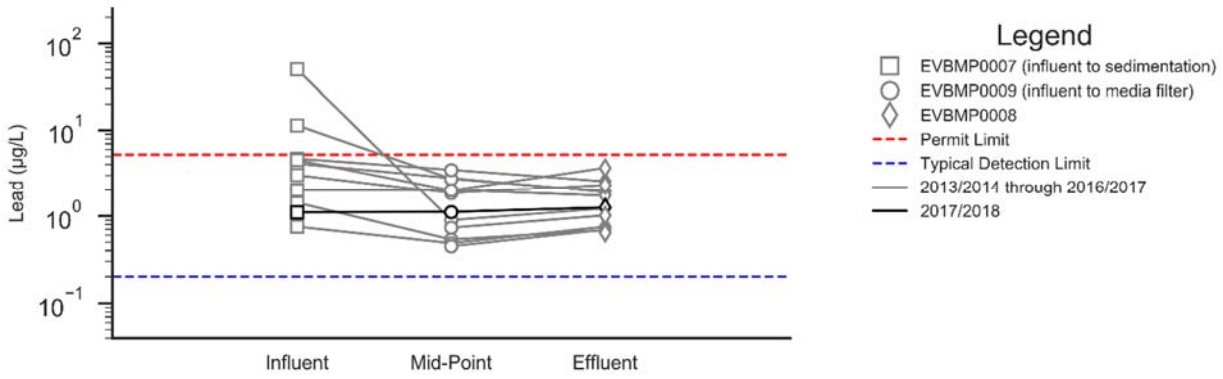

Figure 35. Lead at ELV Treatment BMP

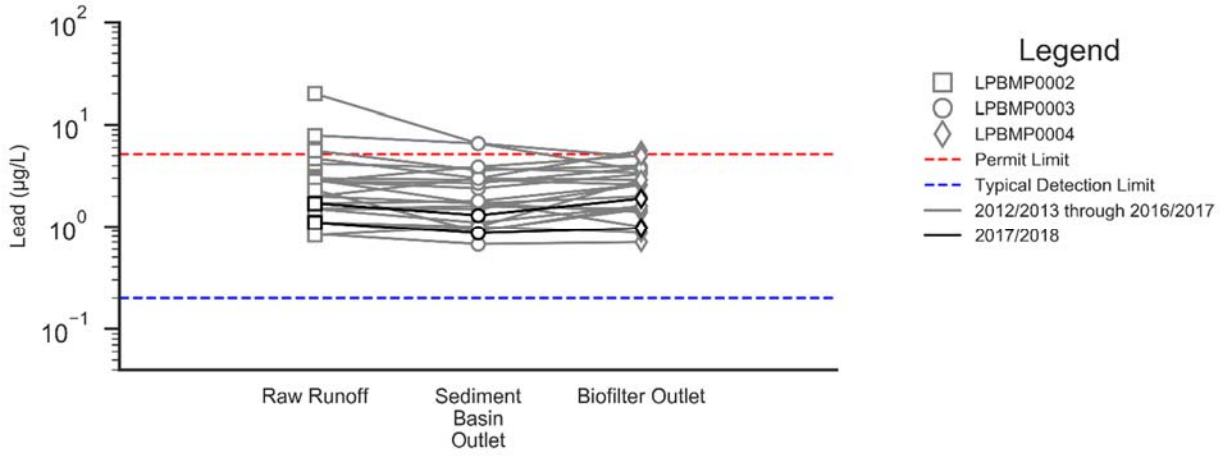

Figure 36. Lead at Lower Lot Biofilter

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

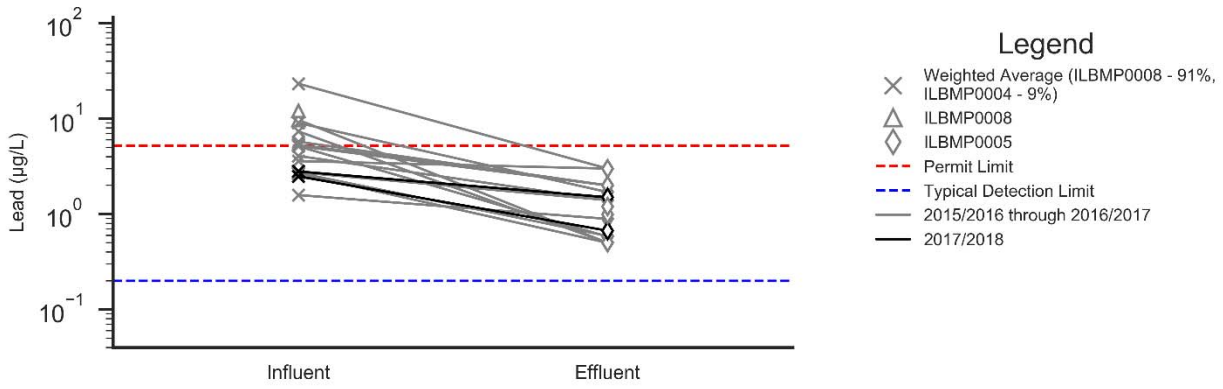

Figure 37. Lead at Southern Detention Bioswale

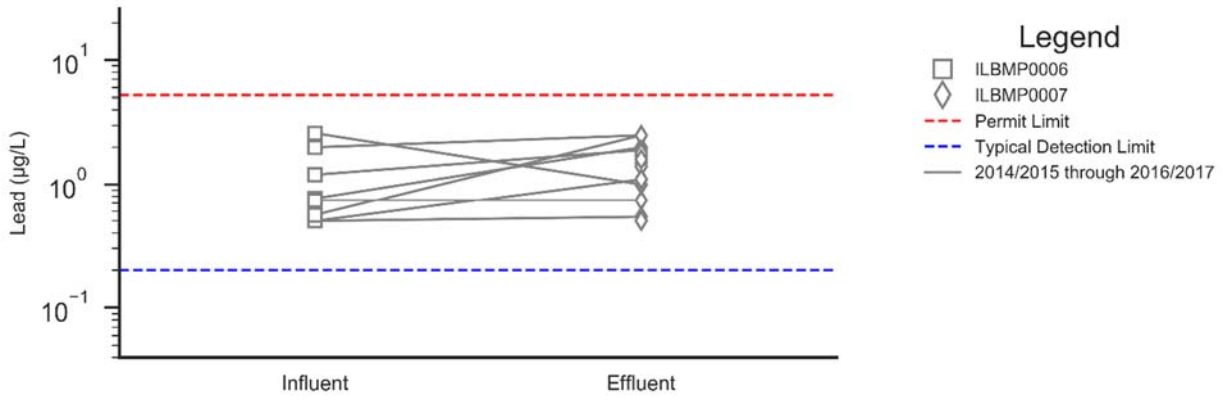

Figure 38. Lead at Northern Detention Bioswale

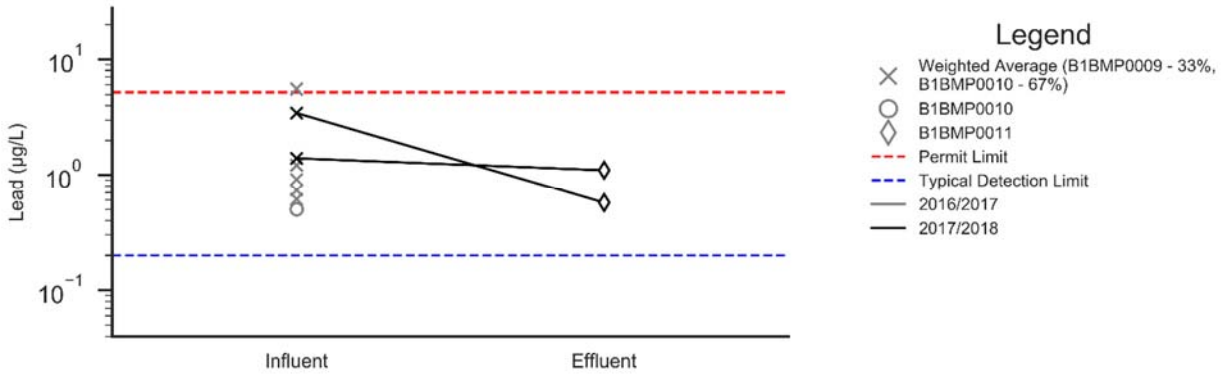

Figure 39. Lead at Upper Lot Media Filter

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

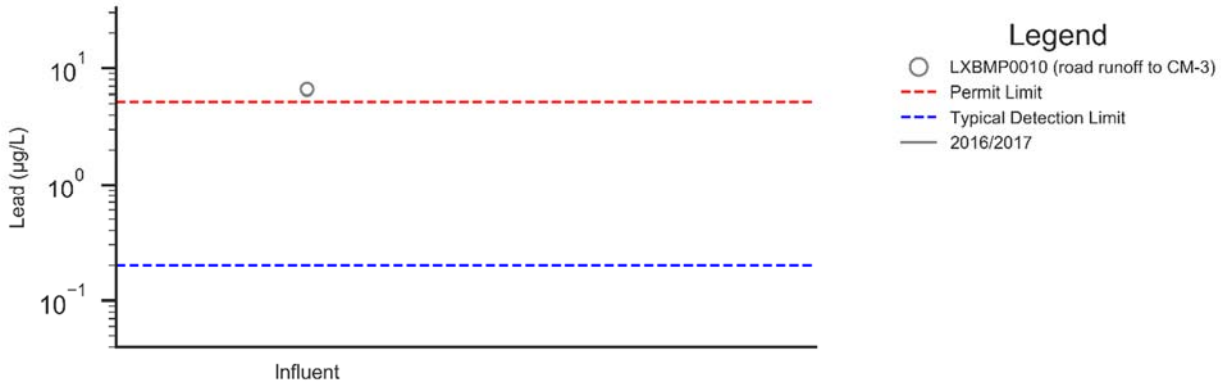

Figure 40. Lead at CM-3

3.4 Copper Paired Line Plots

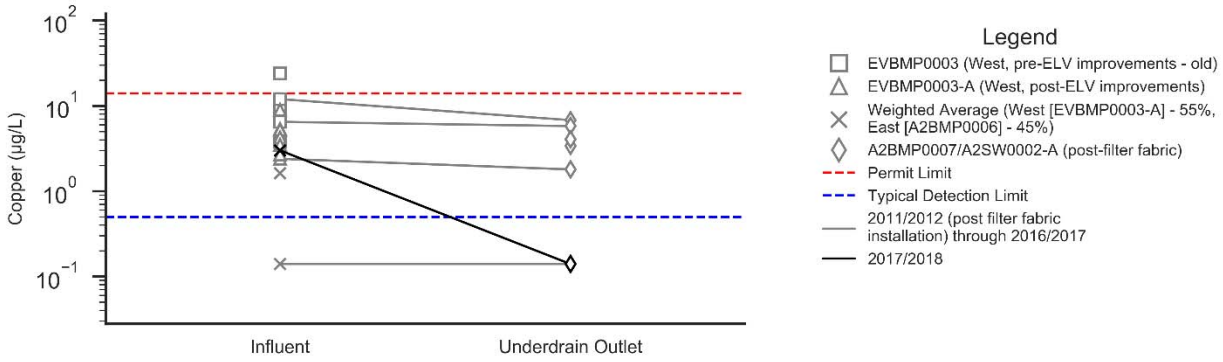

Figure 41. Copper at CM-1, post filter fabric installation (filter fabric installed on 1/20/2012)

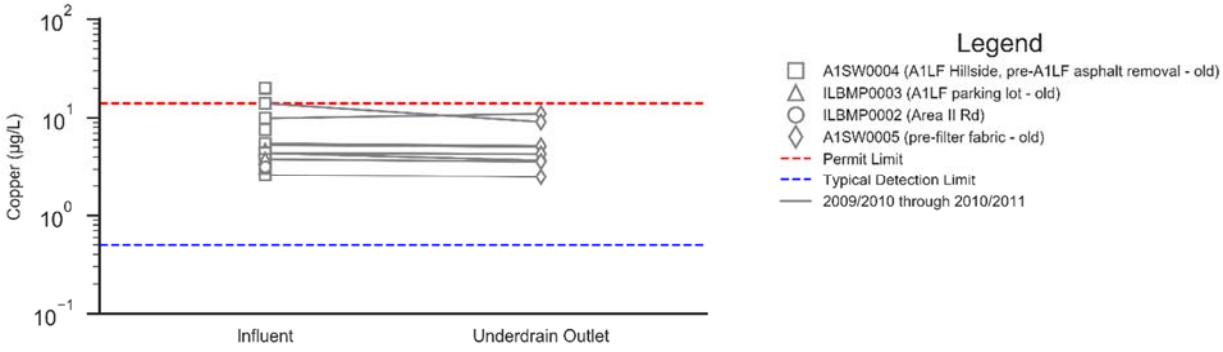

Figure 42. Copper at CM-9, pre improvements (removal of A1LF asphalt and addition of CM weir board filter fabric)

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

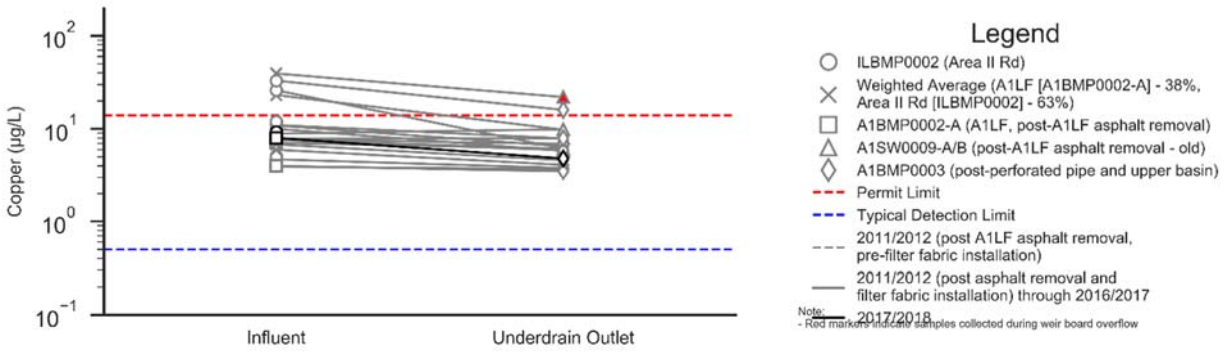

Figure 43. Copper at CM-9, post improvements (removal of A1LF asphalt [9/1/2011] and addition of CM weir board filter fabric [1/20/2012])

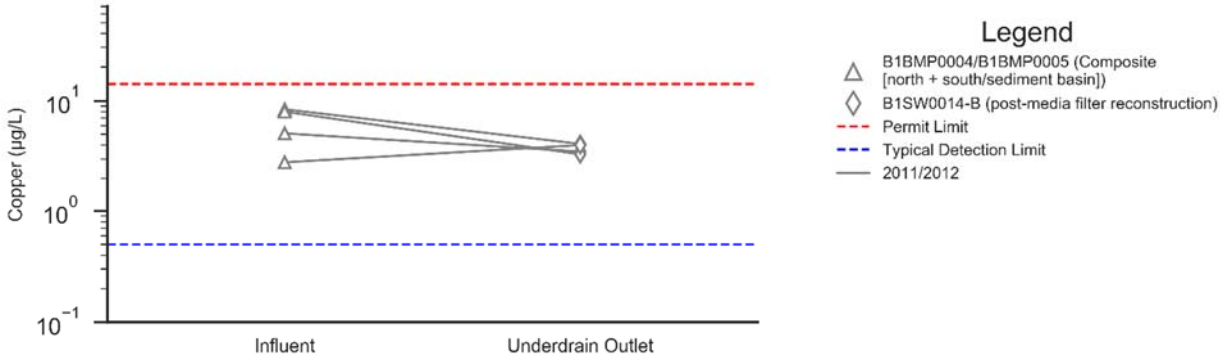

Figure 44. Copper at B-1 Media Filter (CM), pre curb cuts (curb cuts installed on 11/2/2012)

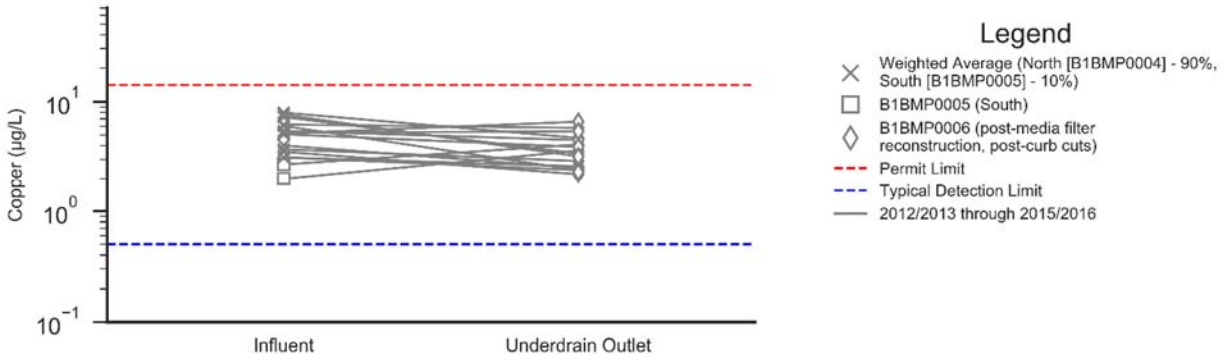

Figure 45. Copper at B-1 Media Filter (CM), post curb cuts (curb cuts installed on 11/2/2012)

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

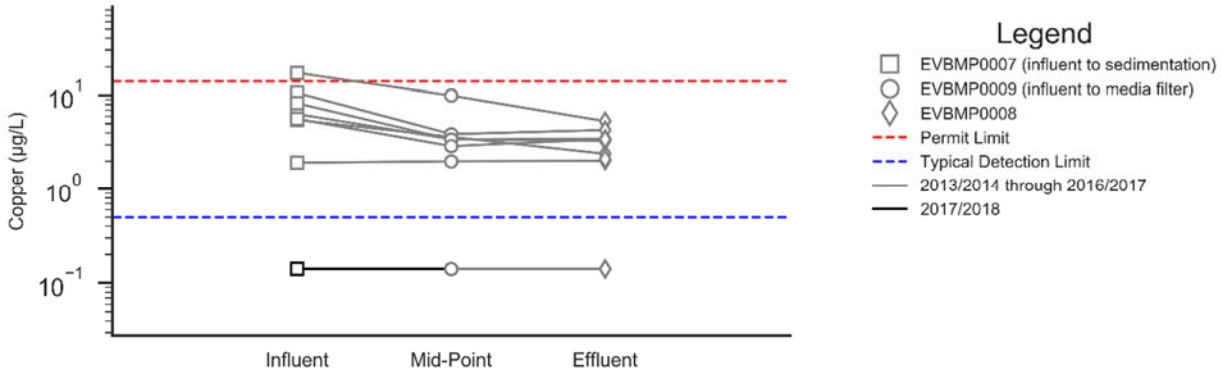

Figure 46. Copper at ELV Treatment BMP

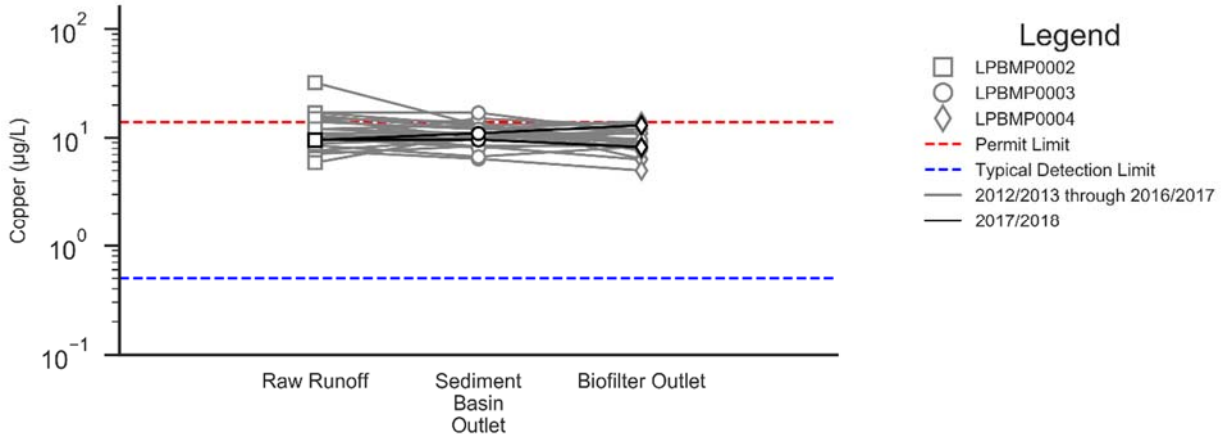

Figure 47. Copper at Lower Lot Biofilter

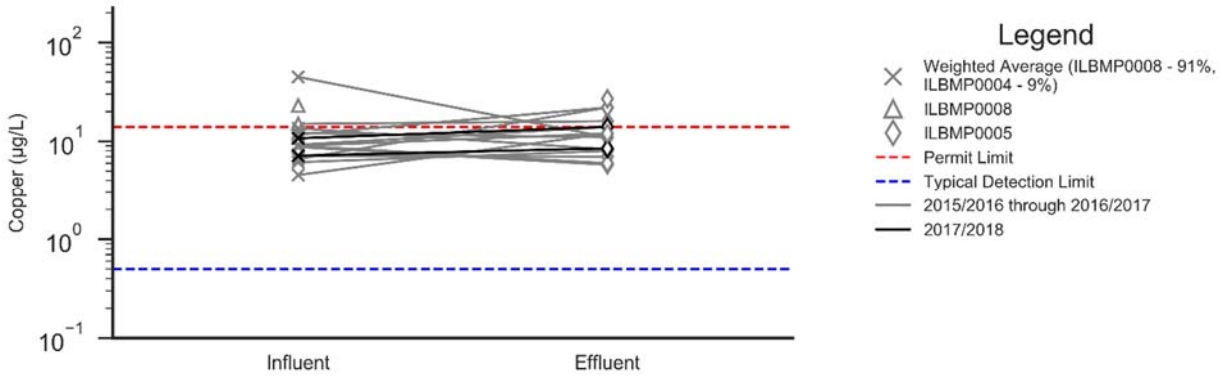

Figure 48. Copper at Southern Detention Bioswale[18]

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

[18] The permit limit does not apply to this location. No exceedances in permit limits for copper occurred at watershed 009 locations during the 2015/2016 reporting year.

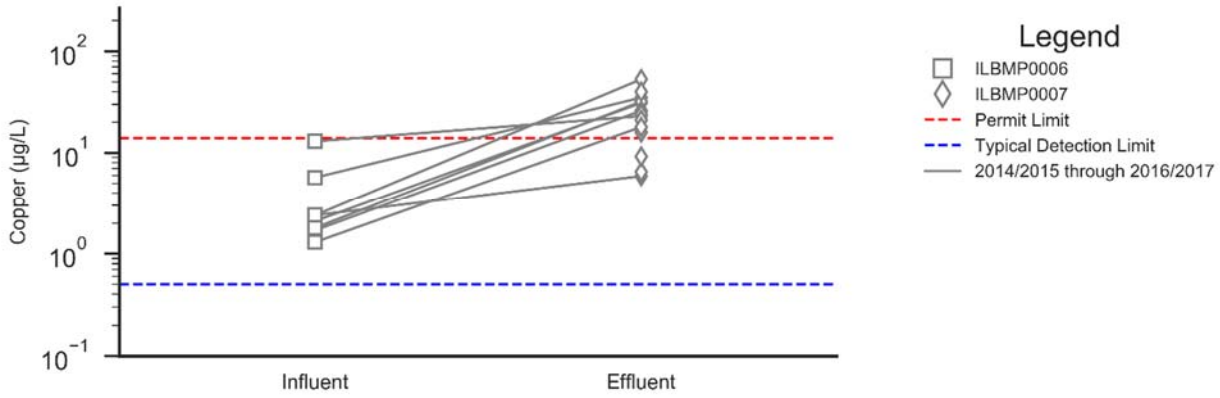

Figure 49. Copper at Northern Detention Bioswale[15]

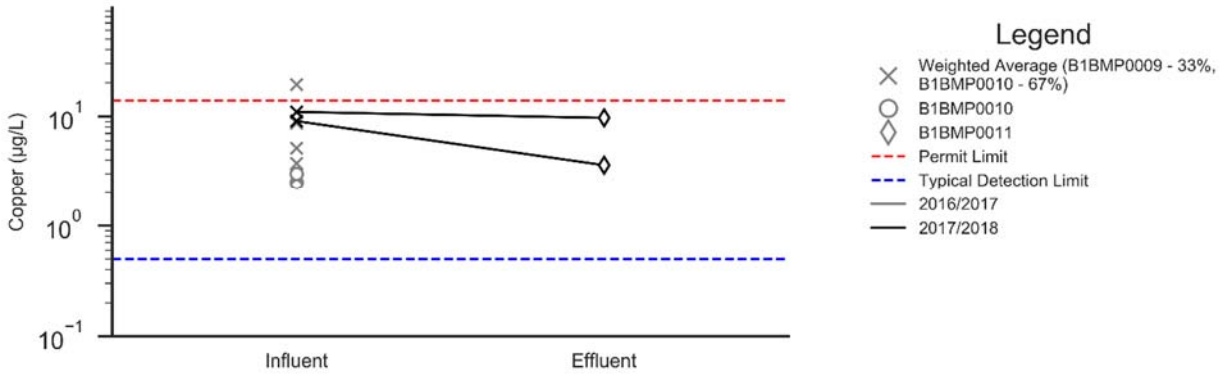

Figure 50. Copper at Upper Lot Media Filter

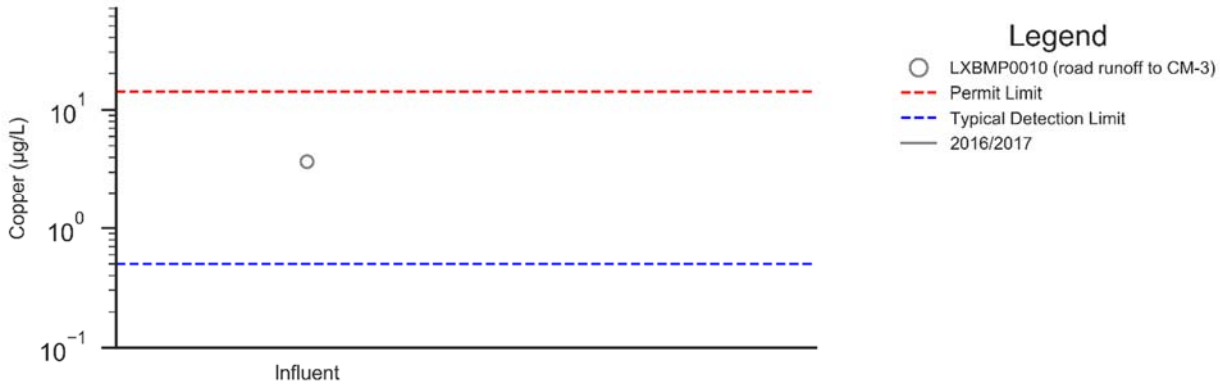

Figure 51. Copper at CM-3

Note: Bold markers and bold solid lines represent 2017/2018 samples; red markers indicate samples collected during weir board overflow.

4 Statistical Analysis

Statistical summaries of the Site cumulative paired data over the 2009-2018 sampling period using the non-parametric one-tailed sign test are shown for the paired datasets in Table 4 through Table 12. This test is used to evaluate statistical differences between paired data points, or in this case, between influent and effluent stormwater samples. The null hypothesis is that the number of data pairs showing an increase from influent to effluent concentrations equals the number of data pairs showing a decrease in concentration from the influent to effluent samples. If the p-value is less than 0.05, the null hypothesis is rejected. Rejection of the null hypothesis results in a statistically significant difference in the number of data pairs that show an increase in concentration from the influent to effluent and data pairs with a decrease in concentration from influent to effluent. For this analysis, data pairs that were taken during observed bypass/overflow events were removed (specific locations, events, and rainfall characteristics were listed previously in Section 3).

4.1 Culvert Modification/Media Filter Areas

At the monitored CMs and media filters (B-1, CM-1, CM-3, CM-8, CM-9, CM-11, and the upper lot media filter), the total number of combined influent and effluent data pairs ranged from 80 (for dioxins) to 97 (for TSS)[19]. Table 4 and Table 5 summarize the paired data statistics for these locations. CM-8, CM-11, and select CM-1 paired statistics are presented separately (Table 5) since the influent flows to these sites come largely from background sites, and therefore significant reduction of the COC concentrations (which are already generally very low) in those flows by CMs is unlikely. No paired data were collected from these background sites in the 2017/2018 reporting year. Data from the CM-3 background site (pre-2016/2017) were excluded since post-storm dry weather flows were observed at the outlet between February 2010 and March 2011 when no flows were observed entering the culvert, suggesting subsurface inflows were contributing to effluent samples. Therefore, this CM cannot be reliably assessed based on the effluent sample results. Samples collected for road runoff to CM-3 during 2016/2017 are not included in the statistical analyses because an influent/effluent data pair was not collected (and no samples were collected in 2017/2018). At the B-1 media filter site, media washout was observed during initial sampling dates in the 2011/2012 reporting year. Since this was a malfunction that was subsequently corrected, results from these sample dates were removed from the analysis. As noted in the paired plots, the CM-1 effluent sample collected on 2/28/2014 represented a blend of underdrain flow and seepage through the upstream weir boards. A leaking seal was noted at CM-1 on 3/3/2017. It is unclear if this condition was also present during the 2/17/2017 sample that resulted in an exceedance of permit limits for dioxins.

Table 4 shows the number of influent samples with higher concentrations than their paired effluent samples, which shows an improvement in water quality from the influent to effluent of the CM/media filter. In the non-background CMs, the majority of sample pairs had higher influent concentrations than their paired effluent (67%, 63%, and 73% for TSS, dioxins, and lead, respectively). The median percent change for all three COCs also showed a decrease in concentration (as shown by a negative percent change) from the median influent concentration to the effluent. In addition, the number of data pairs

[19] Because copper is not included as a pollutant of concern in the Expert Panel Work Plan for watershed 009, which was submitted to the Regional Board in September 2015, results for copper are not included herein.

with influent concentrations greater than the effluent concentrations were found to be statistically significant (p-value ≤ 0.05) for TSS, lead, and dioxins.

Table 4. CM-1 ("background" samples excluded), CM-9, B-1, and Upper Lot Media Filter Combined Non-Background Statistical Analysis

	TSS (mg/L)		Dioxin (µg/L)		Lead (µg/L)	
	Influent	**Effluent**	**Influent**	**Effluent**	**Influent**	**Effluent**
Minimum	0.70	0.53	1.0E-12	1.0E-12	0.09	0.09
Maximum	1,800	610	3.6E-04	9.8E-07	55	39
Average	78	33	6.2E-06	8.0E-08	7.1	3.8
Median	20	14	8.8E-08	3.2E-08	3.5	1.9
Standard Deviation	243	79	4.6E-05	1.5E-07	11	5.9
Coefficient of Variation (COV)	3.1	2.4	7.4	1.9	1.6	1.6
Total pairs of observations	67		60		67	
Number of influent samples having larger concentrations than effluent samples	45		38		49	
Number of effluent samples having larger concentrations than influent samples	20		13		15	
Number of samples having equal influent and effluent concentrations	2		9		3	
p-value by paired nonparametric sign test[1]	<0.001		<0.001		<0.001	
Median percent change (- sign indicating lower effluent results)[2]	-30%		-64%		-45%	

[1] One-tail sign test used to evaluate data. P values of ≤ 0.05 are considered statistically significant.

[2] Percent change was calculated using the median influent and effluent concentrations before rounding, potentially resulting in a value slightly different than what is calculated using influent and effluent results shown in the table.

The number of data pairs with influent concentrations greater than their paired effluent concentrations was statistically significant (p-value ≤ 0.05) for TSS, lead, and dioxins at background sites, as shown in Table 5. Data pairs for lead showed a median decrease from the influent to the effluent. However, even though TSS and dioxins showed statistical significance in the number of influent concentrations greater than their paired effluent concentrations, the median change for dioxins was 0%[20] and TSS showed a median increase of 33%. It should be noted that no data were collected from these sites in the most recent reporting year. In addition, as noted earlier, the influent concentrations at these sites are very low (only one of the dioxins samples at these sites, either influent or effluent, were above Permit limits), so further reductions would be difficult to achieve.

[20] The median concentration for both the influent and effluent were the typical detection limit (1.0E-12), resulting in the median percent change of 0%.

Table 5. CM-1[1], CM-8 and CM-11 Combined Background Statistical Analysis[2]

	TSS (mg/L)		Dioxin (µg/L)		Lead (µg/L)	
	Influent	Effluent	Influent	Effluent	Influent	Effluent
Minimum	1.0	1.0	1.0E-12	1.0E-12	0.20	0.20
Maximum	250	46	1.6E-08	1.0E-07	17	12
Average	19	8.1	8.7E-10	5.4E-09	3.0	1.8
Median	3.0	4.0	1.0E-12	1.0E-12	0.74	0.29
Standard Deviation	47	11	3.5E-09	2.3E-08	4.8	3.0
Coefficient of Variation (COV)	2.5	1.4	4.0	4.3	1.6	1.7
Total pairs of observations	30		20		19	
Number of influent samples having larger concentrations than effluent samples	18		5		14	
Number of effluent samples having larger concentrations than influent samples	6		5		3	
Number of samples having equal influent and effluent concentrations	6		10		2	
p-value by paired nonparametric sign test[3]	<0.001		0.021		0.0022	
Median percent change (- sign indicating lower effluent results)[4]	33%		0%		-61%	

[1] Only CM-1 samples that were taken from east/background tributary influent sites are included in this analysis.
[2] As noted earlier in this memorandum, the CM-3 performance (pre-2016/2017) cannot be reliably assessed based on the effluent sample results. For this reason, the CM-3 paired data were excluded from the statistical analysis presented in this table.
[3] One-tail sign test used to evaluate data. P values of ≤ 0.05 are considered statistically significant.
[4] Percent change was calculated using the median influent and effluent concentrations before rounding, potentially resulting in a value slightly different than what is calculated using influent and effluent results shown in the table.

4.2 Lower Lot Biofilter Treatment Train

Construction of the lower lot biofilter, located in the Outfall 009 watershed, was completed in 2013. To date, samples were taken at this location during 24 rain events that occurred after the construction was completed and fully functional, with samples collected at three locations within the biofilter treatment train (influent, post-sedimentation basin, and post-biofilter) for 23 events from 2012/2013 through 2017/2018 and two locations (influent and post-biofilter) for a single rain event in the 2013/2014 reporting year. The post-biofilter samples collected in early 2014 represents a blend of filtered underdrain water and overflow. A sample was not taken at the biofilter inlet (post-sedimentation basin) during the 2013/2014 sampling year due to the sample location being submerged and inaccessible. During one event in the 2014/2015 reporting year, unusually turbid water was observed in the biofilter; this may have been due to

Figure 52. A photo of the biofilter on 3/13/2018

sediment-laden run-on from the Building 1436 demolition area. Table 6, Table 7, and Table 8 summarize the paired sampling data for the biofilter.

For TSS, over half of data pairs had higher influent concentrations than their paired effluent concentrations for influent runoff to the sedimentation basin outlet and the sedimentation basin outlet to the biofilter outlet, as shown in Table 6 and Table 7, respectively. There were an equal number of data pairs having higher TSS influent concentrations (than their paired effluent) and higher effluent concentrations (than their paired influent) across the system (influent to biofilter outlet), as shown in Table 8.

The majority of data pairs showed a decrease in dioxins concentration through all steps of the treatment train for all years. For the sedimentation basin outlet to the biofilter outlet and the influent runoff to the biofilter outlet, only one sample pair had effluent dioxins concentrations with higher concentrations than their paired influent sample.

For lead, the majority of samples from the influent runoff to the sedimentation basin outlet exhibited a decrease in lead concentration, as shown in Table 6. However, for the sedimentation basin outlet to the biofilter outlet (Table 7) and across the system (influent runoff to the biofilter outlet) (Table 8), the majority of sample pairs showed higher effluent lead concentrations than their paired influent concentration.

TSS and dioxins had median net reductions across the system, for the 24 storm events sampled, as shown in Table 8. Lead had a median increase in concentration across the system; however, the average percent change across the system showed a decrease in concentration (-20%). Considering the entire system (influent runoff to the biofilter outlet), dioxin was the only COC to show a statistically significant ($p\text{-value} \leq 0.05$) number of paired samples that decreased in concentration from the influent runoff to the biofilter outlet, based on the number of samples available.

Table 6. Lower Lot Biofilter Performance Data – Influent Runoff to Sedimentation Basin Outlet

	TSS (mg/L)		Dioxin (µg/L)		Lead (µg/L)	
	Influent	Effluent	Influent	Effluent	Influent	Effluent
Minimum	2.7	2.5	3.8E-10	2.8E-10	0.82	0.67
Maximum	280	110	4.7E-07	2.8E-07	20	6.6
Average	37	27	9.9E-08	7.6E-08	3.2	2.3
Median	20	20	7.2E-08	5.4E-08	2.0	1.7
Standard Deviation	58	29	1.0E-07	7.3E-08	4.0	1.6
Coefficient of Variation (COV)	1.6	1.1	1.0	0.96	1.3	0.72
Total pairs of observations	23		23		23	
Number of influent samples having larger concentrations than effluent samples	13		17		16	
Number of effluent samples having larger concentrations than influent samples	10		6		6	
Number of samples having equal influent and effluent concentrations	0		0		1	
p-value by paired nonparametric sign test[1]	0.34		0.017		0.017	
Median percent change (- sign indicating lower effluent results)[2]	0%		-25%		-15%	

[1] One-tail sign test used to evaluate data. P values of ≤ 0.05 are considered statistically significant.

[2] Percent change was calculated using the median influent and effluent concentrations before rounding, potentially resulting in a value slightly different than what is calculated using influent and effluent results shown in the table.

Table 7. Lower Lot Biofilter Performance Data – Sedimentation Basin Outlet to Biofilter Outlet

	TSS (mg/L)		Dioxin (µg/L)		Lead (µg/L)	
	Influent	Effluent	Influent	Effluent	Influent	Effluent
Minimum	2.5	2.2	2.8E-10	1.0E-12	0.67	0.70
Maximum	110	110	2.8E-07	1.5E-07	6.6	5.6
Average	27	25	7.6E-08	8.8E-09	2.3	2.6
Median	20	16	5.4E-08	2.2E-10	1.7	2.6
Standard Deviation	29	29	7.3E-08	3.1E-08	1.6	1.4
Coefficient of Variation (COV)	1.1	1.2	0.96	3.5	0.72	0.55
Total pairs of observations	23		23		23	
Number of influent samples having larger concentrations than effluent samples	13		22		8	
Number of effluent samples having larger concentrations than influent samples	9		1		15	
Number of samples having equal influent and effluent concentrations	1		0		0	
p-value by paired nonparametric sign test[1]	0.20		<0.001		0.11	
Median percent change (- sign indicating lower effluent results)[2]	-20%		-99.6%		53%	

[1] One-tail sign test used to evaluate data. P values of ≤ 0.05 are considered statistically significant.

[2] Percent change was calculated using the median influent and effluent concentrations before rounding, potentially resulting in a value slightly different than what is calculated using influent and effluent results shown in the table.

Table 8. Overall Lower Lot Biofilter Performance Data – Influent Runoff to Biofilter Outlet

	TSS (mg/L)		Dioxin (µg/L)		Lead (µg/L)	
	Influent	Effluent	Influent	Effluent	Influent	Effluent
Minimum	2.7	2.2	3.8E-10	1.0E-12	0.82	0.70
Maximum	280	110	4.7E-07	1.5E-07	20	5.6
Average	38	25	1.1E-07	1.2E-08	3.2	2.6
Median	22	17	7.6E-08	2.3E-10	2.0	2.6
Standard Deviation	57	28	1.2E-07	3.3E-08	3.9	1.4
Coefficient of Variation (COV)	1.5	1.1	1.1	2.9	1.2	0.54
Total pairs of observations	24		24		24	
Number of influent samples having larger concentrations than effluent samples	12		23		10	
Number of effluent samples having larger concentrations than influent samples	12		1		12	
Number of samples having equal influent and effluent concentrations	0		0		2	
p-value by paired nonparametric sign test[1]	0.50		<0.001		0.27	
Median percent change (- sign indicating lower effluent results)[2]	-25%		-99.7%		30%	

[1] One-tail sign test used to evaluate data. P values of ≤ 0.05 are considered statistically significant.

[2] Median percent change was calculated using the median influent and effluent concentrations before rounding, resulting in a value slightly different than what is calculated using influent and effluent results shown in the table.

4.3 ELV Treatment BMP

The ELV treatment BMP was installed in November 2013. To date, samples have been collected at this location during 13 events from 2013/2014 through 2017/2018. Samples were collected at three locations within the ELV treatment train (influent, sedimentation tank outlet, and media tank effluent) during nine of these events. Samples were only collected at two locations (influent and effluent) during one event, the effluent location only for one event, and the effluent and mid-point location during two events.

Extenuating circumstances relevant to this site during the February/March 2014 storm event included high flows from Helipad Road to the ELV treatment system (resulting in excess inflows to the sump), inadequate erosion controls along the earthen ELV channel (resulting in excess sediment in the sump [approximately one foot of deposited sediment in the sump and less than an inch in the sedimentation tanks]), and a power outage (resulting in the sump pump not operating during part of the storm). The February/March 2014 ELV treatment BMP effluent data are still considered representative for the analysis herein, although it is recognized that because this monitoring event was the first at the ELV, washout of fines from the media bed may have been occurring.

Table 9, Table 10, and Table 11 summarize the paired data for this location. The majority of data pairs from the influent to the sedimentation tank effluent showed a decrease in TSS concentrations. However, there were more effluent samples with higher TSS concentrations than their paired influent samples from the sedimentation tank effluent to the media tank effluent and from the influent to the media tank effluent. For one of the two cases where a net increase in TSS occurred, during the 2013/2014 reporting

year, the ELV treatment BMP was heavily loaded by sediments eroded from the denuded ELV channel prior to implementation of recent erosion control improvements.

For each step of the treatment train, the majority of sample pairs had influent dioxin concentrations higher than their paired effluent concentrations. For lead, the majority of sample pairs showed decreasing lead concentrations from the influent to the sedimentation tank effluent and influent to the media tank effluent. However, there were more sample pairs with higher media tank effluent lead concentrations when compared to their paired sedimentation basin tank effluent concentrations.

Dioxins and lead had median net reductions across the system, as shown in Table 11. However, TSS exhibited a median net increase across the system (due to media losses). Across the system from the influent to the media tank effluent, the number of influent samples with higher concentrations than their paired effluent samples was statistically significant (p-value ≤ 0.05) for dioxins and lead, while TSS showed a statistically significant number of effluent samples with higher TSS concentrations than their paired influent concentrations, based on the number of samples.

Table 9. ELV Treatment BMP Performance Data – Influent to Sedimentation Tank Effluent

	TSS (mg/L)		Dioxin (µg/L)		Lead (µg/L)	
	Influent	**Effluent**	**Influent**	**Effluent**	**Influent**	**Effluent**
Minimum	2.9	1.0	1.1E-10	1.0E-12	0.75	0.49
Maximum	66	47	3.4E-08	5.9E-10	50	3.5
Average	22	12	1.2E-08	2.8E-10	8.8	1.7
Median	13	8	5.1E-10	2.5E-10	3.0	1.9
Standard Deviation	24	15	1.5E-08	2.0E-10	16	1.0
Coefficient of Variation (COV)	1.1	1.2	1.30	0.73	1.8	0.60
Total pairs of observations	9		9		9	
Number of influent samples having larger concentrations than effluent samples	8		8		7	
Number of effluent samples having larger concentrations than influent samples	1		1		2	
Number of samples having equal influent and effluent concentrations	0		0		0	
p-value by paired nonparametric sign test[1]	0.020		0.020		0.090	
Median percent change (- sign indicating lower effluent results)[2]	-39%		-51%		-38%	

[1] One-tail sign test used to evaluate data. P values of ≤ 0.05 are considered statistically significant.

[2] Percent change was calculated using the median influent and effluent concentrations before rounding, potentially resulting in a value slightly different than what is calculated using influent and effluent results shown in the table.

Table 10. ELV Treatment BMP Performance Data – Sedimentation Tank Effluent to Media Tank Effluent

	TSS (mg/L)		Dioxin (µg/L)		Lead (µg/L)	
	Influent	Effluent	Influent	Effluent	Influent	Effluent
Minimum	0.8	10	1.0E-12	1.0E-12	0.45	0.69
Maximum	47	144	5.9E-10	3.0E-10	3.5	3.7
Average	10	33	2.5E-10	1.1E-10	1.5	1.6
Median	3	15	2.4E-10	1.2E-10	1.1	1.3
Standard Deviation	14	39	2.0E-10	1.0E-10	1.0	0.94
Coefficient of Variation (COV)	1.4	1.2	0.81	0.90	0.68	0.58
Total pairs of observations	11		11		11	
Number of influent samples having larger concentrations than effluent samples	0		8		3	
Number of effluent samples having larger concentrations than influent samples	11		0		8	
Number of samples having equal influent and effluent concentrations	0		3		0	
p-value by paired nonparametric sign test[1]	<0.001		<0.001		0.11	
Median percent change (- sign indicating lower effluent results)[3]	341%		-49%		13%	

[1] One-tail sign test used to evaluate data. P values of ≤ 0.05 are considered statistically significant.

[2] Negative percent change potentially caused by media export.

[3] Percent change was calculated using the median influent and effluent concentrations before rounding, potentially resulting in a value slightly different than what is calculated using influent and effluent results shown in the table.

Table 11. ELV Treatment BMP Performance Data – Influent to Media Tank Effluent

	TSS (mg/L)		Dioxin (µg/L)		Lead (µg/L)	
	Influent	Effluent	Influent	Effluent	Influent	Effluent
Minimum	2.9	10	1.1E-10	1.0E-12	0.75	0.69
Maximum	66	144	1.2E-07	4.4E-08	50	3.7
Average	22	38	2.3E-08	4.5E-09	8.3	1.8
Median	15	35	5.3E-09	1.3E-10	3.6	1.8
Standard Deviation	22	39	3.8E-08	1.4E-08	15	0.90
Coefficient of Variation (COV)	1.0	1.0	1.7	3.1	1.8	0.50
Total pairs of observations	10		10		10	
Number of influent samples having larger concentrations than effluent samples	1		9		8	
Number of effluent samples having larger concentrations than influent samples	8		1		1	
Number of samples having equal influent and effluent concentrations	1		0		1	
p-value by paired nonparametric sign test[1]	0.011		0.011		0.011	
Median percent change (- sign indicating lower effluent results)[2]	141%		-98%		-49%	

[1] One-tail sign test used to evaluate data. P values of ≤ 0.05 are considered statistically significant.

[2] Percent change was calculated using the median influent and effluent concentrations before rounding, potentially resulting in a value slightly different than what is calculated using influent and effluent results shown in the table.

4.4 Detention Bioswales

The B1436 detention bioswales were constructed in December 2014, and influent and effluent sample pairs were collected for the first time during the 2015/2016 reporting year[21]. Samples were collected at three locations representing the southern detention bioswale: two influent locations (the rock crib swale outlet and runoff from the adjacent contractor laydown area) and the effluent location. Results from the two influent locations were flow-weighted to determine a representative influent concentration. The southern detention bioswale was sampled during 20 rain events during the 2015/2016, 2016/2017, and 2017/2018 reporting years. However, the effluent was not sampled for two of these events, the influent was not sampled for another two events, and only a single influent sample was collected for two events (so the influent sample was not flow-weighted and only represented runoff from the adjacent contractor laydown area). Therefore, a total of 16 data pairs representing the southern detention bioswale performance have been collected.

The northern detention bioswale was sampled during 18 rain events between 2014/2015 and 2016/2017. However, only the effluent location was sampled for 10 of these events, resulting in eight total sample pairs. Sampling at the northern detention bioswale was discontinued after 2016/2017.

Table 12 summarizes the paired data for this location. Performance data represents both the northern and southern detention bioswales combined. For TSS, dioxins, and lead, the majority of data pairs had influent concentrations that were higher than their paired effluent concentrations. All three COCs had net median reductions across the system, and the number of influent samples with higher concentrations than their paired effluent samples were found to be statistically significant (p-value ≤ 0.05) for all three COCs.

The southern and northern detention bioswales were analyzed together in order to assess BMPs of a similar design. However, as shown in the paired line plots, the southern detention bioswale had a greater proportion of sample pairs that showed a decrease in concentration from the influent to effluent, for all three COCs, compared to the northern detention bioswale.

[21] The effluent location for the northern detention bioswale (ILBMP0007) was sampled during the 2014/2015 reporting year. However, the influent location (ILBMP0006) was not sampled until 2015/2016.

Table 12. Southern and Northern Detention Bioswale Combined Performance Data

	TSS (mg/L)		Dioxin (µg/L)		Lead (µg/L)	
	Influent	**Effluent**	**Influent**	**Effluent**	**Influent**	**Effluent**
Minimum	0.5	1.1	1.0E-12	1.0E-12	0.50	0.50
Maximum	220	36	2.1E-05	1.9E-07	23	3.0
Average	44	10	1.5E-06	1.7E-08	4.3	1.4
Median	25	6	6.6E-08	2.2E-10	2.7	1.4
Standard Deviation	58	9.8	4.7E-06	4.3E-08	4.8	0.81
Coefficient of Variation (COV)	1.3	0.98	3.2	2.5	1.1	0.57
Total pairs of observations	24		24		24	
Number of influent samples having larger concentrations than effluent samples	18		20		17	
Number of effluent samples having larger concentrations than influent samples	6		1		6	
Number of samples having equal influent and effluent concentrations	0		3		1	
p-value by paired nonparametric sign test[1]	0.011		<0.001		0.011	
Median percent change (- sign indicating higher effluent results)[2]	-77%		-99.7%		-49%	

[1] One-tail sign test used to evaluate data. P values of ≤ 0.05 are considered statistically significant.

[2] Percent change was calculated using the median influent and effluent concentrations before rounding, potentially resulting in a value slightly different than what is calculated using influent and effluent results shown in the table.

4.5 Statistical Analysis Summary

A summary of the statistical analyses performed on the paired data presented in this section is shown in Table 13. A statistically significant difference in the number of data pairs that show a decrease in concentration from the influent to effluent (vs. data pairs with an increase in concentration from influent to effluent) was exhibited for CM/media filter sites (both excluding background sites CM-8 and CM-11 and also for CM-8 and CM-11 background sites only) and the detention bioswales, for all three COCs. The lower lot biofilter (influent runoff to biofilter outlet) showed statistically significance reductions only for dioxins (while TSS and lead were not statistically significant based on the number of samples available). The ELV treatment BMP (influent to media tank effluent) showed statistically significant differences for the number of influent samples with higher concentrations than their paired effluent for lead and dioxins. However, TSS at the ELV treatment BMP showed a statistically significant difference in the number of effluent samples with higher concentrations than their paired influent samples (showing a net increase across the system). This statistical analysis was not performed on the road runoff to CM-3 because only influent samples have been collected so far, and no influent/effluent pairs are available.

Table 13. Summary of Performance Data, 2009-2018

Location	TSS		Dioxins		Lead	
	p-value[1]	Significant Difference Observed?	p-value[1]	Significant Difference Observed?	p-value[1]	Significant Difference Observed?
CM/media filter non-background (CM-1 [background samples excluded], CM-9, B-1, and Upper Lot Media Filter)	<0.001	**Yes**	<0.001	**Yes**	<0.001	**Yes**
CM-8 and CM-11 background	<0.001	**Yes**	0.021	**Yes**	0.0022	**Yes**
Lower Lot Biofilter (Influent Runoff to Biofilter Outlet)	0.50	No	<0.001	**Yes**	0.27	No[2]
ELV Treatment BMP (Influent to Media Tank Effluent)	0.011	No[3]	0.011	**Yes**	0.0011	**Yes**
Detention Bioswale	0.011	**Yes**	<0.001	**Yes**	0.011	**Yes**

[1] One-tail sign test used to evaluate data. P values of ≤ 0.05 are considered statistically significant.

[2] Can likely be attributed to the much lower influent concentrations to the lower lot biofilter in recent years (to be discussed further).

[3] The number of effluent samples with higher TSS concentrations than their paired influent samples is statistically significant (instead of the number of influent samples with higher concentrations than their paired effluent).

5 Influent v. Effluent Correlation Charts

Figure 53 through Figure 55 compare influent to effluent concentrations for the paired data presented above for CM/media filter sites (B-1, upper lot media filter, CM-9, and CM-1 non-background sites; CM-1, CM-3, CM-8, and CM-11 background sites are excluded). Correlation charts for the lower lot biofilter are shown in Figure 56 through Figure 58, Figure 59 through Figure 61 for the ELV treatment BMP, and Figure 62 through Figure 64 for the detention bioswales. The plots reflect the same data pairs used to represent the influent and effluent locations in the statistical analyses in the previous section. For example, the lower lot biofilter plots reflect influent runoff samples for the influent and sedimentation basin outlet samples for the effluent, while the detention bioswales plots show the influent location as the flow-weighted average of the rock crib swale outlet and runoff from the adjacent contractor laydown area. Similar to the paired line plots, points are shaded based on the sampling year during which they were collected, where black points represent data from the most recent 2017/2018 reporting year and data from all previous reporting years are shown as gray.

A least-squares regression was used to fit a line to log-transformed data ($\log(y) = m\log(x) + b$). The resulting equation, including the slope of the lines, m, is shown in the least-squares regression equation in the upper left corner of the graph. In addition, the p-value is also shown to indicate the significance of the reported slope. The null hypothesis is that the slope (m) is equal to 0. If the p-value is less than 0.05, the null hypothesis is rejected, which shows that the slope is non-zero and is statistically significant. The p-value to indicate the significance of the reported y-intercept (also represented in the least-square regression equation) is also shown. A 1:1 line was also added to each plot. **Data above the 1:1 line indicate an effluent increase in concentrations, while data below the 1:1 line indicate an effluent decrease in concentrations (or positive BMP performance in the case of the CMs). Additionally, the location where the 1:1 line intersects the best-fit line represents the irreducible concentration for each constituent (e.g. ~ 10 mg/L for TSS at CM sites).** Pairs where one or both results were not detected were included on these graphs with different symbols.

If the regression equations and associated ANOVA analyses indicate non-significant equation intercepts (p-value >0.05), the regressions were re-calculated with the intercept equal to zero, and this result is shown on the plots below (with the intercept p-value shown as N/A). This indicates that in general, the performance of the controls did not change by influent concentration (the percent reduction was constant). In some other cases, both the slope and intercept terms were not significant, and the regression is therefore also not significant. In this case, the effluent concentrations are not related to the influent concentrations. Although there is no regression relationship in this case, the regression equation and p-values are still shown on the plots below.

5.1 CM/Media Filter Influent v. Effluent Correlation Charts

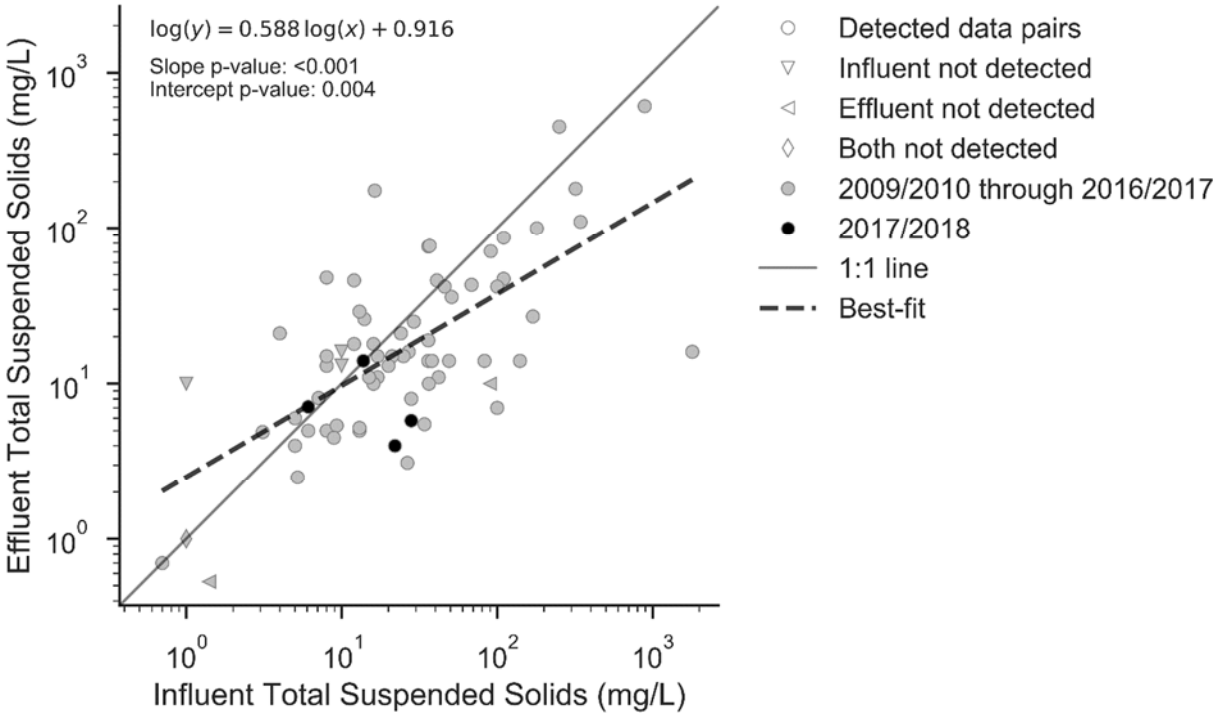

Figure 53. Paired TSS Concentrations at CM/Media Filter Sites

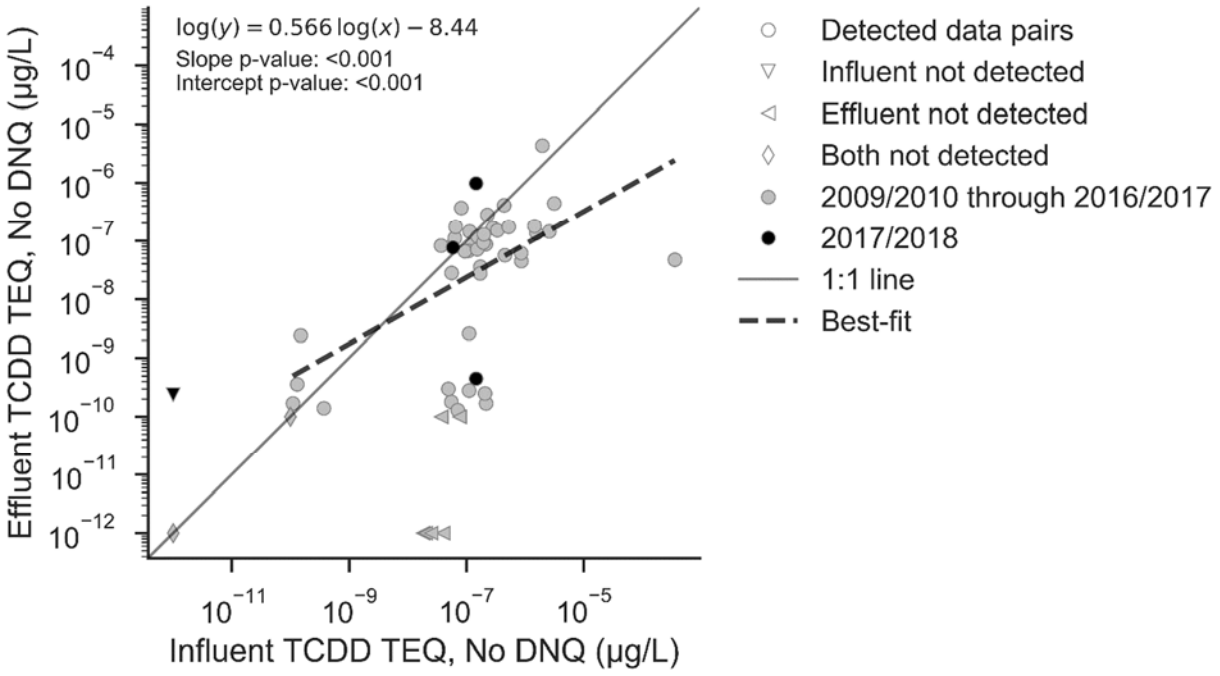

Figure 54. Paired Dioxins Concentrations at CM/Media Filter Sites

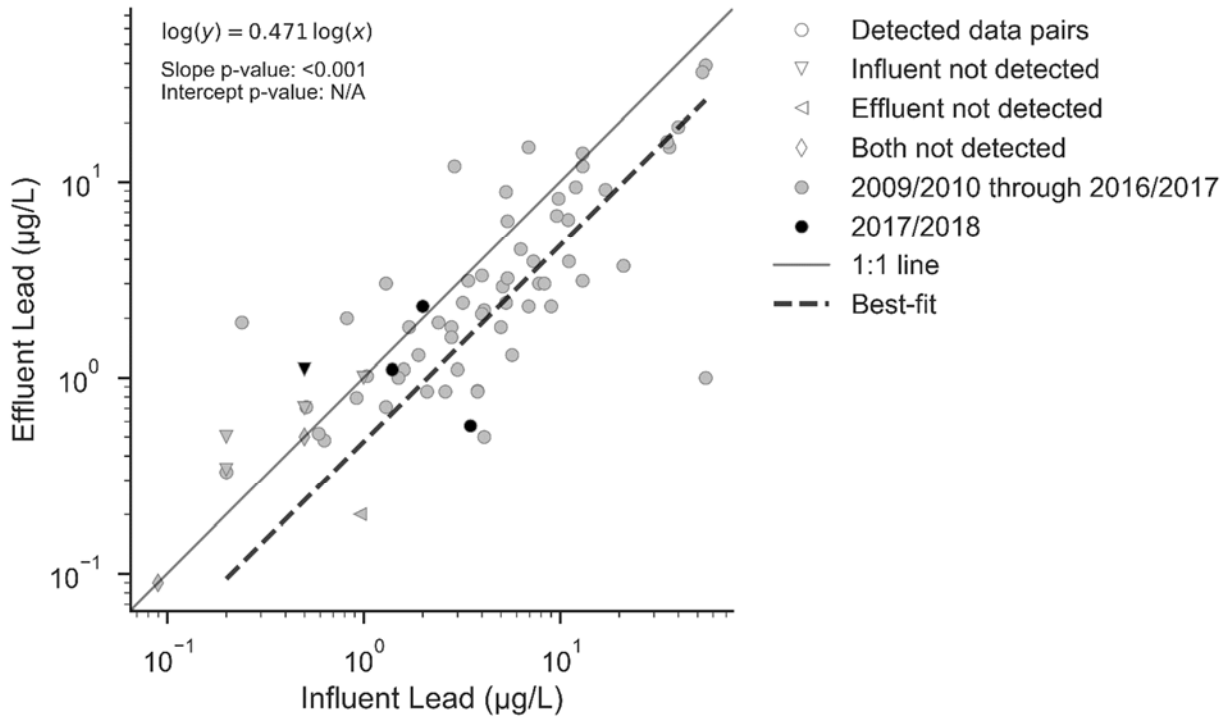

Figure 55. Paired Lead Concentrations at CM/Media Filter Sites

5.2 Lower Lot Biofilter Influent v. Effluent Correlation Charts

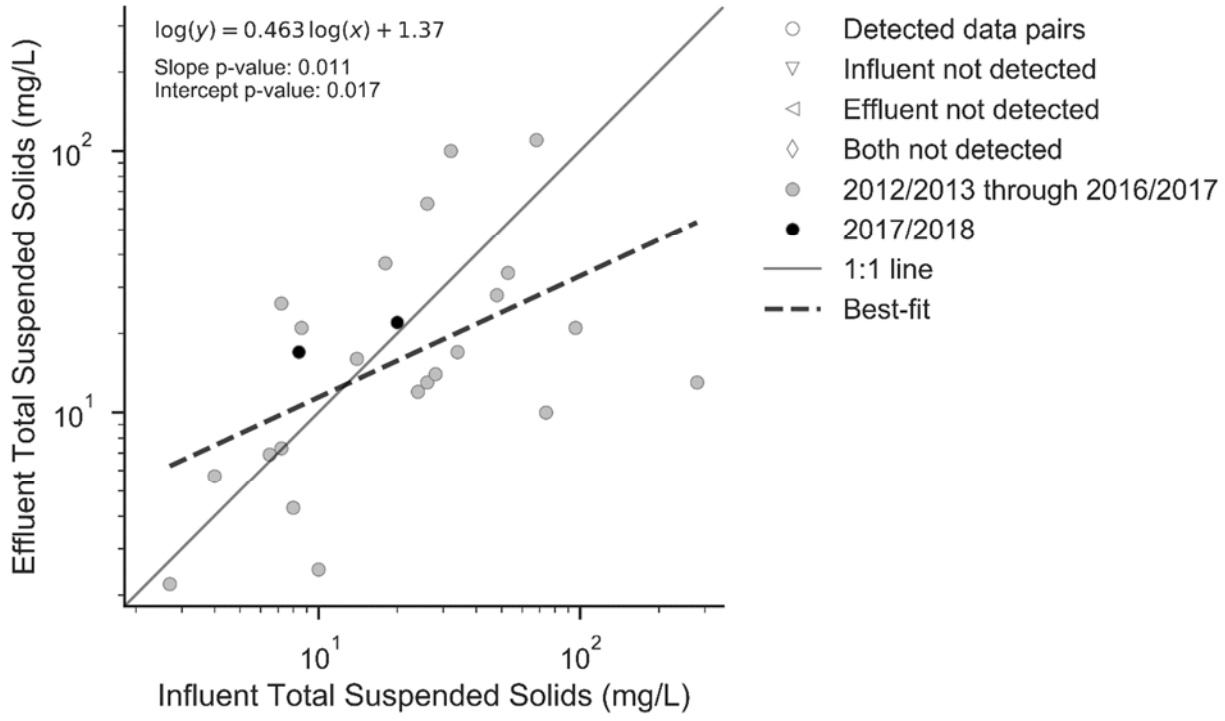

Figure 56. Paired TSS Concentrations at Lower Lot Biofilter

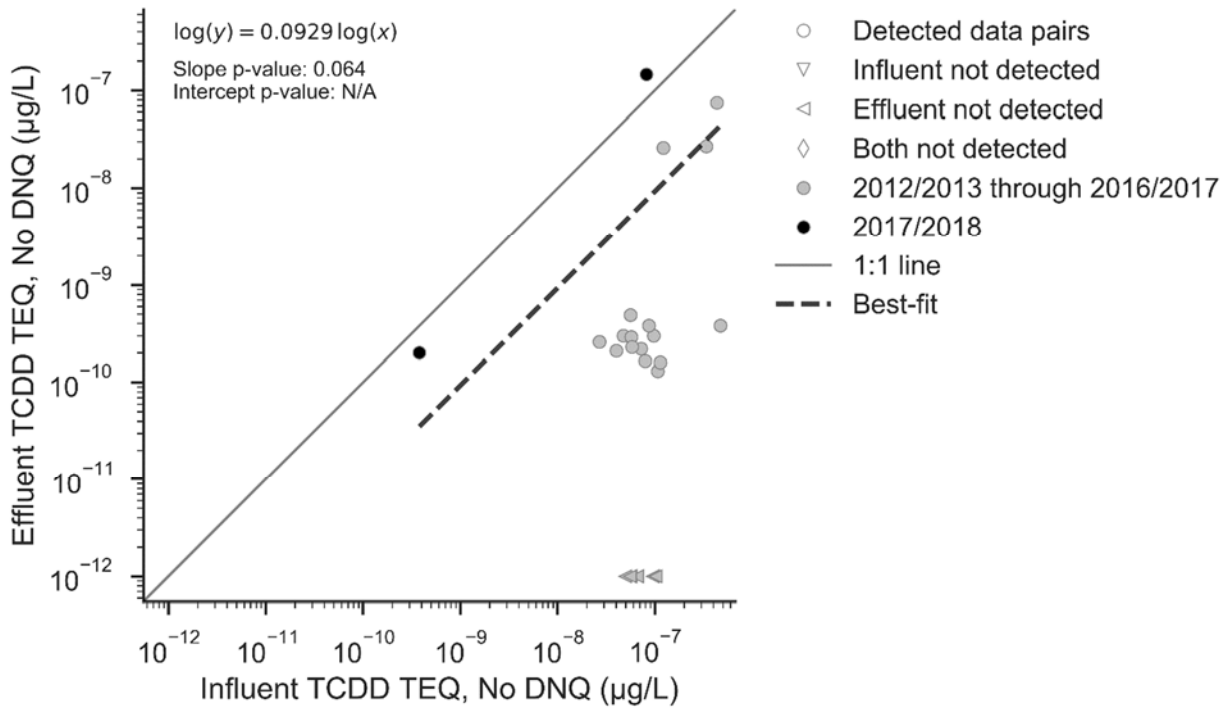

Figure 57. Paired Dioxins Concentrations at Lower Lot Biofilter

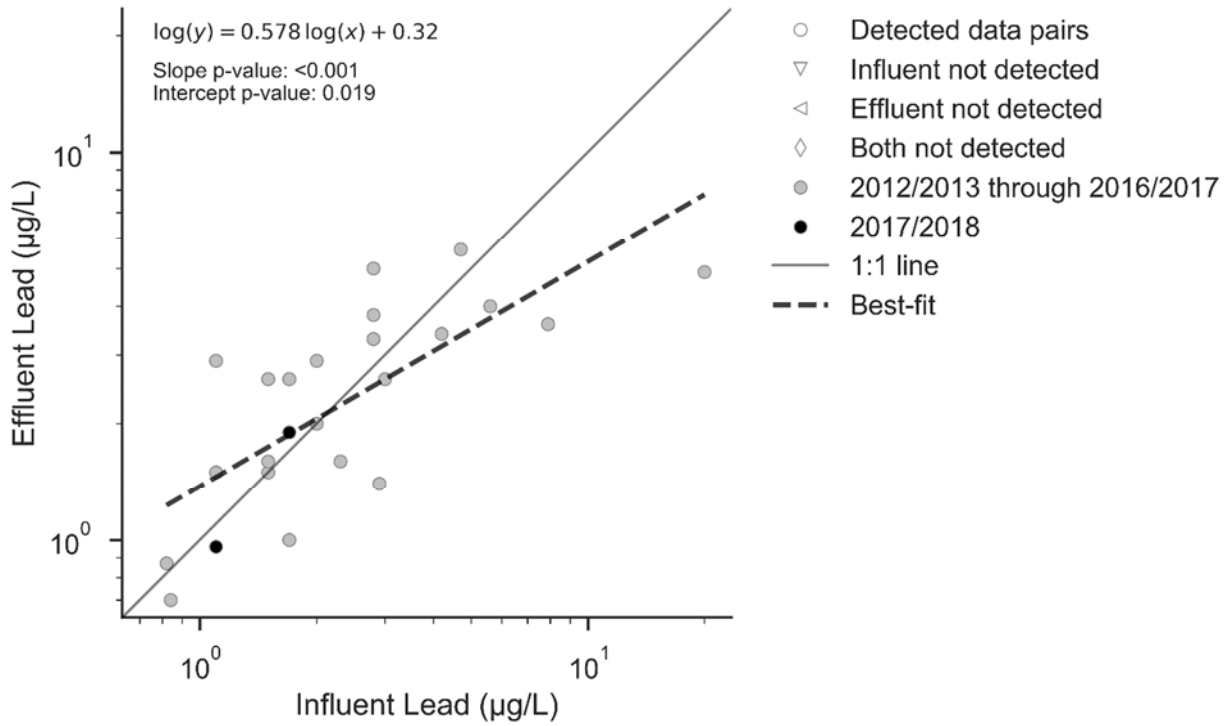

Figure 58. Paired Lead Concentrations at Lower Lot Biofilter

5.3 ELV Treatment BMP Influent v. Effluent Correlation Charts

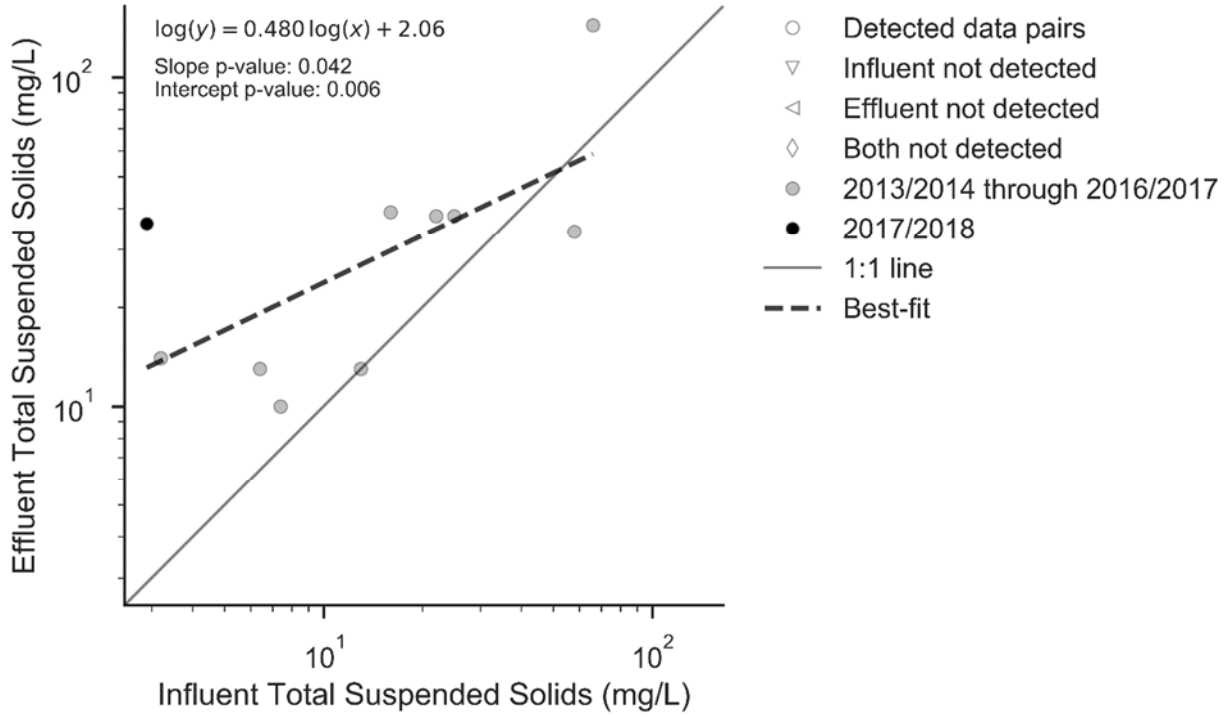

Figure 59. Paired TSS Concentrations at ELV Treatment BMP

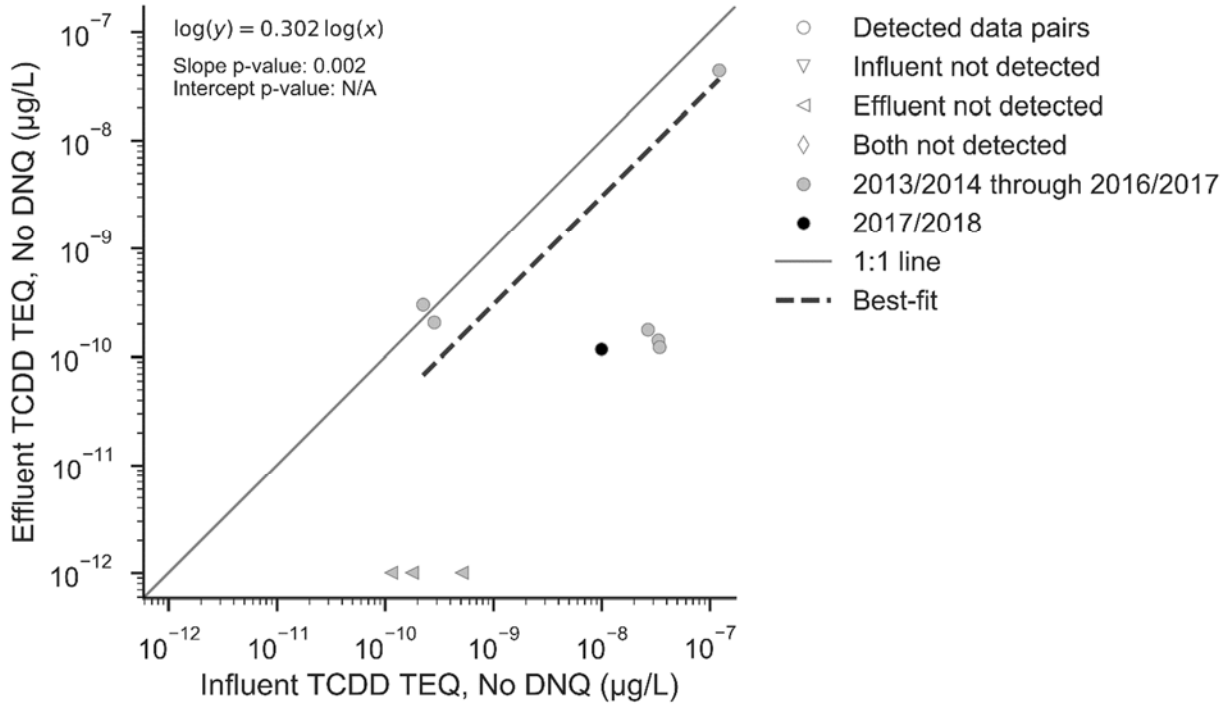

Figure 60. Paired Dioxins Concentrations at ELV Treatment BMP

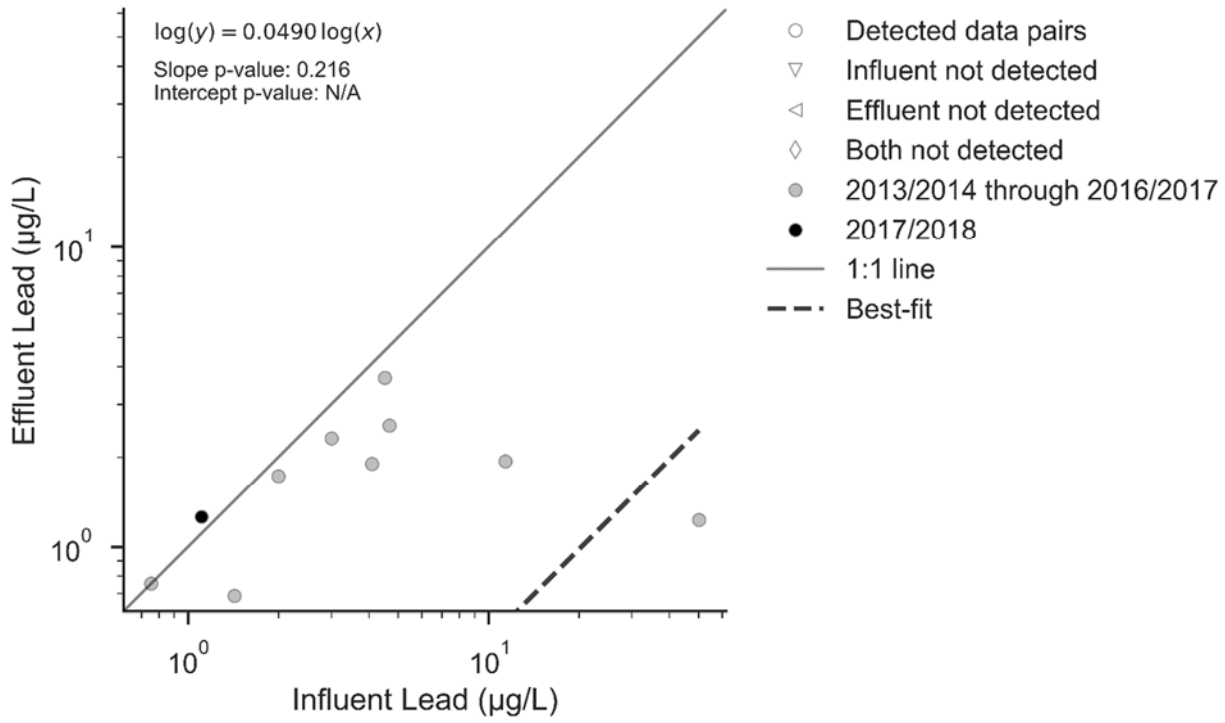

Figure 61. Paired Lead Concentrations at ELV Treatment BMP

5.4 Detention Bioswales Influent v. Effluent Correlation Charts

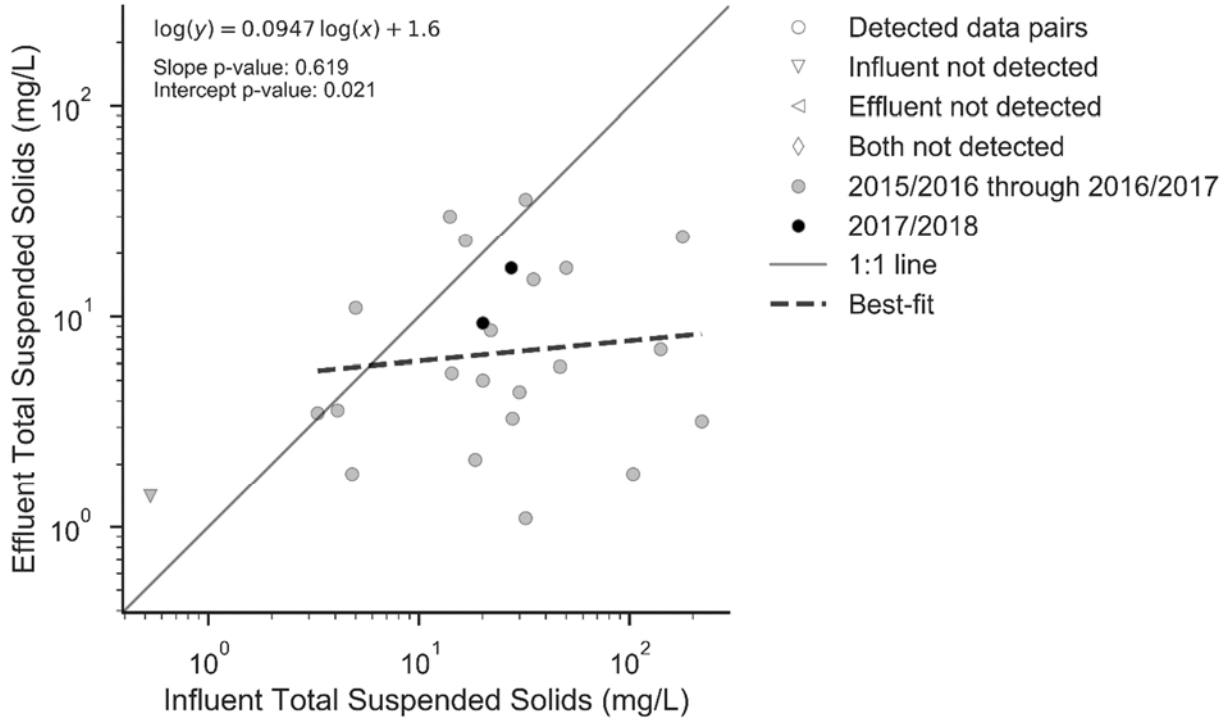

Figure 62. Paired TSS Concentrations at Detention Bioswales

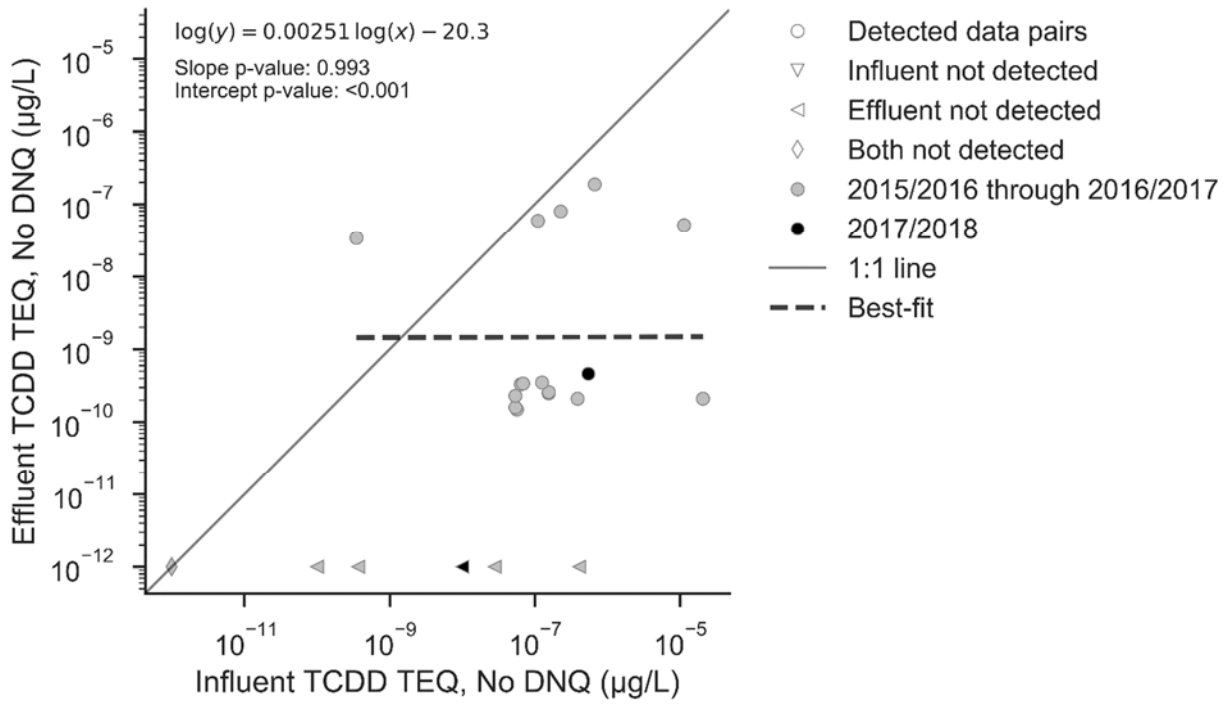

Figure 63. Paired Dioxins Concentrations at Detention Bioswales

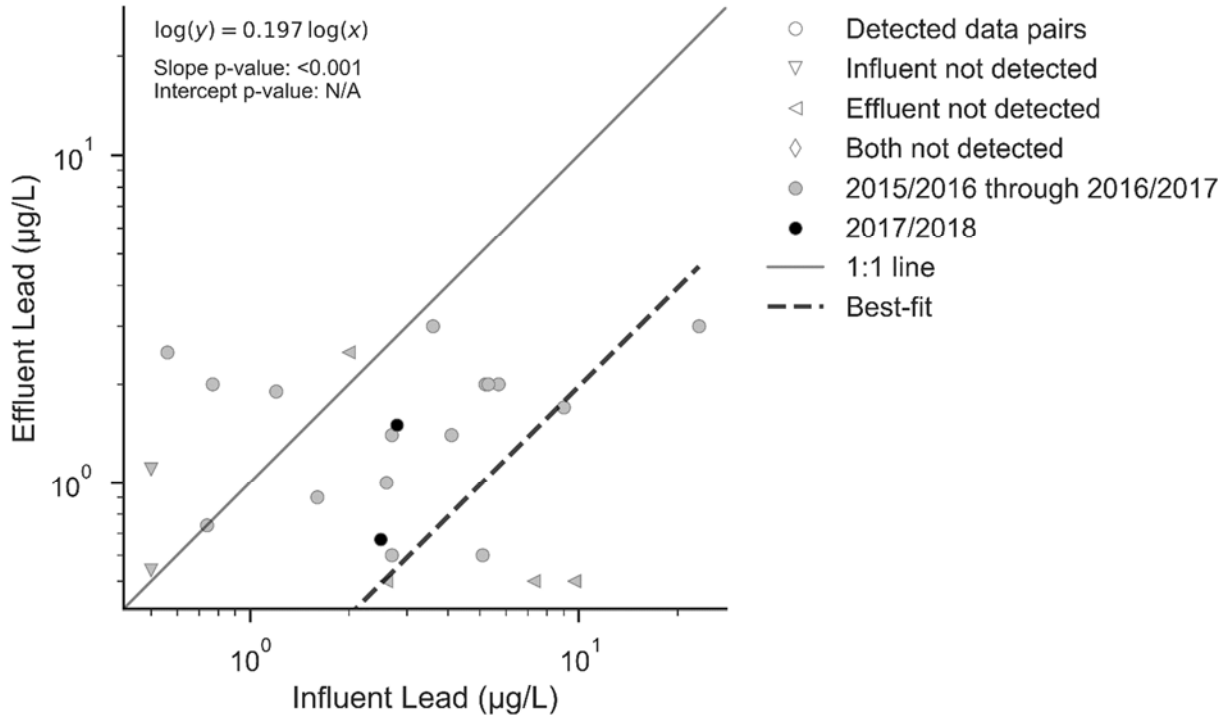

Figure 64. Paired Lead Concentrations at Detention Bioswales

6 Probability Plots

Probability plots for CM/media filter sites (B-1, upper lot media filter, CM-9, and CM-1 non-background sites, which excludes CM-1 background areas, CM-3, CM-8, and CM-11 due to the substantial flows that they receive from background areas) are shown in Figure 65 through Figure 67. Probability plots for the lower lot biofilter are shown in Figure 68 through Figure 70, and plots for the ELV treatment BMP are displayed in Figure 71 through Figure 73. Probability plots for the detention bioswales are displayed in Figure 74 through Figure 76. These log-normal probability plots are prepared by ranking the available log-transformed data and calculating their probability of occurrence. These probability values (shown on the vertical axis) are plotted against their concurrent concentrations. While determining the plotting positions, non-detect (ND) data were assigned to the lowest positions, effectively truncating the probability plots at the fraction of non-detected samples. Therefore, only detected results positions are plotted, which leads to the correct probability of occurrence for the observed data, while values less than the detection limit show their unknown specific occurrences. These figures illustrate trends for influent concentrations as compared to effluent concentrations and vice versa, and for those that have p-values greater than 0.05 for both influent and effluent distributions, they may serve as a useful tool for predicting effluent concentrations at a given percentile.

The figures also contain some basic statistics describing the data shown on the graphs. For each influent and effluent dataset, the number of ND results is shown. The p-value resulting from an Anderson-Darling test for lognormal distributions is also shown. The Anderson-Darling test assesses if the data follows an examined distribution (p-values <0.05 indicate that the actual distribution is significantly different from log-normal distributions for these plots). The null hypothesis here is that the data comes from a lognormal distribution. If the p-value is less than 0.05, the null hypothesis is rejected and it is concluded that the data are not lognormal distributed. The 95th percentile confidence intervals are also shown on the plots for both influent and effluent sample results. If all of the influent or effluent data points are located within the confidence interval and the p-value is greater than 0.05, one can be 95% confident that the lognormal distribution appears to fit the data fairly well, and the fitted line may be used to estimate concentrations at various percentiles.

Where influent data (blue circles) consistently fall above the effluent points (green squares), consistent water quality improvement is occurring at these areas. The vertical distance between the datasets (noting it is a log scale) also indicates the magnitude of the concentration change at these BMP types. Similar to previous plots, points are shaded based on the sampling year during which they were collected. Points that are shaded with blue or green represent data from the most recent 2017/2018 reporting year, while data from all previous reporting years are shown with blue or green outlined shapes but no fill.

The relative difference in the amount of scatter observed in these plots indicates that BMP effectiveness may vary depending on the location and constituent. These plots indicate the influent concentrations above which the CMs are most effective (low concentrations are expected to represent concentrations unlikely to be significantly reduced by the BMP).

6.1 CM/Media Filter Probability Plots

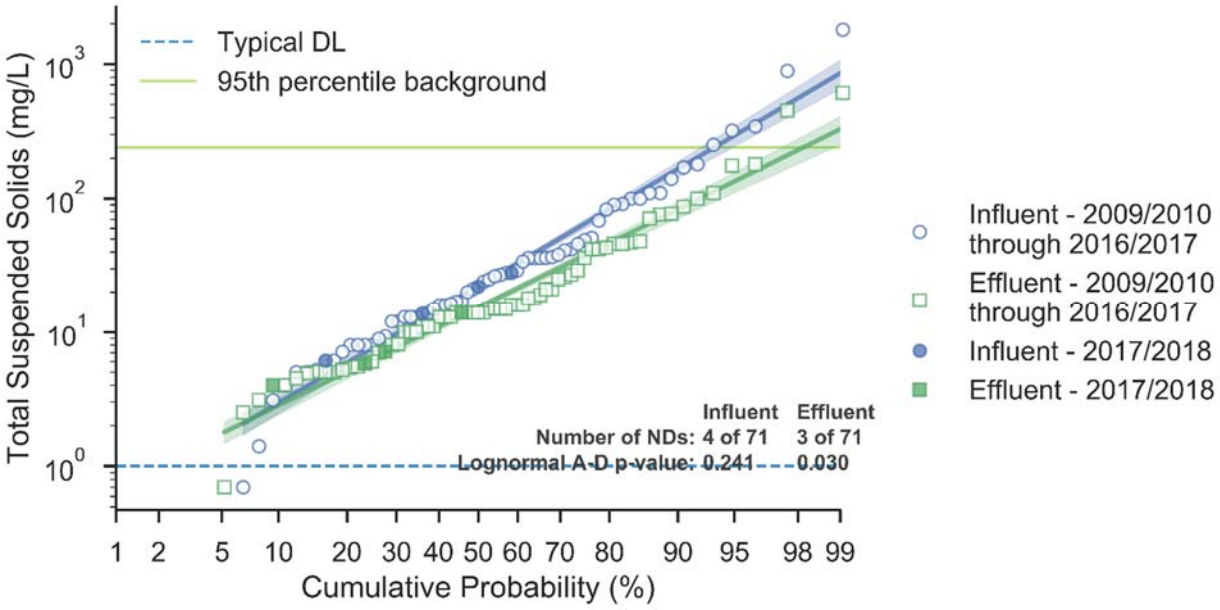

Figure 65. Log-normal Probability Plot of TSS at CM/Media Filter Locations

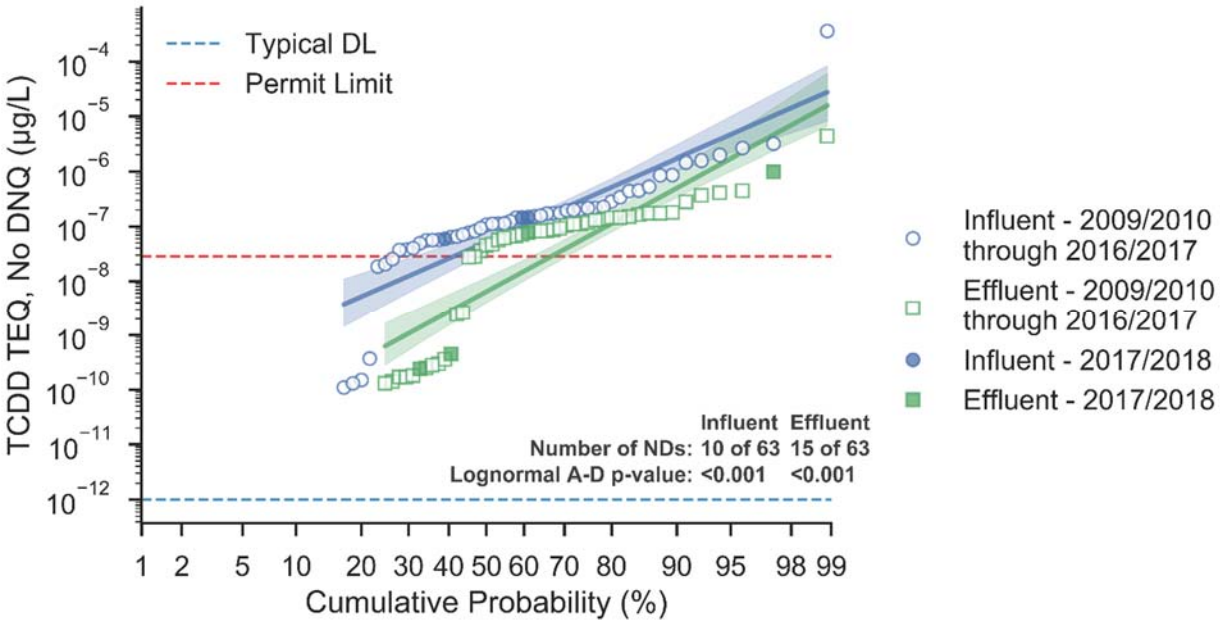

Figure 66. Log-normal Probability Plot of Dioxins at CM/Media Filter Locations

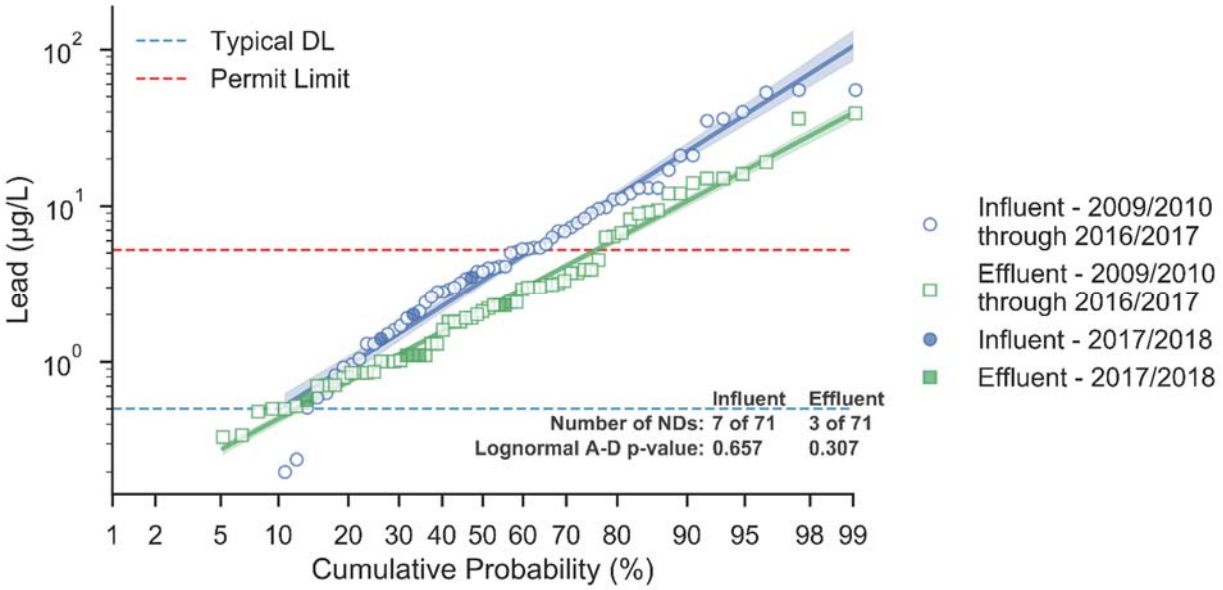

Figure 67. Log-normal Probability Plot of Lead at CM/Media Filter Locations

6.2 Lower Lot Biofilter Probability Plots

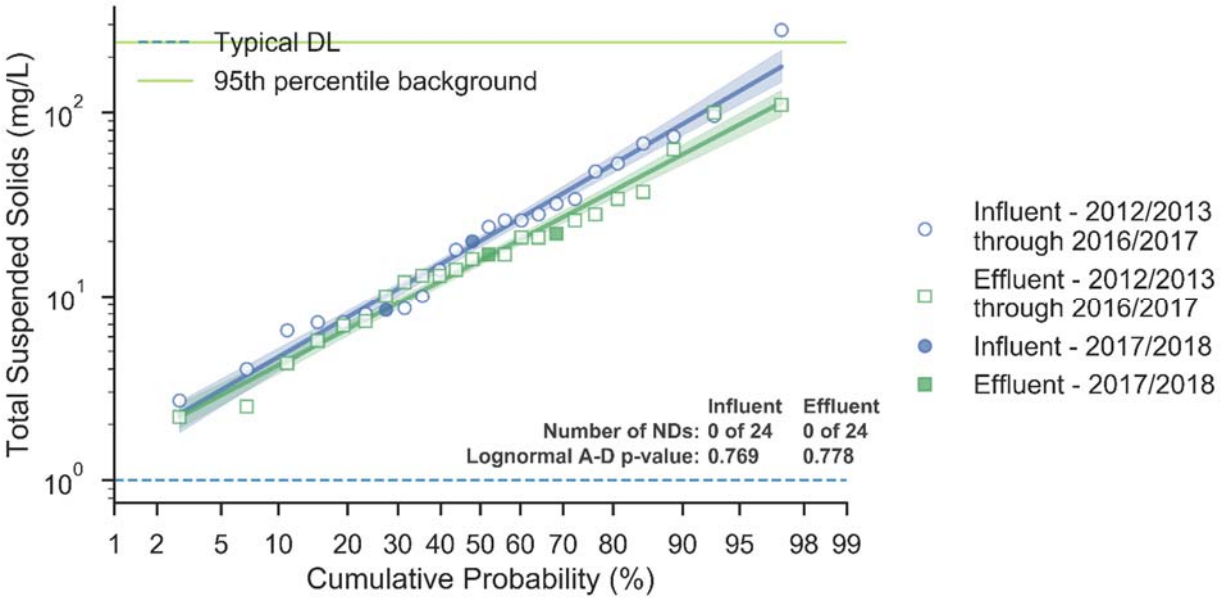

Figure 68. Log-normal Probability Plot of TSS at Lower Lot Biofilter

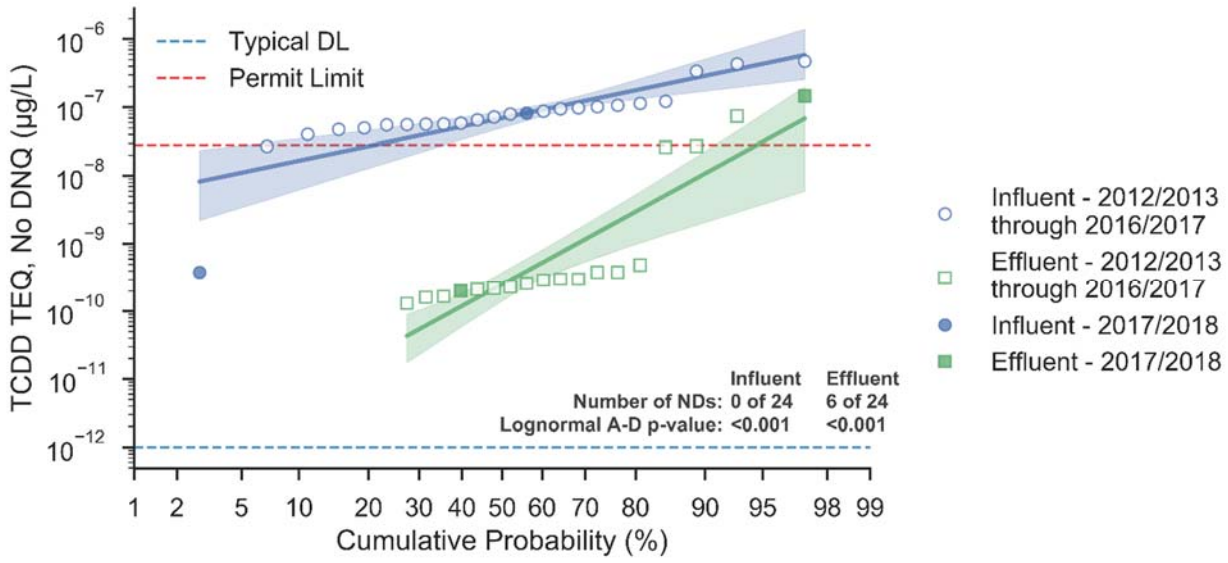

Figure 69. Log-normal Probability Plot of Dioxins at Lower Lot Biofilter

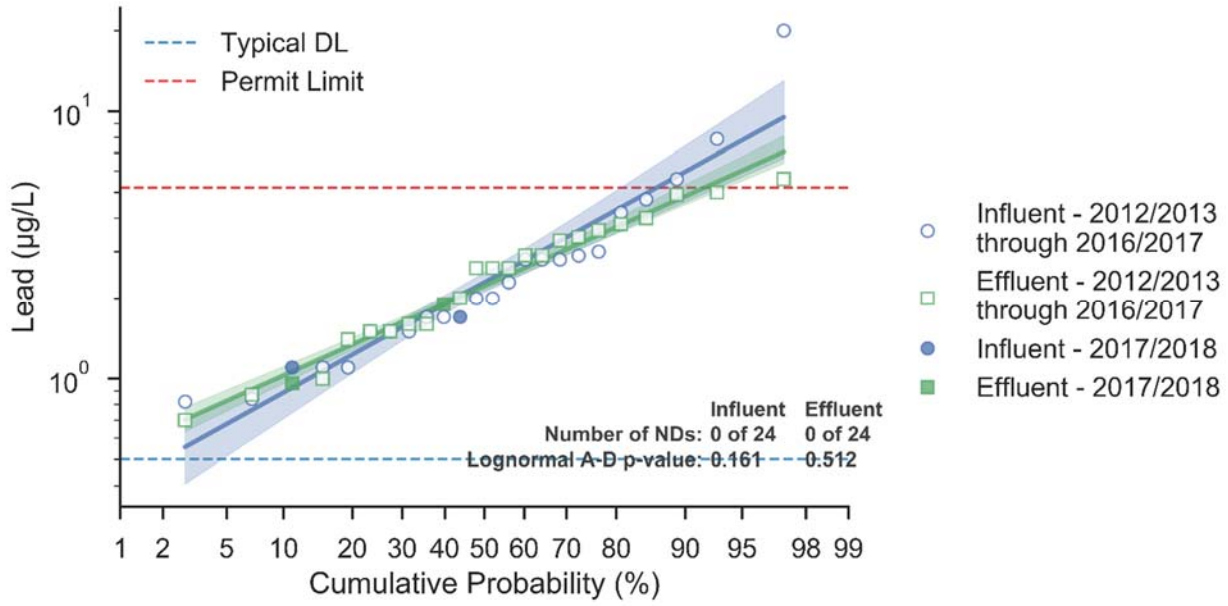

Figure 70. Log-normal Probability Plot of Lead at Lower Lot Biofilter

6.3 ELV Treatment BMP Probability Plots

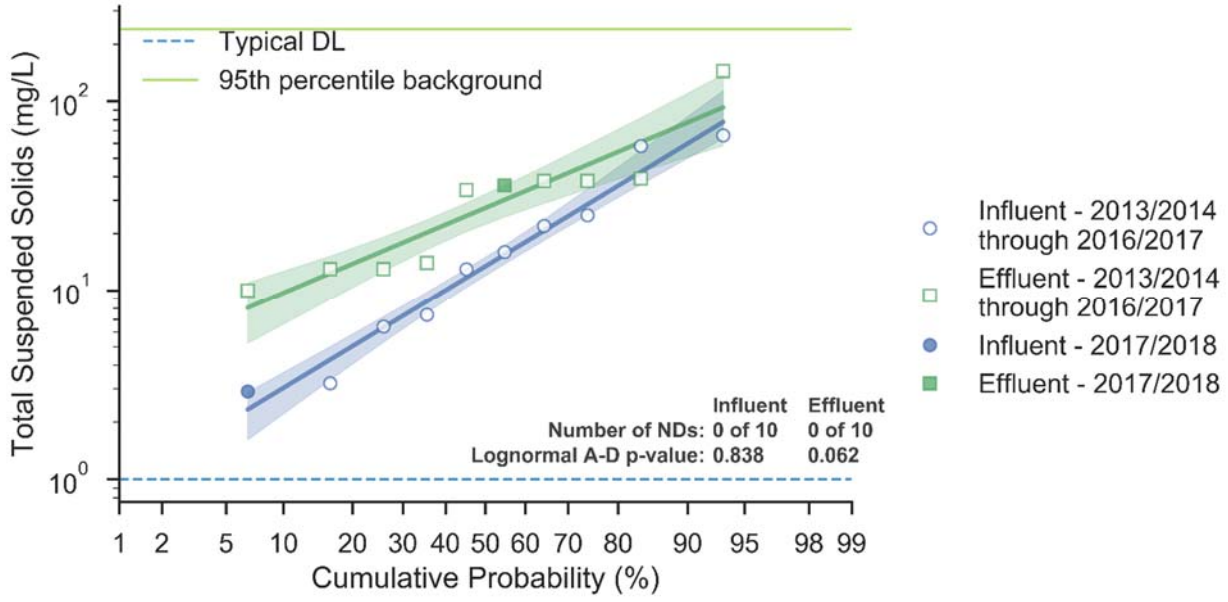

Figure 71. Log-normal Probability Plot of TSS at ELV Treatment BMP

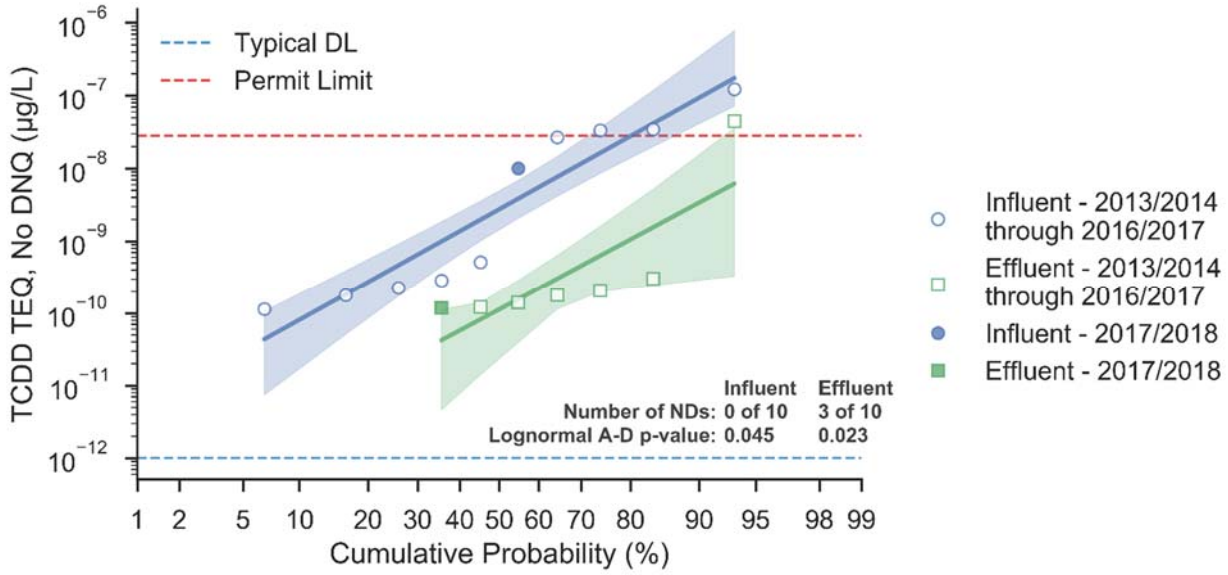

Figure 72. Log-normal Probability Plot of Dioxins at ELV Treatment BMP

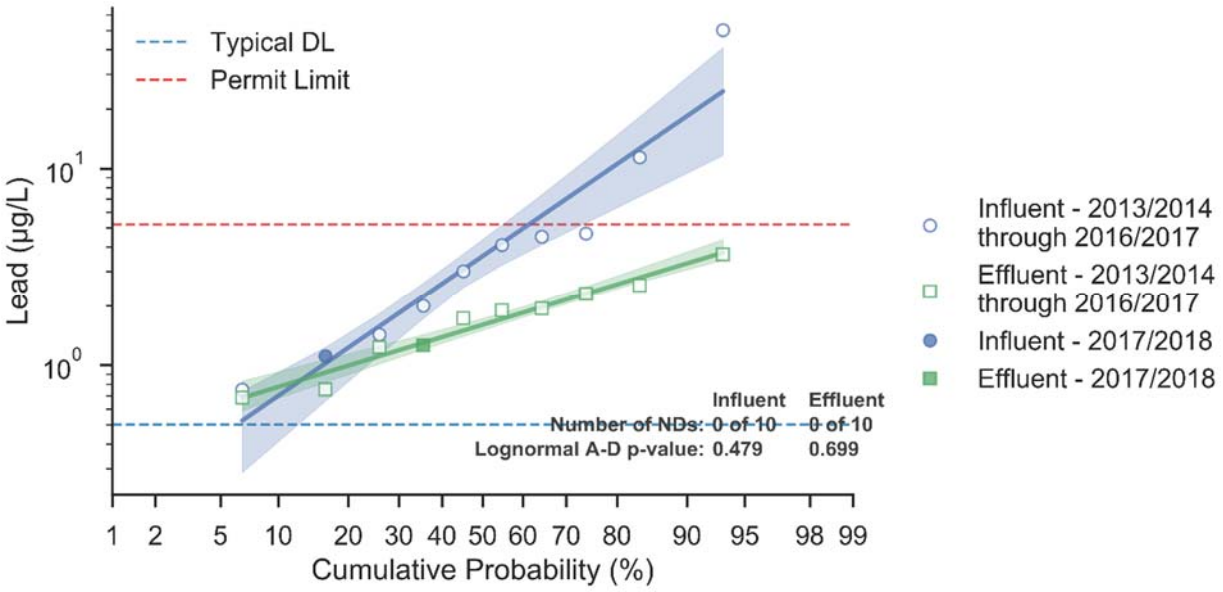

Figure 73. Log-normal Probability Plot of Lead at ELV Treatment BMP

6.4 Detention Bioswales Probability Plots

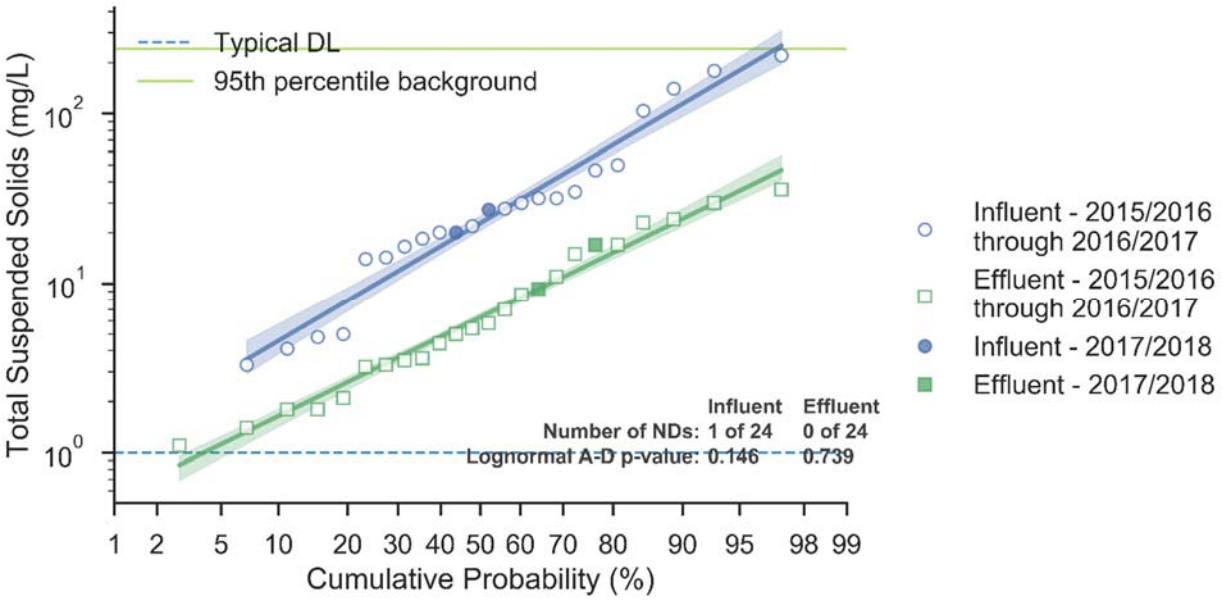

Figure 74. Log-normal Probability Plot of TSS at Detention Bioswales

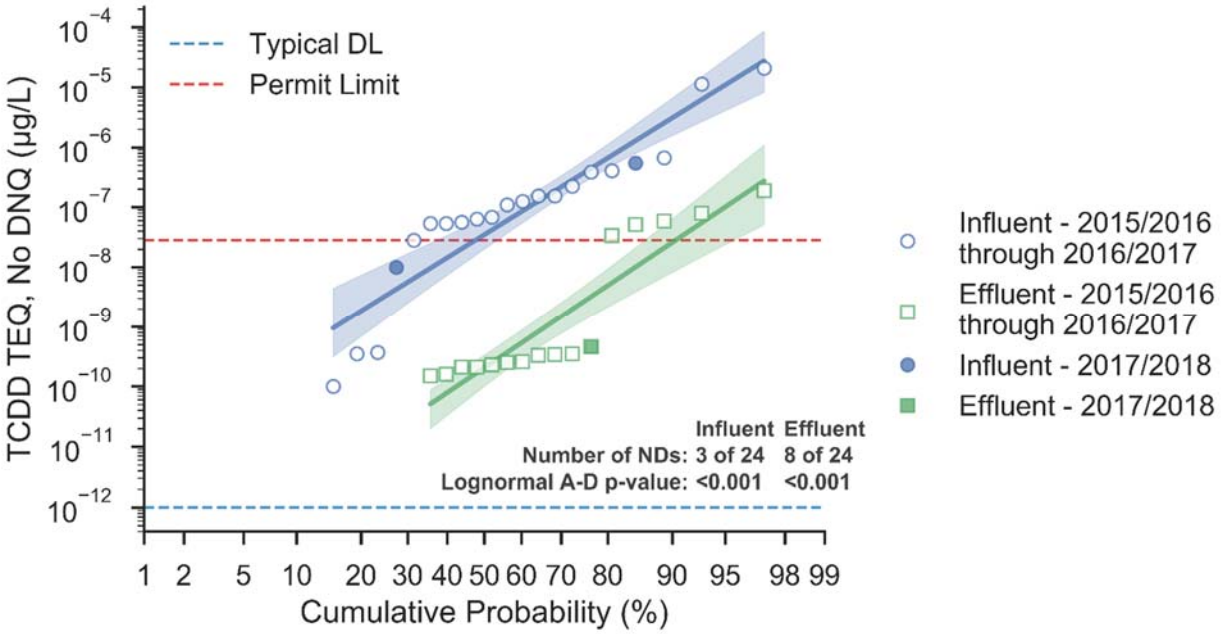

Figure 75. Log-normal Probability Plot of Dioxins at Detention Bioswales

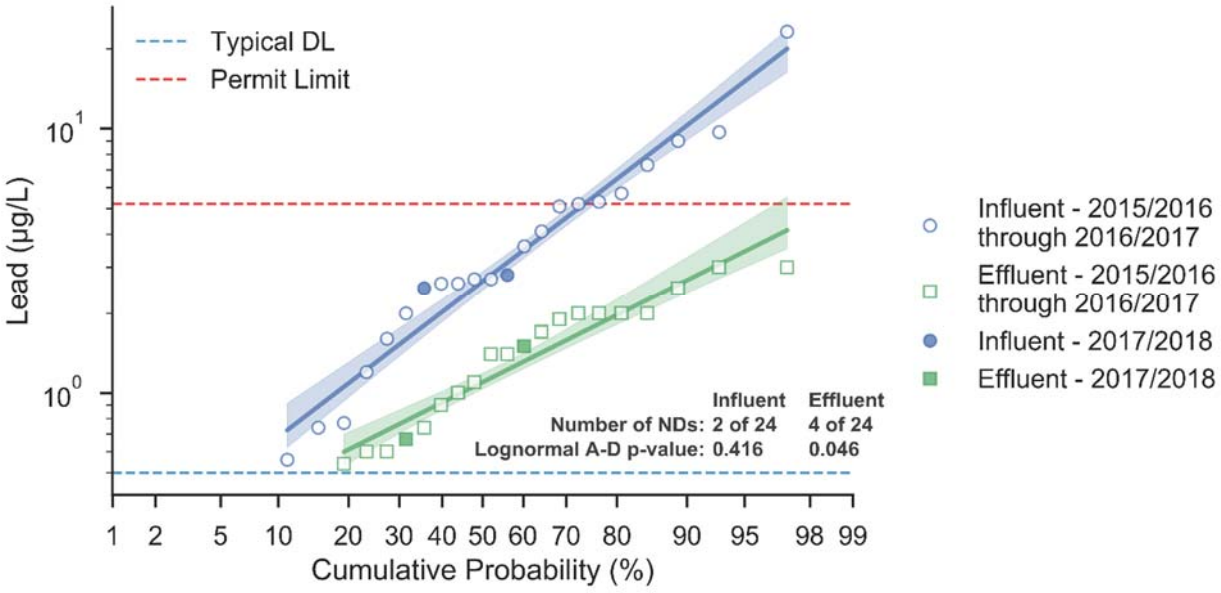

Figure 76. Log-normal Probability Plot of Lead at Detention Bioswales

7 Multiple BMP Box Plots

Multiple BMP box plots for TSS, dioxins, and lead for all BMPs presented herein are shown in Figure 78, Figure 79, and Figure 80, respectively. These plots illustrate basic statistics of influent and effluent performance data, relative to each of the CM/media filter sites (B-1, upper lot media filter, CM-9, and CM-1 non-background sites), the lower lot biofilter, ELV treatment BMP, and the detention bioswales. As shown in Figure 77, the box plots reflect the median, 25th percentile, 75th percentile, 1.5 quartile values, in addition to outliers outside of the 1.5 quartiles, if applicable (shown as diamonds). These plots reflect paired data results only (the same data used in the statistical analyses, influent vs. effluent correlation charts, and probability plots). These plots are intended to illustrate the range of influent and effluent concentrations at each BMP and also show how influent and effluent concentrations compare (i.e., overall lower, higher, or equal effluent concentrations compared to the influent concentrations). If very unequal sample numbers were included in these plots, the comparison between influent and effluent concentrations would be misleading, such as if there were a much larger number of influent or effluent sample results compared to the other.

The amount of overlap of the boxes indicate visual differences in the influent and effluent concentrations. Influent and effluent datasets that are widely separated (such as dioxins at the lower lot biofilter) indicate more robust controls. Influent and effluent datasets that have substantial overlaps[22] (such as TSS at the lower lot biofilter sites) indicate similar influent and effluent concentrations. For TSS, the detention bioswales was the only BMP to show minimal overlap between the interquartile ranges (IQR) of the influent and effluent concentrations. Although an overall decrease was noted for the CM/media filter sites and the lower lot biofilter, the overlap in the box plots is still significant due to the large number of observations available. The ELV treatment BMP also shows significant overlap between the influent and effluent boxes, with an overall increase in TSS concentration observed.

For dioxins, the lower lot biofilter was the only BMP to show no overlap in any part of the influent and effluent boxes, with a decrease in concentration from the influent to effluent. The detention bioswales also showed a decrease in concentration from the influent to effluent, with no overlap shown for the IQR (but overlap shown for other portions of the boxes). The CM/media filter sites and ELV treatment BMP both show an overall decrease in concentration from the influent to effluent, but with more overlap in the influent and effluent boxes.

For lead, the CM/media filter sites, ELV treatment BMP, and the detention bioswales all show an overall decrease in concentration from the influent to effluent, but with large overlaps in the boxes for the CM/media filter sites, moderate overlap for the ELV treatment BMP, and minor overlap for the detention bioswales. The lower lot biofilter showed an increase in lead concentration across the system, with large overlaps in the boxes.

[22] For small to intermediate data sets, if the median value of one set was larger than the 75th percentile value of the other set, or smaller than the 25th percentile value of the other set, it is expected that the sets are statistically different. For large datasets, less overlap between the two datasets may be present and they may still be statistically different. However, wider separation generally results in more robust performance.

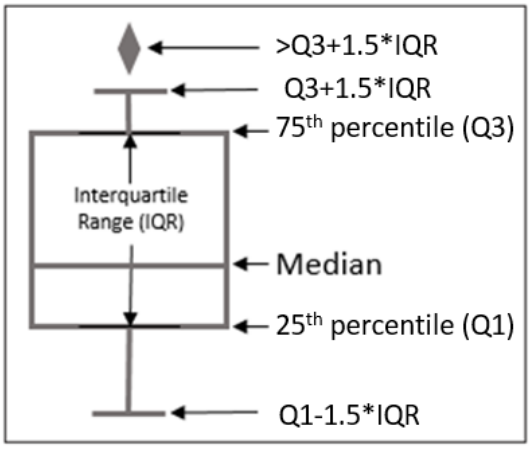

Figure 77. Box Plot Legend

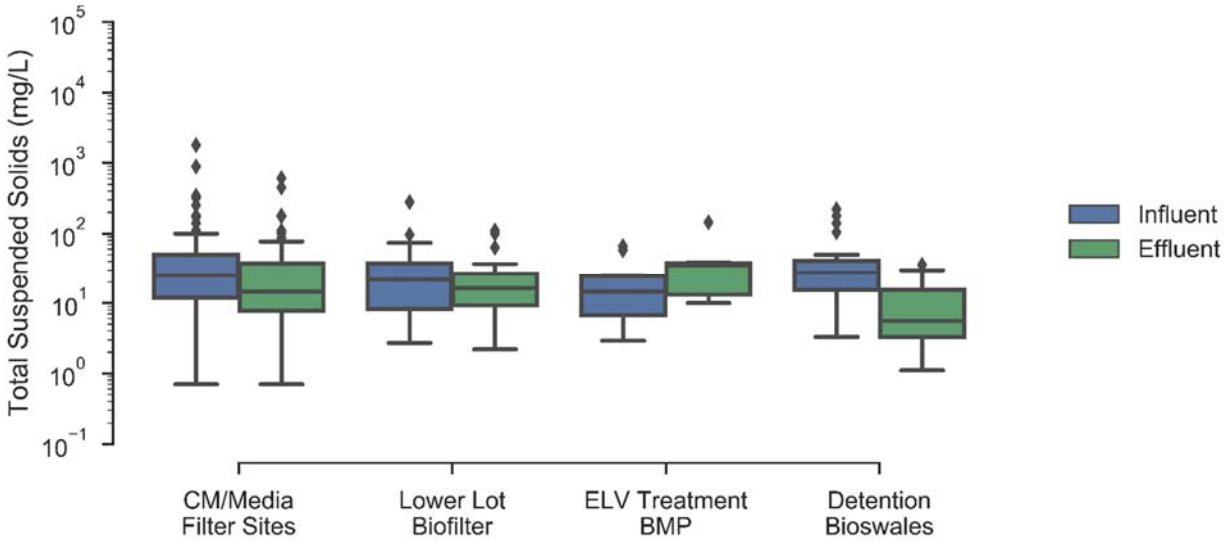

Figure 78. Multiple BMP Box Plot for TSS

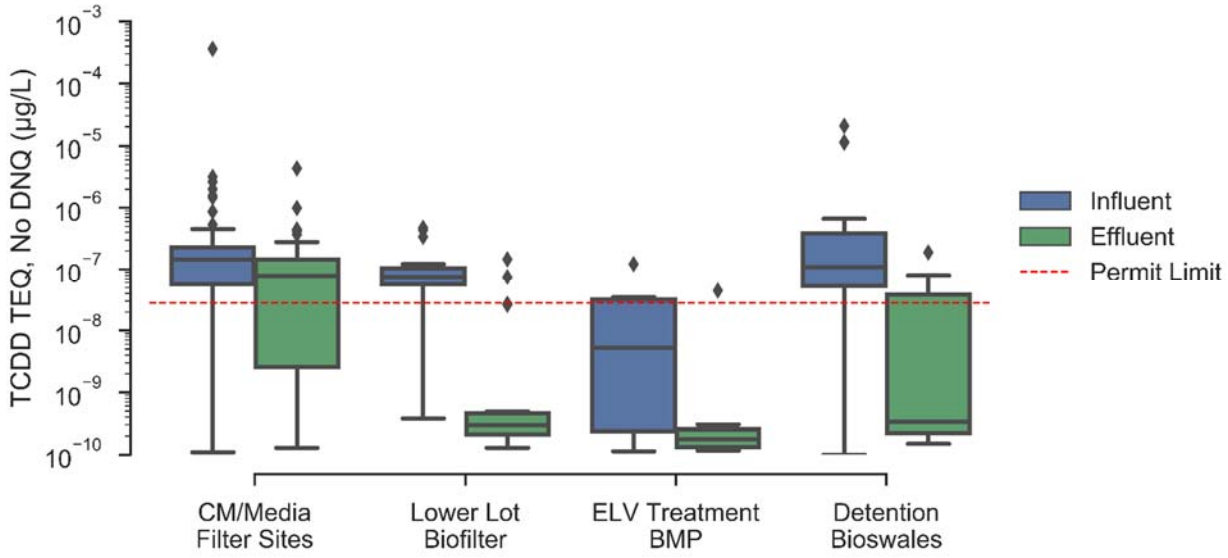

Figure 79. Multiple BMP Box Plot for Dioxins

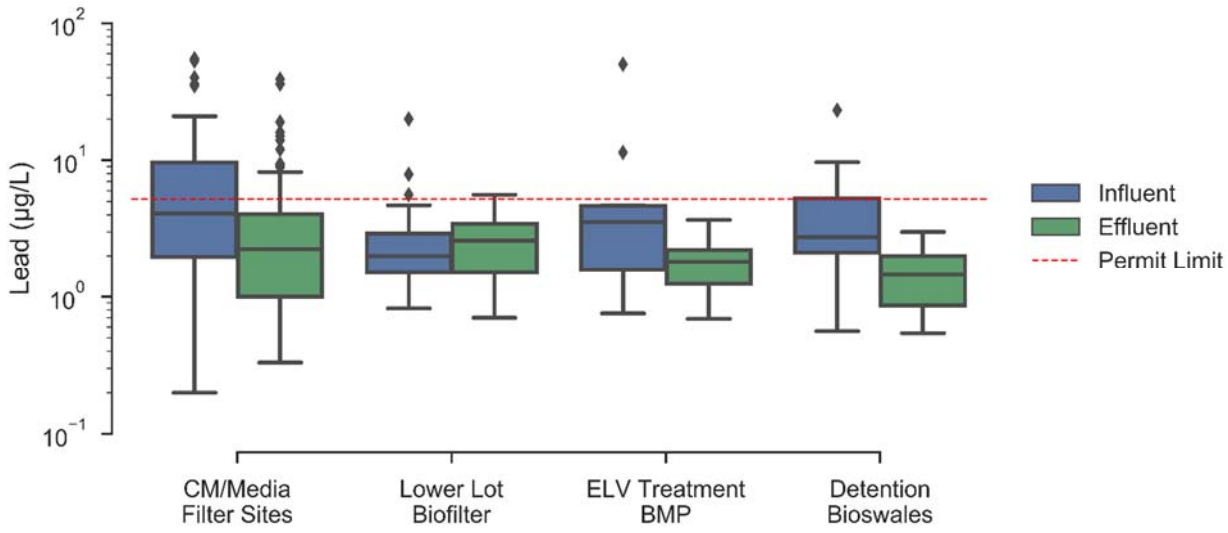

Figure 80. Multiple BMP Box Plot for Lead

8 Comparison to Permit Limits

The number of results greater than the Outfall 009 Permit limits for each of the influent and effluent samples at the CMs/media filters (B-1, CM-1, CM-9, upper lot media filter, and CM-3), the lower lot biofilter, the ELV Treatment BMP, and the detention bioswales is shown in Table 14, Table 15, Table 16, and Table 17, respectively. The analyses included in Table 14 through Table 17 include all data samples analyzed, not just paired samples. Because this analysis includes samples that do not have associated paired data, the number of influent sample results compared to Permit limits may be different than the number of effluent samples compared to limits. Only influent and effluent locations for the BMPs are included in this analysis; intermediate locations are not included (e.g., sedimentation basin effluent at the ELV Treatment BMP).

For all of the CM/media filter sites analyzed, influent concentrations were more often higher than the Outfall 009 Permit limits as compared to effluent concentrations for both lead and dioxins, as shown in Table 14. The maximum and average ratios of observed concentrations to Permit limit, for results exceeding Permit limits, generally show a higher ratio for influent than effluent, for both lead and dioxins, with the exception of lead at B-1 for the average exceedance ratio and dioxins at CM-1 (for the average and maximum ratio). This trend of effluent ratios lower than the influent ratios suggests lead and dioxins reduction through the CMs/media filters. These results enhance the weight of evidence, especially when not enough samples are available for all of the statistical tests.

It should be noted that dioxin results for B-1 are skewed by one exceptionally high influent result of 3.6×10^{-4} µg/L on 12/2/2014. If that result is removed, then the maximum influent ratio drops to 94 and the average becomes 17. CM-1 is skewed by one dioxin effluent result of 4.3×10^{-6} µg/L on 3/17/2012, where the maximum effluent ratio decreases to 35 and the average drops to 8.2 if that result is removed. 100 percent of influent samples are noted to exceed the Outfall 009 Permit limit for lead at CM-3; however, this is only based on one influent sample collected at the road runoff to CM-3 location.

Table 14. Influent and Effluent Summary as compared to the Outfall 009 Permit Limits (B-1, CM-1, CM-9, Upper Lot Media Filter, CM-3), 2009-2018

BMP	Parameter	% of Samples Greater than Permit Limits		Maximum Exceedance Ratio (Exceeding Result : Permit Limit)		Average Exceedance Ratio (Exceeding Result : Permit Limit)	
		Influent	Effluent	Influent	Effluent	Influent	Effluent
B-1	Lead	35%	8.7%	1.8	1.7	1.3	1.5
	TCDD TEQ no DNQ	85%	68%	13,000	10	770	3.9
CM-1	Lead	42%	24%	11	7.5	4.3	3.1
	TCDD TEQ no DNQ	77%	60%	110	150	13	18
CM-9	Lead	39%	28%	11	6.9	4.3	2.9
	TCDD TEQ no DNQ	47%	26%	56	5.2	9.1	3.2
Upper Lot Media Filter	Lead	10%	0%	1.1	N/A[1]	1.1	N/A[1]
	TCDD TEQ no DNQ	90%	50%	11	2.7	5.4	2.7
CM-3	Lead	100% (one sample only)	N/A[2]	1.3	N/A[2]	1.3	N/A[2]
	TCDD TEQ no DNQ	0%	N/A[2]	N/A	N/A[2]	N/A	N/A[2]

[1] Not calculated because there were no exceedances of Permit limits

[2] No effluent samples collected in 2016-2018

The number of results exceeding the Permit limits for the influent and effluent samples at the lower lot biofilter are summarized in Table 15. Influent concentrations were more often higher than the Outfall 009 Permit limits as compared to effluent concentrations for lead (three influent vs. one effluent, both out of 24 samples) and dioxins (22 influent vs. two effluent, both out of 24 samples). Observation of the maximum and average ratios of observed concentrations to the Permit limit show that a higher ratio is calculated for influent than effluent samples for lead and dioxins, suggesting reduction in both pollutants through the lower lot biofilter.

Table 15. Influent and Effluent Summary as Compared to the Outfall 009 Permit Limits (Lower Lot Biofilter), 2013-2018

	% of Samples Greater than Permit Limits		Maximum Exceedance Ratio (Exceeding Result : Permit Limit)		Average Exceedance Ratio (Exceeding Result : Permit Limit)	
Parameter	**Influent**	**Effluent**	**Influent**	**Effluent**	**Influent**	**Effluent**
Lead	13%	4.2%	3.8	1.1	2.1	1.1
TCDD TEQ no DNQ	92%	8.3%	17	5.2	4.4	3.9

Similar trends are observed for the ELV treatment BMP, as shown in Table 16. There were a greater number of influent sample concentrations exceeding the Outfall 009 Permit limits compared to effluent concentrations for lead and dioxins. Only two influent samples (out of ten samples) exceeded the Permit limit for lead (no effluent samples exceeded), while there were three exceedances over limits of influent samples (out of ten samples) and only one exceedance of effluent samples (out of 13 samples) for dioxins. As observed with the CM sites and lower lot biofilter, higher maximum and average ratios of observed concentrations to Permit limits were calculated for influent samples compared to effluent samples. This trend also suggests reduction in lead and dioxins through the ELV treatment BMP.

Table 16. Influent and Effluent Summary as compared to the Outfall 009 Permit Limits (ELV Treatment BMP), 2013-2018

	% of Samples Greater than Permit Limits		Maximum Exceedance Ratio (Exceeding Result : Permit Limit)		Average Exceedance Ratio (Exceeding Result : Permit Limit)	
Parameter	**Influent**	**Effluent**	**Influent**	**Effluent**	**Influent**	**Effluent**
Lead	20%	0%	9.7	N/A[1]	5.9	N/A[1]
TCDD TEQ no DNQ	30%	7.7%	4.4	1.6	2.3	1.6

[1] Not calculated because there were no exceedances of Permit limits

The number of results exceeding the Permit limits for the influent and effluent samples at the detention bioswales are shown in Table 17. Influent concentrations were more often higher than the Outfall 009 Permit limits as compared to effluent concentrations for both lead and dioxins. 19 influent concentrations (out of 26 samples) exceeded the Permit limit for dioxins, and five effluent samples (out of 36 samples) exceeded the Permit limit. Eight influent concentrations (out of 26 samples) of lead exceeded the Permit limit, while no effluent concentrations (out of 36 samples) exceeded the Permit limit for lead. The maximum and average influent exceedance ratios for dioxins are greater than the effluent ratios, suggesting that dioxins are generally reduced through the detention bioswales.

Table 17. Influent and Effluent Summary as compared to the Outfall 009 Permit Limits (Detention Bioswales), 2015-2018

	% of Samples Greater than Permit Limits		Maximum Exceedance Ratio (Exceeding Result : Permit Limit)		Average Exceedance Ratio (Exceeding Result : Permit Limit)	
Parameter	**Influent**	**Effluent**	**Influent**	**Effluent**	**Influent**	**Effluent**
Lead	31%	0%	4.5	N/A[1]	1.9	N/A[1]
TCDD TEQ no DNQ	73%	14%	737	6.7	67	2.9

[1] Not calculated because there were no exceedances of Permit limits

9 BMP Influent and Effluent Ranks

In addition, results from the Watershed 008 and 009 BMP Subarea Prioritization Analysis (Appendix C) may also be used to evaluate water quality improvements resulting from the use of the BMPs. As described in the Prioritization Memo, potential BMP subarea monitoring locations were ranked based on water quality sample comparisons between both stormwater concentrations and permit limits, and subarea stormwater particulate strengths and background stormwater particulate strengths. A statistical methodology was used to rank the subareas based on these comparison results and pollutant-specific "weighting factors," which were combined to produce a multi-constituent score for the potential BMP subareas.

The subareas were ranked from the highest multi-constituent scores to the lowest scores, such that higher rankings (i.e., closer to 1) indicate monitoring locations with poorer historical water quality compared to locations with higher scores. The rankings for monitoring locations corresponding to the BMPs discussed in this memo are shown in Table 18. For BMPs with multiple influent monitoring locations, the rankings of both locations are shown and a flow-weighted ranking was calculated (based on the same weights used to calculate single influent concentrations as described in Section 3). It should be noted that flow-weighting the rankings is not as accurate as weighting the multi-constituent scores and re-ranking all subareas, but this approach shows an approximate representation. Only influent and effluent locations for the BMPs are included in Table 18; intermediate locations are not included (e.g., sedimentation basin effluent at the ELV Treatment BMP).

Improved water quality from treatment by a BMP can be demonstrated by an increase in the ranking score value (for example, rank 1 to rank 60) (i.e., higher multi-constituent score to lower multi-constituent score) between the influent and effluent rank. As shown in Table 18, there were increases in the ranking values from the influent locations to the effluent locations, based on the multi-constituent scores, for B-1, CM-9, the lower lot biofilter, the ELV treatment BMP, the southern detention bioswale, and the upper lot media filter. These ranking changes further demonstrate that BMP implementation has generally resulted in improved water quality. Only CM-1 and the northern detention bioswale showed a decrease in the ranking value after the BMP (the decrease in ranking value was minor for CM-1). Additional details of the subarea ranking analysis are included in the Prioritization Memo.

Table 18. Comparison of Multi-Pollutant Ranking between Influent and Effluent Locations

BMP	Influent Location(s) and Ranking(s)		(Area-weighted) Influent Ranking	Effluent Location and Ranking
B-1 Media Filter	B1BMP0004 – **22**	B1BMP0005 – **60**	**26**	B1BMP0006 – **62**
CM-9	ILBMP0002 - **1**	A1BMP0002-A – **77**	**30**	A1BMP0003 – **67**
CM-1	EVBMP0003-A – **56**	A2BMP0006 - **95**	**73**	A2BMP0007 – **69**
Lower Lot Biofilter	LPBMP0002 – **19**		-	LPBMP0004 – **95**
ELV Treatment BMP	EVBMP0007 – **78**		-	EVBMP0008 – **95**
Southern Detention Bioswale	ILBMP0008 - **10**	ILBMP0004 – **23**	**11**	ILBMP0005 – **76**
Northern Detention Bioswale	ILBMP0006 – **61**		-	ILBMP0007 – **20**
Upper Lot Media Filter	B1BMP0009 – **12**	B1BMP0010 – **21**	**18**	B1BMP0011 – **35**
CM-3 (road runoff)	LXBMP0010 – **15.5**		-	LXBMP0012 – N/A[1]

[1] Samples from this monitoring location have not yet been collected.

10 Runoff Volume Discharge Analysis

In addition to water quality performance, the lower lot biofilter is also designed to reduce the frequency of smaller storms discharging untreated runoff to the Northern Drainage by retaining the storm runoff and allowing evapotranspiration to take place. It was estimated in 2017 that the average volume pumped to the biofilter has increased from 52,000 gallons per inch of rainfall to 82,000 gallons per inch of rainfall since the detention bioswales were constructed. Similarly, the estimated percent of total runoff volume (from both the 24-inch drain and the lower lot drainage areas) increased from 22% to 44% on average since the detention bioswales were constructed.

To evaluate how many storms have been prevented from discharging to the Northern Drainage this year, a binned presence/absence of discharge plot was developed as shown in Figure 81. All storms sampled since the lower lot biofilter was constructed are included (3/8/2013 to present). The storm events with discharge to the Northern Drainage (i.e., bypass of the low flow diversion weir or treated effluent from the biofilter) were identified and counted. The total number of storm events compared to the number of events where discharge occurred were then binned based on storm depth in one inch increments. Additionally, this plot shows the percent of discharging events (i.e., number of events with discharge divided by the number of total events for that storm depth bin). As is shown in Figure 81, **the lower lot biofilter successfully prevented almost half of all storms less than or equal to one inch from discharging to the Northern Drainage**, but had decreasing effects for larger rains.

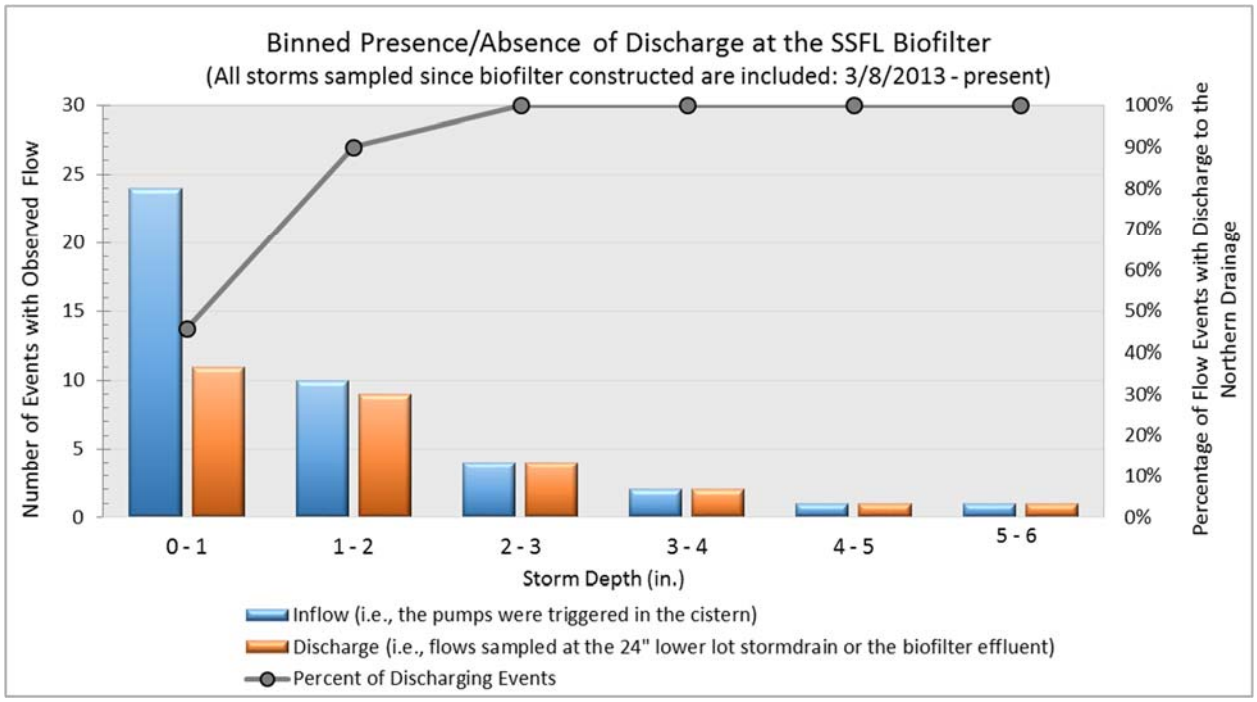

Figure 81. Binned Presence/Absence of Discharge at the SSFL Lower Lot Biofilter

11 Sampling Event Analysis

The Expert Panel evaluated the need for additional sampling at the BMPs in the context of the recent slow-down in site activities particularly in the Outfall 009 watershed. Following the 2016/2017 reporting year, it was decided that until site activities increase, samples would only be collected twice per year at the following BMPs: upper lot media filter, southern detention bioswale, lower lot biofilter, CM-1 (influent-west and effluent), and the ELV Treatment BMP. The CM-1 influent-east (background) location will continue to be sampled during every storm, in order to collect more background data and because it is now being reconstructed with new media and enlarged.

12 Cumulative TSS Loading Analysis

An analysis was performed to calculate the cumulative TSS loading to each BMP thus far, based on historical storm event depths and the measured influent concentrations of TSS. These values were compared to the estimated sediment load that would result in highly reduced flows through the media which would cause larger volumes of bypassed flows, based on a study by Pitt and Clark (2010).

The estimated TSS loading to each BMP containing media and with sufficient data (ELV Treatment BMP, lower lot biofilter, B-1 media filter, CM-1, and CM-9) was estimated for each storm event where a sample was collected (at either the influent or effluent location[23]). The estimated cumulative TSS loading was determined using the following steps:

- The average annual percent capture and treatment (i.e., the percentage of incoming runoff that does not bypass the BMP) was determined using USEPA's Storm Water Management Model (SWMM) for each BMP.
- The runoff coefficient for each BMP's drainage area was determined using SWMM, simulated over the average annual year scenario[24].
- The total area of each BMP's drainage area was determined using available Geographic Information System (GIS) shapefiles.
- The runoff volume treated by each BMP during each individual storm event was calculated as follows:
    - Storm event volume treated = BMP drainage area x Storm event rainfall depth x Runoff coefficient of the BMP drainage area x Average annual percent capture
- The storm event TSS loading contributed to each BMP during each individual storm event was then calculated as follows:
    - Storm event TSS loading = Storm event volume treated x Event-dependent TSS influent sample result (concentration)
- The cumulative TSS loading since implementation of the BMP was calculated by summing the storm event TSS loading results from all storms occurring since the BMP was constructed.

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[23] In the event that an effluent sample was taken and an influent sample was **not** taken during the same storm event, the average of all TSS influent samples at the BMP was used to represent the influent loading of TSS during this specific event.

[24] Because the runoff coefficient is determined by modeling an average year scenario in SWMM, it will reflect both runoff producing storm events and events that do not produce runoff. As described, the runoff coefficient is used to calculate TSS loading for storm events where a sample was collected (i.e., a runoff producing event). Therefore, use of the runoff coefficient from the average annual year scenario may slightly underestimate TSS loading for the runoff producing events.

- The media area of each BMP was estimated from plans[25], and the cumulative TSS loading per unit area of media was calculated for each BMP.

For BMPs with pretreatment (ELV Treatment BMP and lower lot biofilter), the sample collected at the effluent of the sedimentation basin or the influent to the media was collected to represent actual TSS loading to the media. The cumulative TSS loading per media unit area to each BMP was compared to the estimated sediment load to the media until initial maintenance is needed (about 50 kg/m^2) (Pitt and Clark, 2010). The percentage of cumulative sediment loading until highly reduced treatment flows for each BMP is shown in Table 19.

The estimated number of years until media replacement is needed for each BMP, assuming an average reporting year for all subsequent years, is also shown in Table 19. This was estimated using a similar procedure outlined above based on an average rainfall year. The long-term average annual rainfall of 16.8 inches was used as the storm event depth and the average TSS concentration from all sampled events was used as the TSS influent sample result. The estimated TSS loading to each BMP (per media area) during an average rainfall year and the number of average years until media replacement is needed is shown in Table 19. It should be noted that varying annual rainfall, in addition to smaller or larger storm events, will result in varying TSS loading and this serves as a rough estimate of when replacement may be expected.

Additional analyses and standing water depth and flow bypass observations were made during the 2016/2017 and 2017/2018 reporting years related to BMP clogging and maintenance.

An analysis of flow monitoring data obtained in 2017 show that CM-9 and CM-1 begin with an estimated range of hydraulic conductivities that is close to or exceeds the "average flow rate before initial clogging" of 33 inches per hour from the Media Report (Pitt and Clark, 2010). Over time, these conductivities are substantially reduced and well below this value suggesting that maintenance may be needed to remove sediment deposited over the rainy season. Since the media mounds of the CMs are covered with backfill and gravel, it is possible that these surface materials are clogged with sediment and the actual media itself may not be the limiting factor. Therefore, this analysis shows that media may actually be clogged more than results in Table 19 indicate. Additionally, conclusions of this analysis result in recommendations to either replace the media or design and construct a new engineered treatment system to better handle larger fractions of the annual flows.

Some excessive bypass/overflow potentially associated with media clogging at CM-1 was observed during the 2016/2017 reporting year. Due to the estimated sediment loading compared to the approximate sediment load to the media until maintenance is needed, in addition to observations of ponding, CM-1 is planned to be reconstructed and the media replaced this year.

[25] For CM-1 and CM-9, it was assumed that the front half of the media mound received flow, especially during small storm events. However, ponding can occur above the media filter, especially during large storm events, and infiltrate over a larger surface area. Therefore, the media area estimate is conservative for CM-1 and CM-9.

Maintenance observations of the BMPs performed during the 2017/2018 reporting year concluded that the BMPs are overall well maintained and operating effectively. No ponding was observed, after 72 hours following storm events, at the detention bioswales, B-1, upper lot media filter, or CMs discussed herein[26]. Minor sediment deposition was observed in a few of the CMs, and it was removed as needed.

Table 19. Percent of Cumulative Sediment Loading until Clogging

BMP	Wet Seasons in Operation	Cumulative TSS load (kg)[1]	Cumulative TSS load per media area (kg/m^2)	% of "sediment load to the media until maintenance is needed"	TSS load per media area in average rainfall year (kg/m^2)	Number of average years until media replacement is expected
ELV Treatment BMP	5	45.9	2.3	4.7%	1.5	32
Lower Lot Biofilter	5	679	3.1	6.3%	1.5	31
B-1	7	199	11	21%	4.7	8
CM-1	9	398	67	136%	7.7	Media replacement recommended and is planned
CM-9	9	196	33	67%	6.7	2

[1] The BMP drainage areas were updated since completion of the 2015/16 annual report. As a result, cumulative TSS loads for some BMPs were calculated to be lower herein than in the 2015/16 annual report. Considering the updated drainage areas, the cumulative TSS loads (in kg) through the 2015/16 reporting year are as follows: ELV Treatment BMP: 44.7; B-1: 180; CM-1: 371; and CM-9: 186.

[26] Ponding was observed during one storm event (after 72 hours) at CM-4, CM-5, and CM-8. However, this ponding may have been temporary and due to localized clogging that can be removed during typical maintenance activities.

13 Discussion and Observations

The following general observations were made based on an evaluation of the aforementioned data summary charts and tables.

1. **Are the CMs/media filters reducing the concentrations of lead, dioxin, and TSS between the untreated influent and the treated effluent?**

   Yes. The CMs were originally installed as provisional (pending further evaluation) stormwater controls that could be installed in areas where existing culverts carried the stormwater below the roads. As a result, they handle a wide range of flows during a typical rain year and experience relatively short treatment residence times and the weirs overflow during average to large size storms. However, the performance monitoring results indicate that statistically significant pollutant concentration reductions are occurring for TSS, dioxins, and lead at the non-background CMs/media filters (i.e., CM-1, CM-9, B-1, and upper lot media filter) as a result of their sedimentation and media treatment unit processes. Median pollutant reductions in the non-background CMs ranged from 30-64%. Effluent concentrations of TSS, dioxins, and lead were also lower than corresponding influent samples for the CM background locations (i.e., CM-8 and CM-11), with statistically significant pollutant removal observed for all three COCs. Monitoring results show that the CMs are reducing the concentrations of TSS, dioxins, and lead between the influent and effluent at both the non-background and background CMs.

2. **Are the detention bioswales, Lower Lot Biofilter, and ELV Treatment BMPs reducing the concentrations of lead, dioxin, and TSS between the untreated influent and the treated effluent?**

   Generally. Cumulative performance monitoring data (as summarized by the statistical analysis tables, correlation charts, and probability plots) indicate that detention bioswales effluent concentrations were lower than corresponding influent samples for all COCs evaluated. Statistically significant pollutant removals were observed for all three COCs. Effluent concentrations were generally lower (compared to influent runoff) at the lower lot biofilter for dioxins, with statistically significant pollutant removal observed. In contrast, over half of the data pairs at the lower lot biofilter showed effluent results with larger lead concentrations than their paired influent samples, and the median percent change in lead concentration showed an increase of 30% from influent runoff to the biofilter outlet. However, the average percent change in concentrations showed a decrease (20%) in lead concentrations (see additional discussion on question #4 of this section). There were an equal number of data pairs with higher effluent results as data pairs with higher influent results for TSS from influent runoff to the lower lot biofilter outlet. However, there was a 25% median decrease in TSS concentration from the influent to effluent.

   Data from the ELV Treatment BMP showed that the majority of sample pairs had lower effluent concentrations for dioxins and lead than corresponding influent samples, with statistical significance shown for both dioxins and lead. However, the majority of data pairs had higher effluent TSS concentrations than influent concentrations (with statistical significance), with a median increase of 141% from the influent to effluent. Overall, median percent change of

concentrations from the influent to effluent shows reduced effluent concentrations of lead, dioxins, and TSS at the detention bioswales, lower lot biofilter, and ELV Treatment BMP, with the exception of TSS at the ELV Treatment BMP and lead and TSS at the lower lot biofilter. In addition, the number of results exceeding the Permit limits for both the influent and effluent samples show an improvement in water quality between the untreated influent and the treated effluent, as described in the subsequent observation below.

3. **Are the treatment controls aiding in compliance with NPDES permit limits at Outfall 009?**

   Yes. Collectively, the treatment controls are expected to support water quality improvement and NPDES compliance at Outfall 009, where lead and dioxin compliance challenges persist. All COC-BMP combinations had fewer effluent concentration results above Permit limits compared to the influent concentrations. Most COC-BMP combinations also showed lower average and maximum exceedance ratios (i.e., exceeding sample concentrations divided by the Permit limit) for effluent results compared to the influent results[27]. These observations show that the treatment controls are aiding to improve water quality. For example, average influent exceedance ratios for CM-9 were 4.3 and 9.1 for lead and dioxins, respectively, while the average effluent exceedance ratios were reduced to 2.9 and 3.2 for lead and dioxins, respectively, during this same time period. This not only demonstrates that the treatment controls are reducing NPDES COC concentrations in stormwater above Outfall 009, but that the treatment control drainage areas (which include paved roads) are pollutant generating source areas that, without treatment, would have worsened water quality at the downstream NPDES compliance location. This is further supported by the BMP Subarea Prioritization Analysis (Appendix C to the 2016/2017 Annual Report), which ranks Outfalls 008 and 009 with higher ranking values (i.e., lower rank and lower multi-constituent scores) than many of the potential source areas, based on their multi-pollutant rank, where a higher ranking value indicates better runoff quality. Outfalls 008 and 009 are both ranked 95, which is the highest possible ranking value in the 2017/2018 reporting year.

4. **Is there a reason why some recent monitoring data at the lower lot biofilter have shown net increases in pollutant concentrations across the system compared to prior years?**

   Yes. Data collected to date at the lower lot biofilter showed median net TSS and dioxins reductions of 25% and 100%, respectively, while lead concentrations showed a net increase of 30% for the 24 monitoring events available since completion of the biofilter. As previously noted, dioxin reductions across the system have been consistent, as 23 out of 24 sample pairs decreased in dioxin concentrations from the influent runoff to the biofilter outlet. However, 12 of the 24 paired samples had higher influent concentrations than their paired effluent concentrations for TSS, and 10 of the 24 samples had larger influent concentrations for lead. It should first be noted that there are no applicable permit limits for TSS and only one effluent sample has exceeded permit limits for lead (sample collected on 12/2/2014). However, this pattern of net increases in lead concentrations (and in part, TSS concentrations) across the

[27] The only exceptions include the average exceedance ratio for lead at B-1 and dioxins for CM-1 (both average and maximum exceedance ratio).

system can likely be attributed to the significantly lower influent concentrations to the lower lot biofilter in recent years. The B1436 detention bioswales, which were constructed in December 2014, slow and treat a portion of the drainage area which would have previously flowed to the lower lot biofilter. Some treatment is expected to be achieved by the detention bioswales, but the primary purpose is to delay the influent runoff to the lower lot biofilter and reduce the portion of the total flow that bypasses the BMP during large storm events. As previously noted, the average volume pumped to the biofilter has increased since the detention bioswales were constructed. Similarly, the estimated percent of total runoff volume (from both the 24-inch drain and the lower lot drainage areas) has increased since the detention bioswales were constructed. The average influent TSS concentration to the Lower Lot biofilter for samples collected before or during December 2014 was 109 mg/L, and the average for samples collected after December 2014 was 19 mg/L. This trend of significantly lower TSS influent concentrations following construction of the detention bioswales was also observed for lead, where the average influent lead concentration before and after construction of the detention bioswales was 8.0 µg/L and 2.0 µg/L, respectively. The average effluent concentrations of both TSS and lead were lower in post-detention bioswale samples when compared pre-detention bioswale samples (i.e., 41 mg/L vs. 21 mg/L for TSS and 4.0 µg/L vs. 2.2 µg/L for lead). The median percent increase in lead reductions across the system and the number of sample pairs with higher effluent concentrations than their paired influent concentrations for TSS and lead can be explained by the significant reduction in average influent concentrations to the Lower Lot biofilter since construction of the detention bioswales.

5. **Is the lower lot biofilter preventing stormwater runoff from discharging to the Northern Drainage?**

   Yes. Monitoring data at the lower lot biofilter were also examined to determine its ability to prevent smaller storms from discharging to the Northern Drainage. The lower lot biofilter successfully prevented almost half of all storms less than or equal to one inch from discharging to the Northern Drainage.

6. **Has an adequate number of samples been collected such that sampling can be potentially discontinued at some locations?**

   Yes. Following the 2016/2017 reporting year, the Expert Panel evaluated the need for continued sampling at the BMPs. It was decided that in the context of reduced site activities (e.g., construction, demolition, etc.) anticipated for the 2017/2018 reporting year in the Outfall 009 watershed, samples would only be collected twice per year at the following BMPs: upper lot media filter, southern detention bioswale, lower lot biofilter, CM-1 (influent-west and effluent), and the ELV Treatment BMP. Two background locations are planned to continue to be sampled during every storm, in order to collect more background data. The Panel has committed to revisiting the monitoring frequency when Outfall 009 watershed site activities increase.

7. **Is maintenance required for any of the BMPs?**

   Yes. The cumulative TSS loadings to the ELV Treatment BMP, lower lot biofilter, B-1 media filter, CM-1, and CM-9 were investigated and compared to the estimated value of cumulative sediment loading to the media before maintenance is needed (Pitt and Clark, 2010). The ELV

Treatment BMP and lower lot biofilter were only 4.7% and 6.3%, respectively, towards requiring maintenance, and it was estimated that maintenance would not be needed for approximately another 30 years, assuming average rainfall years. However, calculations showed that CM-1 has reached the cumulative sediment loading where maintenance was needed (136%) based on lab measurements of cumulative solids loading until media clogging. Some bypass/overflow potentially associated with media clogging at CM-1 was also observed during the 2016/2017 reporting year. Due to the estimated sediment loading and ponding observations, CM-1 is planned to be reconstructed and the media replaced this year. Cumulative solids loadings at B-1 and CM-9 were estimated to be 21% and 67% respectively, towards lab-based thresholds of media clogging, and initial maintenance is expected to be needed in approximately eight and two years, respectively, assuming average rainfall years. No ponding was observed, after 72 hours following storm events, during observation performed during 2017/2018 at the detention bioswales, B-1, upper lot media filter, or CMs discussed herein. The Expert Panel recommends that observations of clogging, overflow, and underdrain flows should continue to be taken at BMPs (and stage recorders may also be used) during storms so that this consideration is tracked and timely maintenance can be performed when needed.

14 References

Burton, G. A. and Pitt, R.E., 2001. *Stormwater Effects Handbook: A Toolbox for Watershed Managers, Scientists, and Engineers*. Lewis Publishers. September.

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Santa Susana Surface Water Expert Panel and Geosyntec Consultants, 2015. *Site-Wide Stormwater Work Plan and 2014/15 Annual Report* ("2015 Work Plan").

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Burton, G. A. and Pitt, R.E., 2001. *Stormwater Effects Handbook: A Toolbox for Watershed Managers, Scientists, and Engineers*. Lewis Publishers. September.

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Appendix E: Comparison of Iron Concentration Observations at SSFL and Potential Iron Sources

R. Pitt
August 3, 2018

Comparison of Iron Concentration Observations at SSFL and Potential Iron Sources

Contents

Summary

This memo describes analyses that were conducted on SSFL stormwater data to compare iron concentrations from different locations and associations of iron with other constituents. These analyses present a weight-of-evidence that the outfall iron observations are most likely associated with natural background iron sources associated with soil erosion. The appendix describes information summarized from prior research on anthropogenic metal corrosion sources of iron in stormwater.

The SSFL stormwater quality database contains about 40,000 entries (one entry for each constituent for each event for each location). This was reduced to about 12,000 entries for just those samples that contained iron data. Part of the data analyses investigated relationships of iron to other constituents,

focusing on metals and primary constituents. The data set was then divided into four subsets for separate analyses: outfall samples, background samples, influent samples to site stormwater controls, and other samples obtained at locations that were being evaluated for potential stormwater controls. There were no iron data for effluent samples from existing stormwater controls.

This long single row of data was manually transposed into columns for each constituent for each event in each category. Overall, about 250 samples collected at SSFL between 2008 and 2018 included iron analyses. Column statistics were then calculated. The following tables summarize these column statistics for the iron data for these four data categories.

	Outfall Iron	Background Iron	Influent Iron	Siting Iron	Outfall Iron, filtered	Background Iron, filtered	Influent Iron, filtered	Siting Iron, filtered
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
count	29	17	31	180	29	17	31	180
min	0.01	0.05	0.09	0.02	0.01	0.02	0.03	0.01
max	18.0	39.0	64.0	77.1	1.1	0.4	0.5	4.1
average	3.3	3.3	5.9	4.0	0.2	0.2	0.2	0.2
median	1.1	0.7	2.1	1.2	0.1	0.1	0.1	0.1
stdev	4.8	9.3	11.7	8.6	0.3	0.1	0.1	0.4
COV	1.46	2.86	1.98	2.14	1.31	0.87	0.73	2.25
# exceeding benchmark	23	11	30	155	5	3	8	18
% exceeding benchmark	79.3	64.7	96.8	86.1	17.2	17.6	25.8	10.0

	Outfall Fe % filt	Background Fe % filt	Influent Iron, % filtered	Siting Fe % filt	Outfall Fe part strength	Background Fe part strength	Influent Fe part strength	Siting Fe part strength
					g/kg*	g/kg*	g/kg*	g/kg*
count	27	17	31	180	27	17	31	179
min	0.5	1.1	0.1	0.3	11.2	5.5	1.7	-4.0
max	51.0	64.0	81.0	122.2	439.0	158.8	304.4	670.0
average	12.3	26.4	11.6	13.5	83.6	52.6	70.6	58.5
median	7.3	29.0	5.9	7.1	59.5	29.9	58.3	39.0
stdev	11.2	19.8	17.2	17.0	83.8	46.7	58.2	83.5
COV	0.91	0.75	1.49	1.25	1.00	0.89	0.82	1.43

* g/kg particulate strength is equivalent to mg/g values shown for soils

The consistent particulate strength similarities (no statistically significant differences for the number of samples available) for both the stormwater groups and for the different outfalls indicate similar sources of iron at SSFL. The particulate strength values are also in the general range expected for natural soils

(although those values vary greatly). Also, the iron runoff concentrations are all less than the appendix values noted for washoff for steel materials. The water chemistry modeling and laboratory tests for iron also indicate stable iron compounds, with small amounts of iron in ionic forms for typical environmental conditions. The observed filterable iron concentration observations at SSFL also indicate small amounts of iron in filterable forms. Iron losses associated with material exposures are likely associated with mostly filterable forms, especially for nearby iron sources. Iron from distant material exposure sources, however, would undergo changes as it is carried to the outfalls during rains and would become more stable with greater particulate associations. High iron losses at distant locations would also be diluted before the monitoring locations. Samples were obtained at many locations in the watershed areas in the different sample groups, with some much closer to candidate iron exposure locations. However, no iron concentration differences were noted for the different sample groups, except that may be associated with soil erosion.

Pearson correlation analyses indicated that iron is strongly associated with manganese, copper, and lead for all four sample groups, while all of the others listed here were strongly associated with iron in three of the four sample categories. These correlations therefore also indicate similar likely sources of these metals in SSFL stormwater for all of the sample groups.

Cluster analyses indicated that all of the stormwater constituent dendograms are quite similar with total forms of the metals in a large group that are closely to moderately closely grouped together, while filtered constituents form separate (but looser) groups on the chart. These similarities also support common sources of stormwater iron at SSFL.

Cluster analyses of particulate strengths show that iron, aluminum, and manganese are closely related for all four groups. Zinc would be closely related to iron and in elevated concentrations if near galvanized metal sources. However, zinc is poorly correlated with iron or the other metals closely correlated with iron, further indicating natural soil sources of the iron in the SSFL stormwater. These data groups represent locations throughout the drainage areas, potentially with some near metal structures on the site, but the correlation patterns are reasonably consistent and do not show apparent differences by location.

The similar relative loadings of the principal components for stormwater samples and calculated particulate strength values also imply similar sources for the monitored constituents, which are likely natural soils and not due to material exposure.

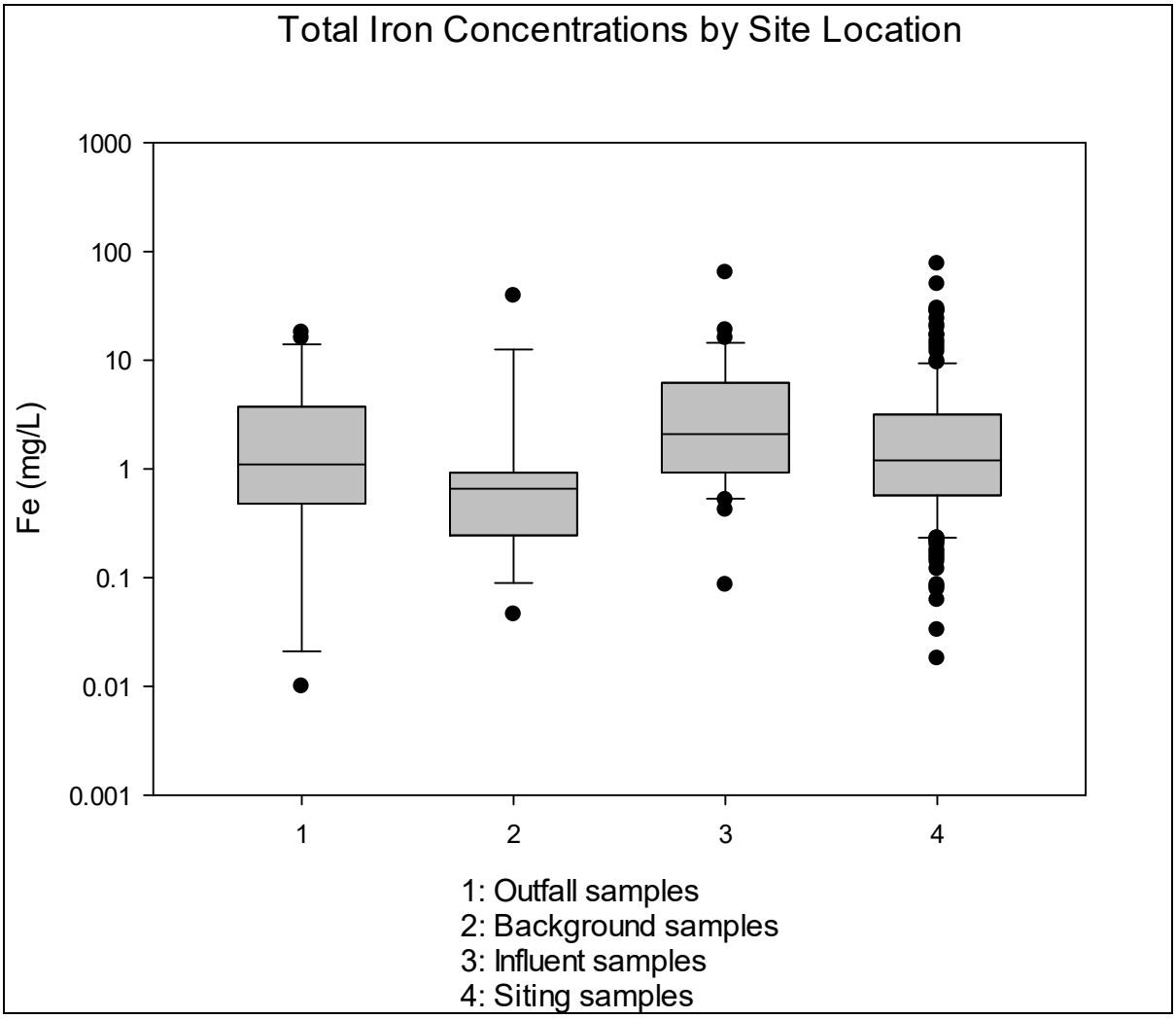
Recommendations

In the future, it is recommended that pH and total and filtered Fe, total and filtered Mn, total and filtered Zn, and total and filtered Al be added to all of the outfall sample analyses. This will help confirm if the Fe is from a nearby metallic iron source (iron more abundant in filtered forms if from material exposure compared to more particulate bound iron from background soil sources). The pH will help identify the form of the filtered Fe phase. Also, Mn and Al are usually closely associated with Fe for background/natural sources, while it may not be closely associated with Fe if it is a local metallic corrosion source. Prior studies have shown that Zn and Fe are highly associated and in high concentrations if from galvanized metal sources. Background and siting samples should also be

periodically analyzed for these additional analytes to confirm continued consistent concentrations throughout the site.

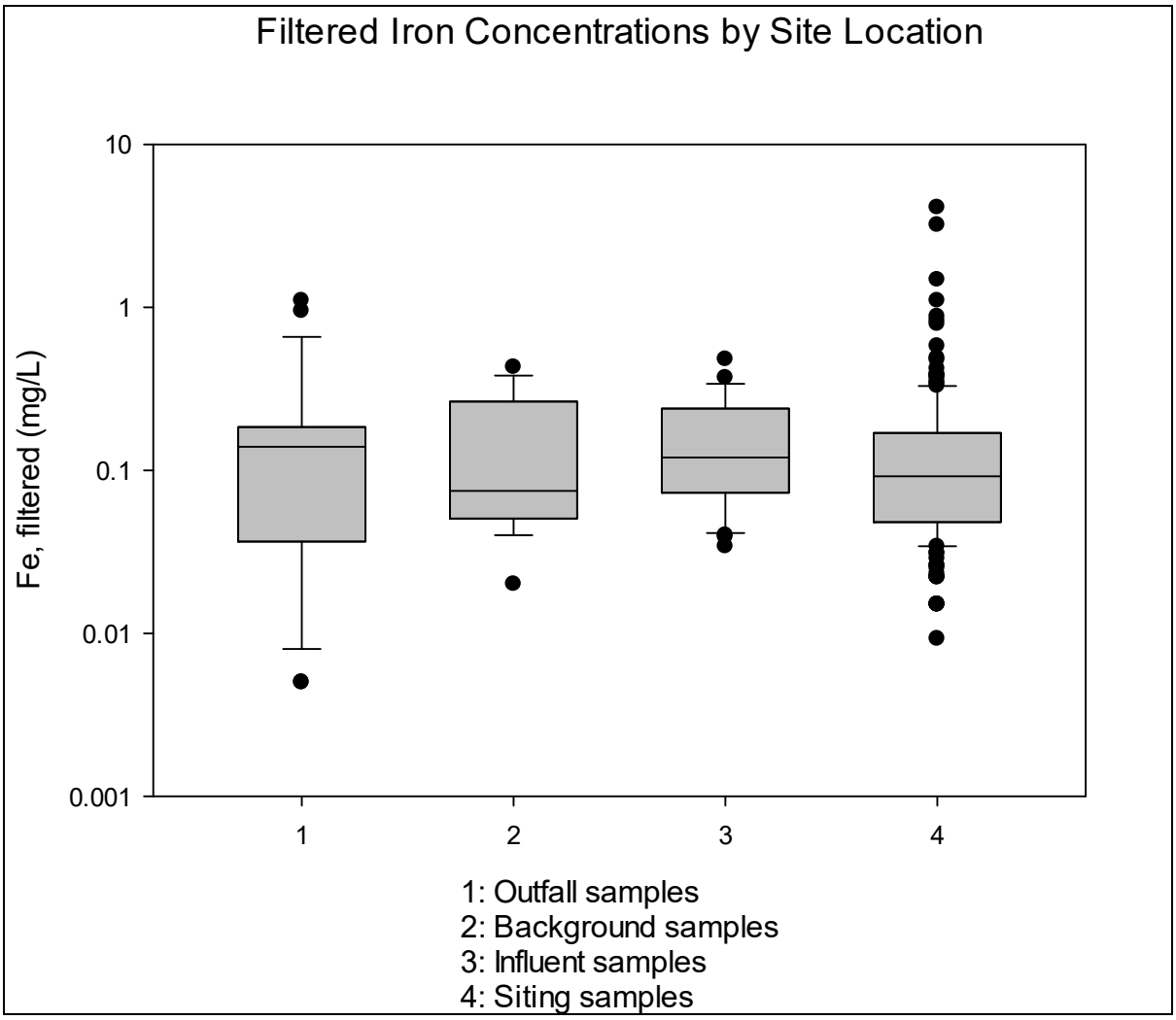
Iron Concentration and Particle Strength Observations

Total Iron Concentration Comparisons



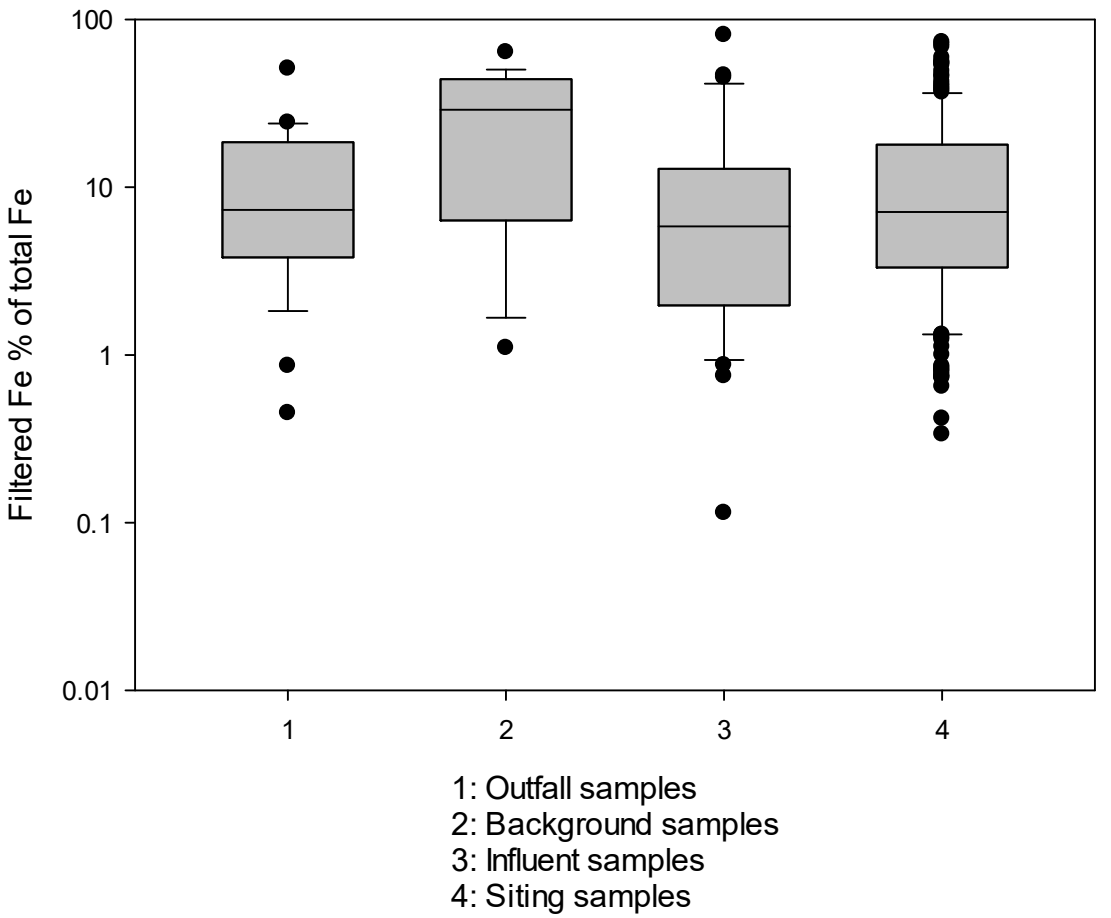
The non-parametric Kruskal-Wallis one way analysis of variance on ranks test indicated that at least one group of total iron concentrations was significantly different from another group. The box and whisker plot and multiple pairwise tests (Dunn's method) indicates that the background site total iron concentrations are significantly less than influent samples ($p = 0.008$). These differences are likely associated with soil erosion contributions to total iron stormwater concentrations, as the background samples generally had much lower TSS concentrations than the other sample groups. The multiple pairwise tests did not show that the outfall and background total iron concentrations were significantly different ($p = 0.62$).

Filtered Iron Concentration Comparisons



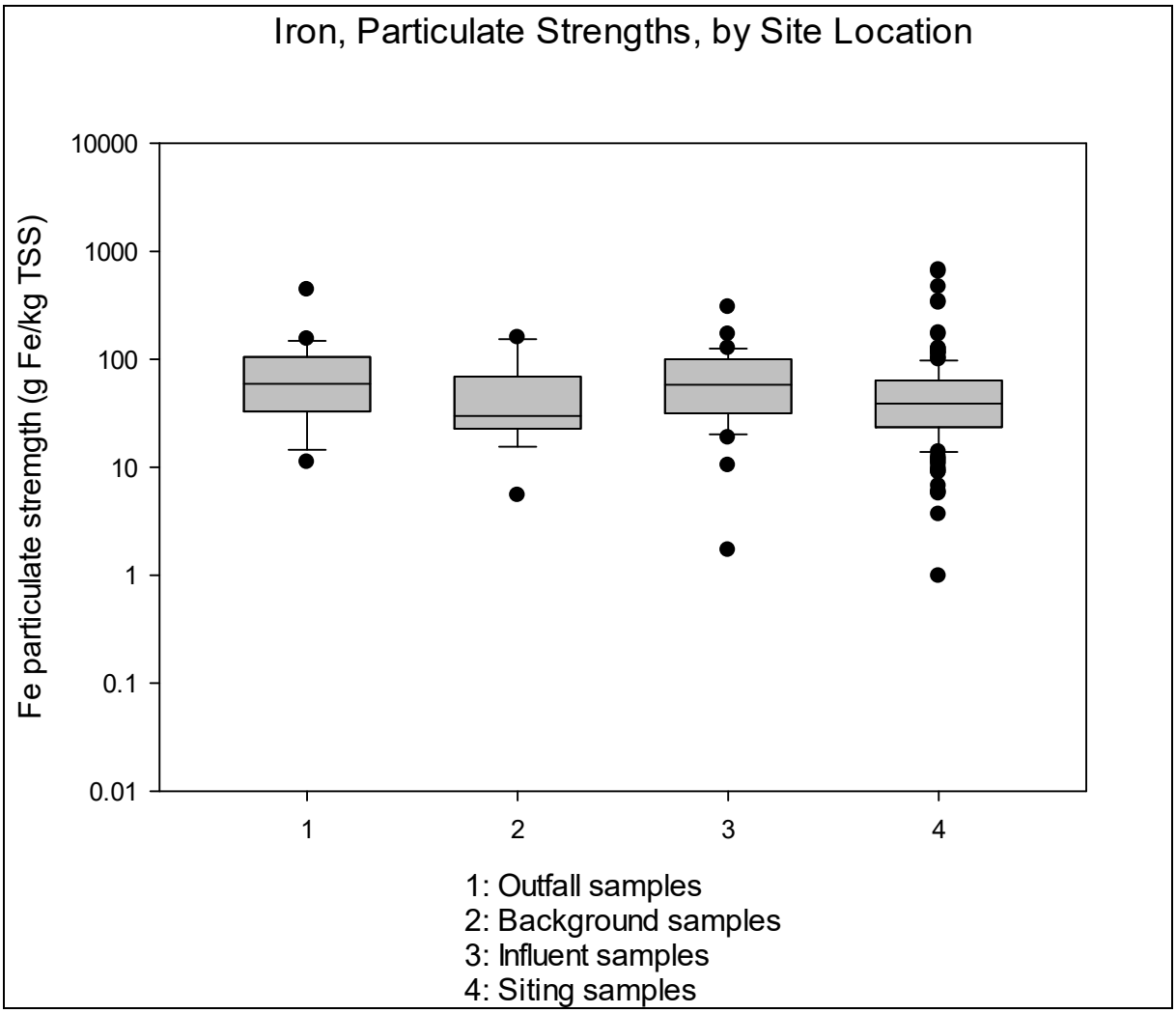
The non-parametric Kruskal-Wallis one way analysis of variance on ranks test did not indicate any significant differences between any of the groups for filtered iron concentrations ($p = 0.40$), for the numbers of observations available.

Filtered Iron as a Percentage of Total Iron Concentrations



The non-parametric Kruskal-Wallis one way analysis of variance on ranks test indicated that at least one group of filtered iron percentages was significantly different from another group. The box and whisker plots and multiple pairwise tests (Dunn's method) indicates that the background site filtered iron percentages are significantly less than influent samples ($p = 0.018$) and site samples ($p = 0.043$). The multiple pairwise tests did not show that the outfall and background filtered iron percentages were significantly different ($p = 0.35$).

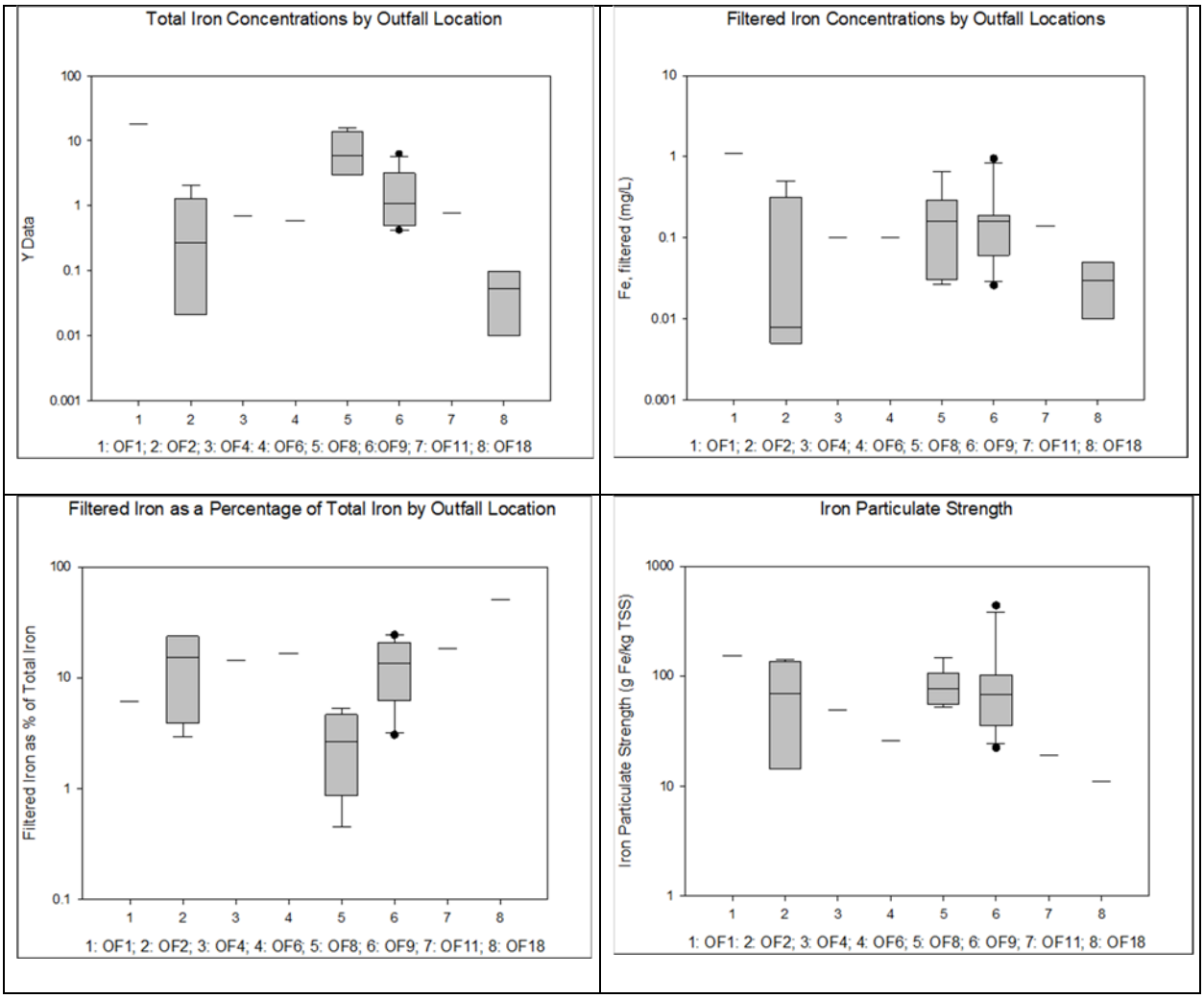
Iron Particulate Strength Comparisons



The non-parametric Kruskal-Wallis one way analysis of variance on ranks test indicated that at least one group of iron particulate strength values was significantly different from another group. However, the box and whisker plot and multiple pairwise tests (Dunn's method) did not indicate which group(s) may be different (smallest p = 0.08 for outfall vs. site samples). The multiple pairwise tests also did not show that the outfall and background iron particulate solids values were significantly different (p = 0.39).

As noted in the appendix, normal soils have a minimum iron content of about 7 and maximum values of up to 550 g/kg, with typical average values of about 38 g/kg (Lindsay 1979). The calculated particulate strengths in the SSFL runoff ranged from about 5 to 670 g/kg, with medians of 30 to 60 g/kg. During washoff tests, the iron concentration associated with washing off a steel sample was about 6 mg/L. Painted metal and other metals had much lower average washoff iron concentrations of about 0.25 to 0.6 mg/L. The background samples at SSFL had median total iron concentrations of about 0.7 mg/L.

Additional analyses compared the iron concentrations for each of the outfalls having iron data. These four basic box and whisker plots are shown below.



Only four of the outfalls had more than one iron analyses: outfalls 1, 4, 6, and 11 (1 event each with all exceeding the 0.3 mg/L benchmark), outfall 2 (5 events with 2 exceeding the 0.3 mg/L benchmark), outfall 8 (7 events with all exceeding the 0.3 mg/L benchmark), outfall 9 (11 events with all exceeding the 0.3 mg/L benchmark)), and outfall 18 (2 events with no benchmark exceedances). Kruskal-Wallis analyses indicated at least one group was different for total iron ($p = 0.008$), but not for the other data sets. The only significantly identified difference was noted when contrasting outfall 2 and outfall 8, as obvious on the box and whisker plot. The filtered iron percentage plots show an apparent difference between these two outfalls, but was not significantly different at the $p = 0.05$ level. It's important to note that the iron particulate strength values are all similar with no statistically significant differences notes.

The consistent particulate strength similarities (no statistically significant differences for the number of samples available) for both the stormwater groups and for the different outfalls indicate similar sources of iron at SSFL. The particulate strength values are also in the general range expected for natural soils (although those values vary greatly). Also, the iron runoff concentrations are all less than the appendix values noted for washoff for steel materials. The water chemistry modeling and laboratory tests for iron also indicate stable iron compounds, with small amounts of iron in ionic forms for typical environmental

conditions. The observed filterable iron concentration observations at SSFL also indicate small amounts of iron in filterable forms. Iron losses associated with material exposures are likely associated with mostly filterable forms, especially for nearby iron sources. Iron from distant material exposure sources, however, would undergo changes as it is carried to the outfalls during rains and would become more stable with greater particulate associations. High iron losses at distant locations would also be diluted before the monitoring locations. Samples were obtained at many locations in the watershed areas in the different sample groups, with some much closer to candidate iron exposure locations. However, no iron concentration differences were noted for the different sample groups, except that may be associated with soil erosion.

Correlations of SSFL Iron Concentrations with other SSFL Metal Concentrations

The next step in these analyses was to consider correlations between different SSFL constituents for these groups. It is hypothesized that similar relationships support a common source. These analyses used Pearson correlation matrices, cluster analyses, and principal component analyses. Pearson correlations reveal simple correlations between any pair of constituents, while the multivariate tools consider combinations of relationships.

Pearson Correlation Analyses

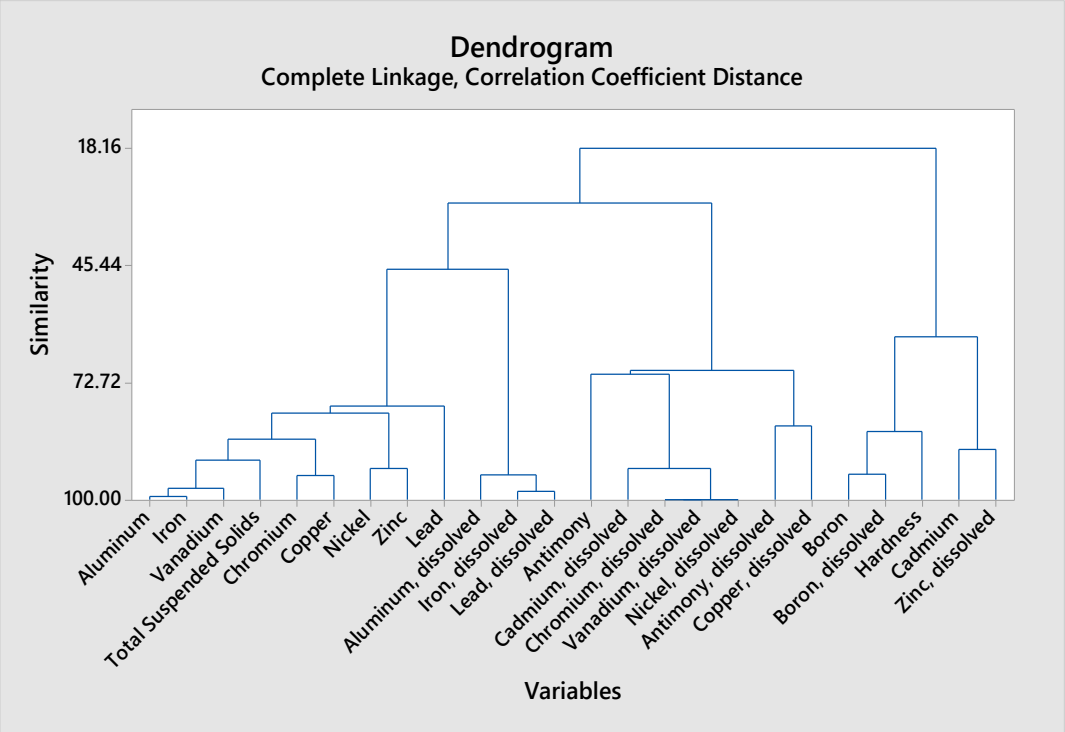
Pearson correlations were calculated for total iron concentrations with other SSFL heavy metal concentrations (total and filtered concentrations), along with TSS and turbidity. The following table shows those correlations that were found to be significant with total iron for the four sample groups. Statistical significance is highly dependent on the number of sample pairs available. The siting location sample group has about 180 samples and had significant correlations with all of the constituents shown on this summary table. The other groups had 17 to 29 sample pairs and only the strongest correlations were noted as being statistically significant. Many other analytes were available from the SSFL samples, but there were many non-detectable results for many of the rarer constituents. Most of the constituents shown on this table also had some non-detectable results. In those cases, the detection limits were used. Iron is strongly associated with manganese, copper, and lead for all four sample groups, while all of the others listed here were strongly associated with iron in three of the four sample categories. These correlations therefore also indicate similar likely sources of these metals in SSFL stormwater for all of the sample groups.

Significant Pearson Correlations of Fe with other Heavy Metals

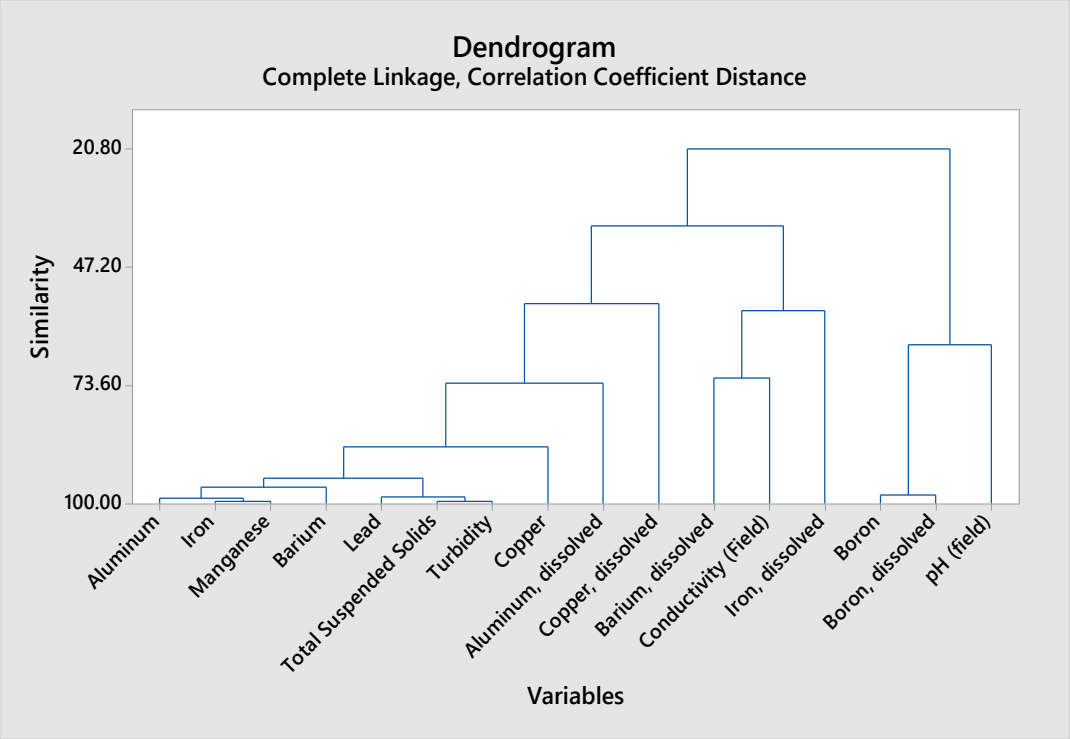
	Al	Al filt	Ba	Ba filt	Cr	Cr filt	Cu	Fe filt	Pb	Pb filt	Mn	Mn filt	Ni	NI filt	V	V filt	Zn	TSS	turb
Pearson correlation coefficient	0.994	0.468			0.987		0.887	0.668	0.818		0.592		0.809		0.992		0.758	0.866	
Significance	1.60E-18	0.0375			1.52E-21		3.13E-10	7.42E-05	5.85E-08		0.00759		3.24E-07		8.40E-24		3.03E-06	2.75E-09	
number of outfall data pairs	20	20			27		28	29	29		19		27		27		28	28	
Pearson correlation coefficient			0.998				0.971	0.579	0.998		0.999							0.986	0.54
Significance			2.63E-20				9.20E-11	0.0149	1.44E-19		4.94E-22							5.53E-13	0.0251
number of background data pairs			17				17	17	17		17							17	17
Pearson correlation coefficient	0.988		0.879		0.995		0.948		0.846		0.994		0.979		0.992		0.875		0.459
Significance	3.16E-23		3.5E-10		1.99E-28		6.38E-15		7.3E-09		4.05E-27		3.74E-20		5.38E-26		5.46E-10		0.0123
number of influent data pairs	29		29		29		29		29		29		29		29		29		29
Pearson correlation coefficient	0.956	0.419	0.945	0.222	0.98	0.202	0.87	0.499	0.856	0.196	0.974	0.3	0.981	0.154	0.991	0.262	0.557	0.803	0.86
Significance	2.94E-97	4.26E-09	8.59E-89	0.00272	1.54E-127	0.00648	1.41E-54	8.54E-13	1.20E-52	0.00868	4.86E-118	4.16E-05	1.50E-128	0.0383	5.21E-157	0.000361	3.62E-16	7.45E-42	7.02E-54
number of siting data pairs	181	181	181	181	181	181	174	181	179	179	181	181	181	181	181	181	181	180	180

Multivariate Analyses (Cluster and Principal Component Analyses)

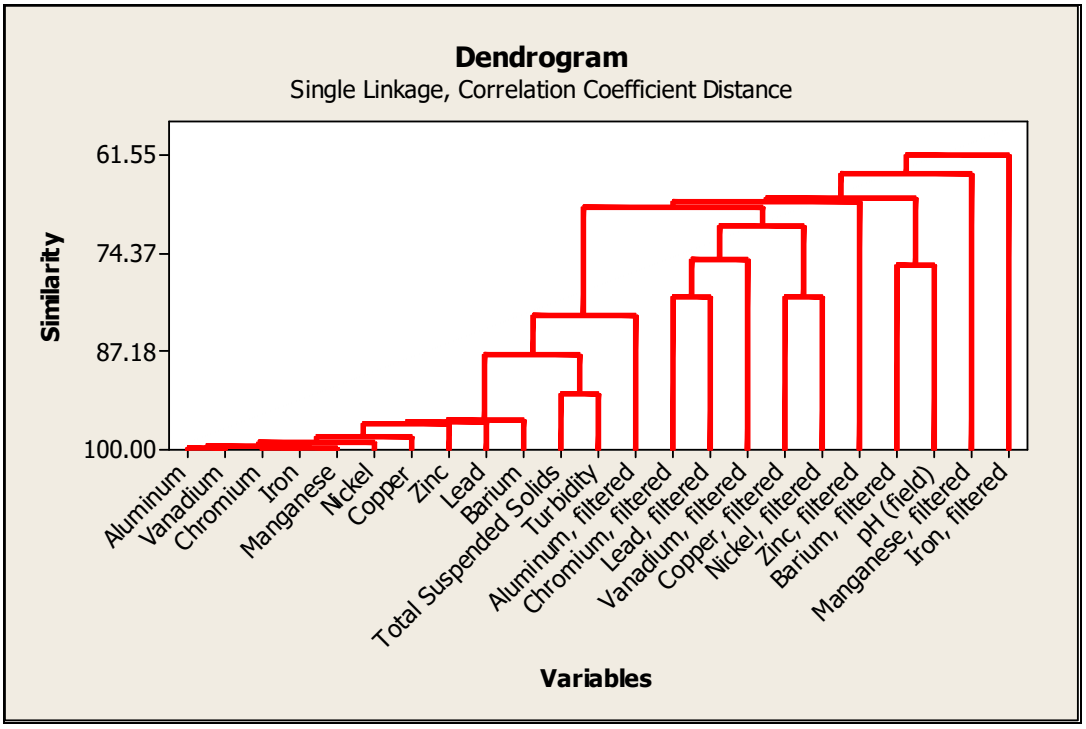
Cluster analyses can be displayed as dendograms that reflect various combinations of constituents that are similar in being able to explain variability. Constituents joined by short branches are closely related, as iron and aluminum are in the first dendogram below (outfall constituents). Filtered iron and filtered lead are also shown to be very close. Basically, all of the stormwater constituent dendograms are quite similar with total forms of the metals in a large group that are closely to moderately closely grouped together (on the left portion of the chart), while filtered constituents form separate (but looser) groups on the right side of the chart. It is interesting that few total and filtered forms are closely connected.



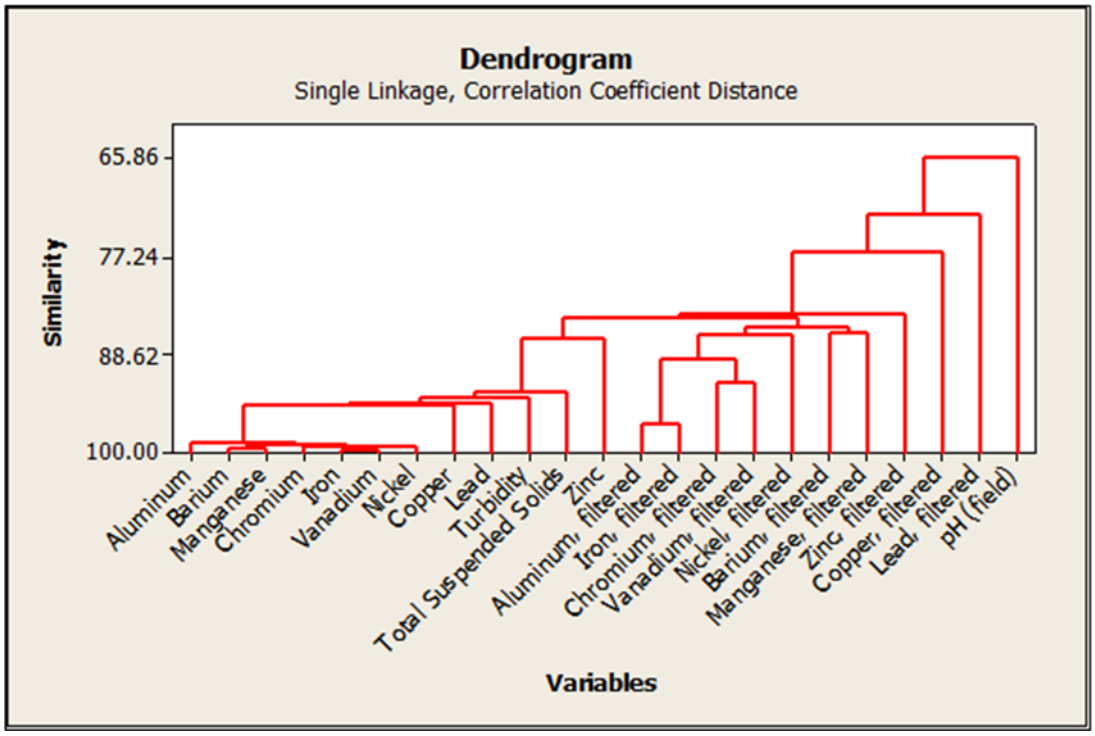
Outfall Cluster Analyses for SSFL Stormwater



Background Cluster Analyses for SSFL Stormwater

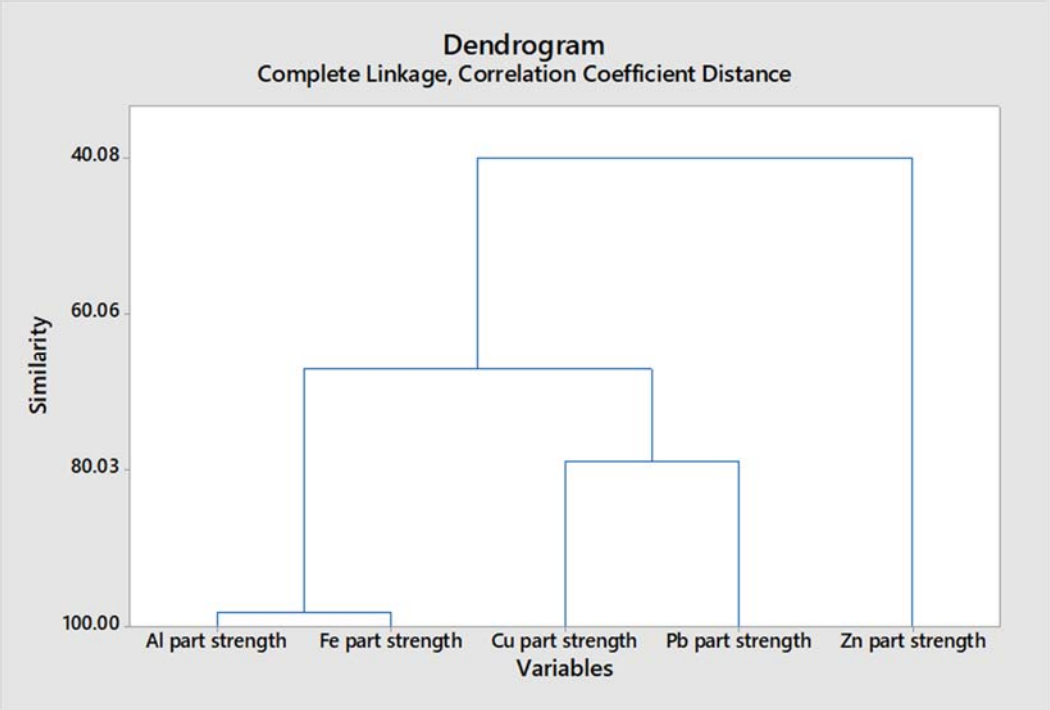


Influent Cluster Analyses for SSFL Stormwater

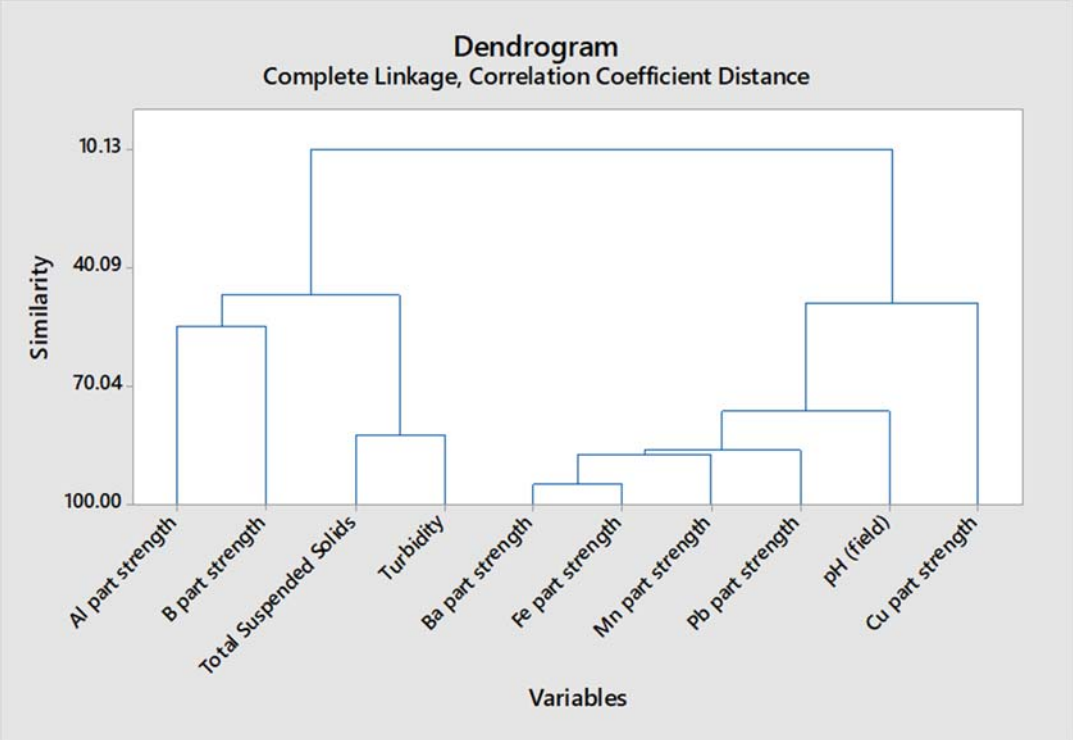


Siting Cluster Analyses for SSFL Stormwater

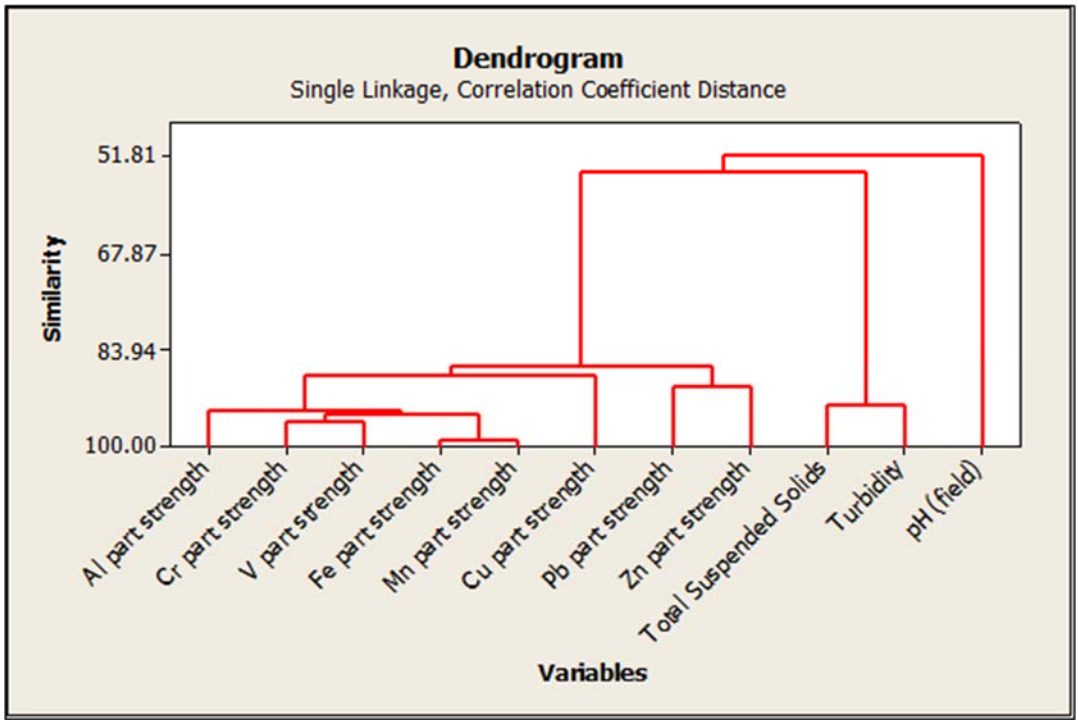
The following sets of dendograms are for particulate strengths for the four sample groups. There are fewer constituents available for these analyses due to missing and non-detectable filtered concentration data for some of the groups. In general, iron, aluminum, and manganese are closely related for all four groups. Zinc would be closely related to iron and in elevated concentrations if near galvanized metal sources. However, zinc is poorly correlated with iron or the other metals closely correlated with iron, further indicating natural soil sources of the iron in the SSFL stormwater. These data groups represent locations throughout the drainage areas, potentially with some near metal structures on the site, but the correlation patterns are reasonably consistent and do not show apparent differences by location.



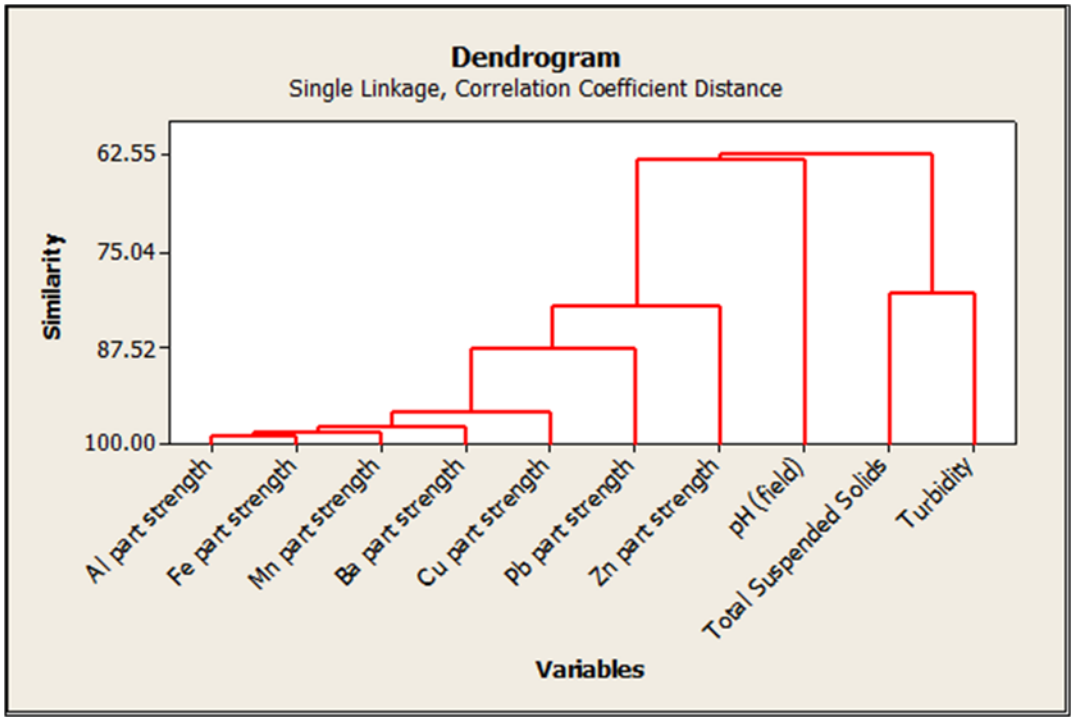
Outfall Cluster Analyses for Particulate Strengths



Background Cluster Analyses for Particulate Strengths



Influent Cluster Analyses for Particulate Strengths

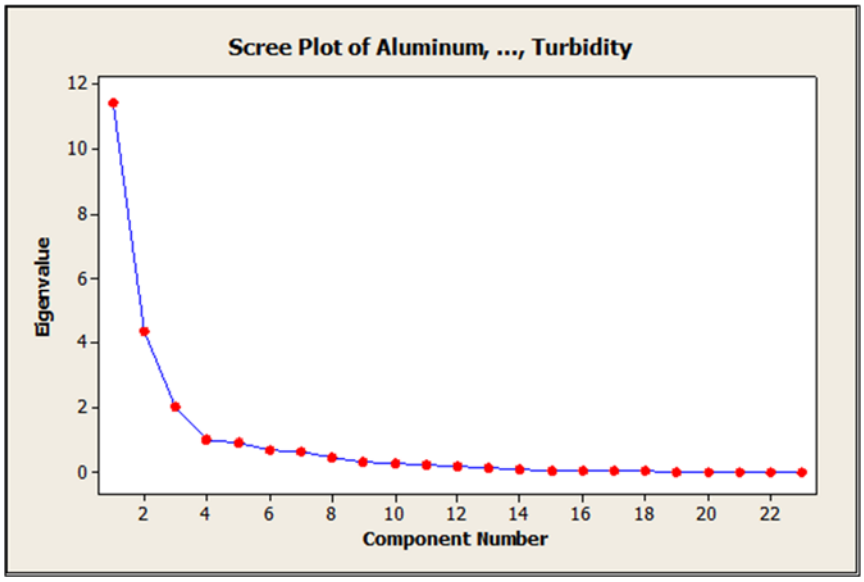


Siting Cluster Analyses for Particulate Strengths

Principal Component Analyses (PCA) also group variables together that are closely correlated in explaining overall data variability. Eigenvectors are used to identify the groupings of the constituents into principal components. The outfall concentration PCA tests identified four principal components that explained about 85% of the variation. The first principal component included major loadings for iron, aluminum, and nickel. The second principal component was more spread out for most constituents, while the third principal component included major loadings for filtered aluminum, filtered iron, and total and filtered lead. The outfall particulate strength PCA tests indicated that the first two principal components explained about 83% of the total variability. The first component had major loadings for iron and copper, along with aluminum and lead. The second principal component for outfall particulate strengths had zinc as with the major loading.

The background SSFL stormwater PCA tests had most of the metals in the first principal component (Al, Ba, Fr, Pb, Mn, along with TSS and turbidity). The background particulate strength first principal component had large loadings of iron, lead, and barium. The influent sample group PCA tests for stormwater and particulate strengths also had most of the heavy metals in the first principal component, with TSS and turbidity in the second principal component.

A more through PCA evaluation was possible with the siting sample groups due to the large number of samples available in this group. The scree plot below shows the relative importance of the different principal components. The first four principal components represent about 82% of the total variability. Later components represent smaller portions of the total variability.



Scree Plot for SSFL siting sample stormwater

The following table shows the loadings for the first four principal components for the siting stormwater samples, indicating that total metals (and TSS and turbidity) are all strongly associated with the first principal component, and filtered samples with the second principal component. The other principal components are comprised of mixtures of most of the constituents.

Component Loadings for First Four Principal Components for Siting Sample Stormwater

	PC 1	PC 2	PC 3	PC 4
Al	0.951	-0.241	0.044	0.00457
Al filt	0.598	0.604	0.23	-0.0809
Ba	0.944	-0.208	0.0455	0.098
Ba filt	0.347	0.623	0.188	0.353
Cr	0.942	-0.246	0.0623	-0.0285
Cr filt	0.379	0.708	0.168	-0.314
Cu	0.886	-0.132	-0.204	0.101
Cu filt	0.156	0.498	-0.638	0.0199
Fe	0.954	-0.255	0.0715	0.00765
Fe filt	0.666	0.552	0.218	-0.062
Pb	0.83	-0.409	-0.103	-0.0196
Pb filt	0.327	0.319	-0.309	0.000258
Mn	0.964	-0.214	0.0478	0.0488
Mn filt	0.47	0.667	0.0415	0.0785
Ni	0.962	-0.237	0.0232	-0.00469
NI filt	0.314	0.716	-0.132	-0.129
V	0.961	-0.181	0.0728	0.00617
V filt	0.486	0.781	0.108	-0.158
Zn	0.652	-0.0653	-0.657	0.0509
Zn filt	0.059	0.225	-0.863	0.129
pH	0.0588	0.273	0.242	0.829
TSS	0.762	-0.456	0.00111	-0.0461
turb	0.882	0.016	0.157	-0.102

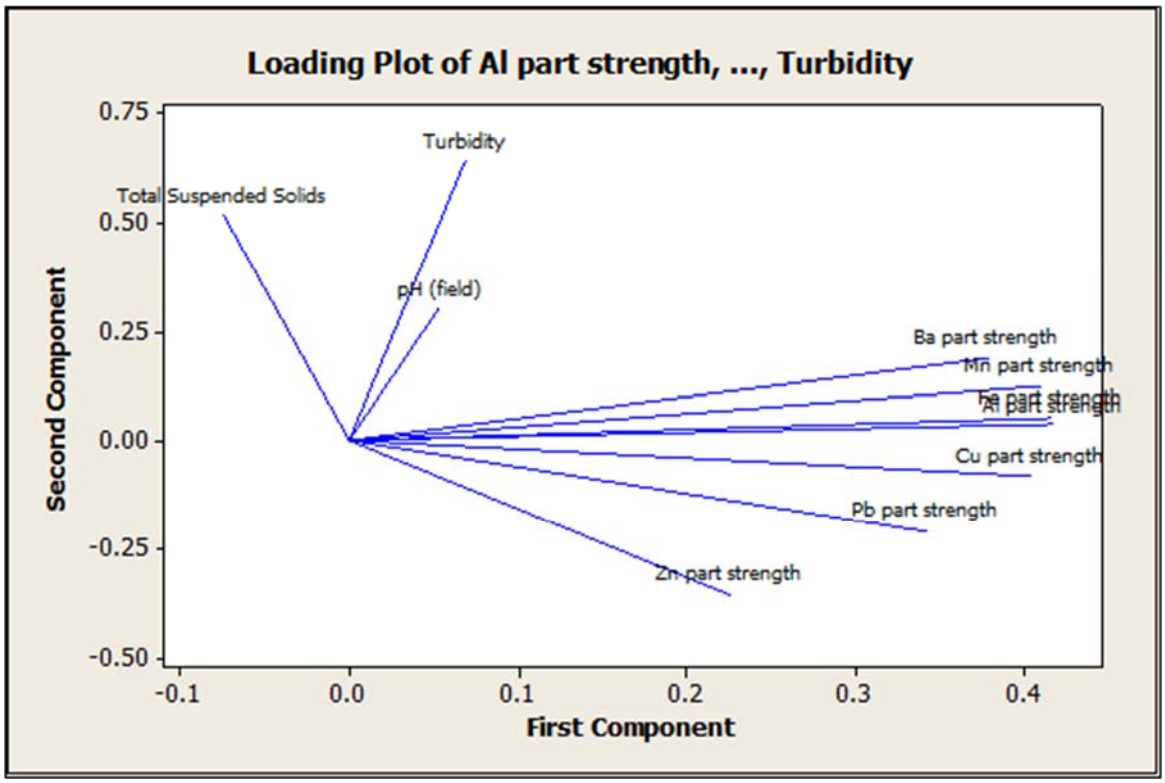
Similar relations are also shown for the particulate strength PCA tests for the siting locations, as shown below in the loading table for the first three principal components (86% of total variability).

Component Loadings for Siting Location Particulate Strengths

	PC 1	PC 2	PC 3
Al part strgth	0.98	0.0485	0.00493
Ba part strgth	0.889	0.254	-0.262
Cu part strgth	0.949	-0.106	0.107
Fe part strgth	0.977	0.0713	-0.025
Pb part strgth	0.805	-0.276	0.139
Mn part strgth	0.962	0.17	-0.103
Zn part strgth	0.53	-0.471	0.529

pH	0.125	0.404	-0.7
TSS	-0.176	0.689	0.591
Turb	0.161	0.854	0.305

A plot of loadings for the first and second principal components can illustrate the lengths and directions of the individual eigenvalues. This plot illustrates the similarities for the metals particulate strengths, and the more distant locations for TSS, turbidity, and pH values.



The similar relative loadings of the principal components for stormwater samples and calculated particulate strength values also imply similar sources for the monitored constituents.

Appendix: Contributions of Heavy Metals from Material Exposures to Stormwater

This discussion presents information concerning iron losses associated with anthropogenic material exposure. This information can be compared to observed SSFL iron concentrations and background observations at sites with minimal expected material exposure. As noted here, iron losses associated with material exposure are quite different than expected background conditions associated with natural soil iron losses for stormwater (mainly in associated other heavy metals, concentrations, and the filterable fraction of the observed iron). Iron is usually closely associated with manganese and aluminum in the natural environment due to their large abundance in most soils. In addition, iron from material exposures are more abundant in filterable forms than observed in natural conditions (especially in close proximity to corrosion sources). Zinc coating are frequently applied to steel in order to prevent steel from corrosion. Therefore, iron and zinc may be closely correlated if the iron is from a galvanized steel source. Iron and aluminum are not highly correlated for any of the major sources, as they are for natural soils.

This review examines the contributions of iron from different materials exposed to rain or runoff. Environmental iron chemistry is briefly discussed showing the effects of environmental pH and Eh conditions on iron speciation and associated compounds. Following is a literature review of monitored iron levels mainly from different types of roofing and drainage materials conducted by Ogburn as part of her Ph.D. dissertation at the University of Alabama (Ogburn, Olga. Ph.D. *Urban Stormwater Contamination Associated with Gutter and Pipe Material Degradation*. Department of Civil, Construction, and Environmental Engineering at the University of Alabama. 2013). As part of her research, she also conducted controlled exposure tests of different materials to roof and parking lot stormwater and river and marine receiving waters under different pH conditions. The results of these tests are also briefly presented. Finally, material washdown tests were also performed as part research conducted in conjunction with Navy stormwater research with SPAWAR personnel in San Diego (Pitt, R. *The Use of WinSLAMM at Naval Bases to Predict Stormwater Pollutant Sources and to Identify Treatment Options*. U.S. Navy, NESDI, SPAWAR Systems Center Pacific, San Diego, CA 92152. February 17, 2014. 211 pgs.). The iron results from these tests are also briefly summarized.

Chemical Quality of Rocks and Soils

A general indication of the abundance of common elements in soils is shown in Table A1 (Lindsay l979). Almost half of typical soil material is oxygen and about a third is silica. Approximately seven percent is aluminum and four percent is iron.

Table A1. Common Elements in Soils (Lindsay 1979)

Abundance Rank	Element	Typical Minimum (mg/kg)	Typical Maximum (mg/kg)	Typical Average (mg/kg)
1	O	- -	- -	490,000
2	Si	230,000	350,000	320,000
3	Al	10,000	300,000	71,000
4	Fe	7,000	550,000	38,000
5	C	- -	- -	20,000
6	Ca	7,000	500,000	13,700
7	K	400	30,000	8,300
8	Na	750	7,500	6,300
9	Mg	600	6,000	5,000
10	Ti	1,000	10,000	4,000
11	N	200	4,000	1,400
12	S	30	10,000	700
13	Mn	20	3,000	600
14	P	200	5,000	600
15	Ba	100	3,000	430
16	Zr	60	2,000	300
17	F	10	4,000	200
18	Sr	50	1,000	200
19	Cl	20	900	100
20	Cr	1	1,000	100
21	V	20	500	100

Natural soils can contribute pollutants to runoff through erosion. Iron and aluminum are very high on this list and receiving water concentrations of these metals are not likely to be significantly affected by anthropogenic activities alone. Iron and aluminum can both cause detrimental effects in receiving waters if in their dissolved forms. Generally, a reduction of the pH substantially increases the abundance of these dissolved metals.

The values shown on this table are expected to vary substantially, depending upon the specific mineral types. Arsenic is mainly concentrated in iron and manganese oxides, shales, clays, sedimentary rocks and phosphorites. Mercury is concentrated mostly in sulfide ores, shales and clays. Lead is fairly uniformly distributed, but can be concentrated in clayey sediments and sulfide deposits. Cadmium can also be concentrated in shales, clays and phosphorites (Durum 1974).

Iron Contributions to Wet Weather Flows from Material Exposure

The material in the literature review and leach test sections are summarized from the research conducted by Ogburn (2013) as part of her dissertation research at the University of Alabama. This research was mostly funded by the National Science Foundation (grant no. EPS-0447675). The NSF project included tasks conducted at UA supporting the Center for Optical Sensors and Spectroscopies (COSS) at UAB's Department of Physics by applying emerging technologies to solve current environmental problems. This research showed that many of the heavy metals in stormwater could be related to material selection and that use of proper materials could result in decreased heavy metals in wet weather flows. This summary of her research only addresses findings associated with iron. Other heavy metals of interest in stormwater were also addressed in her original research.

Environmental Chemistry of Iron, Especially Associated with Corrosion

When exposed to the atmosphere, iron reacts and forms a reaction product commonly termed rust, having the approximate composition $Fe_2O_3*H_2O$. This is loosely attached to the material surface and does not form a protective barrier that isolates the metal from the environment. Hence, the reaction proceeds at a roughly linear rate until the metal is completely consumed. The following are brief descriptions of tools used to estimate the forms of iron in the environment related to pH and oxidation conditions.

Pourbaix (Eh-pH) Diagrams

Pourbaix diagrams display how pH and redox potential (Eh) influence the form of the metal (US EPA 2007). They show the different zones of corrosion, passivation, and immunity according to the redox potential and pH of the system (Degremont 1979). A given field is marked with the ion that is predominant within it, and a boundary is placed where the ion becomes equal to an adjacent prevailing ion (Garrels and Christ 1990). The solubility of most metal-containing minerals is greatest under acid conditions, decreasing with increasing pH. The location of measured values of oxidation potential and pH in aquatic systems can be seen on Figure A1 (US EPA 2007). The dashed lines depict the limits of measurements in natural environments. The main factors that control Eh are atmospheric oxygen and organic matter. High Eh (oxidizing or aerobic) conditions are found in the atmosphere, in most surface waters, and shallow soils in contact with atmospheric oxygen. The lowest Eh (reducing or anaerobic) conditions are observed in water-logged soils and sediments that contain organic matter and in groundwaters that contain a few mg/L or more of dissolved organic carbon (DOC). Intermediate Eh conditions are maintained in waters and sediments that are only partially oxidized due to their relative isolation from the atmosphere.

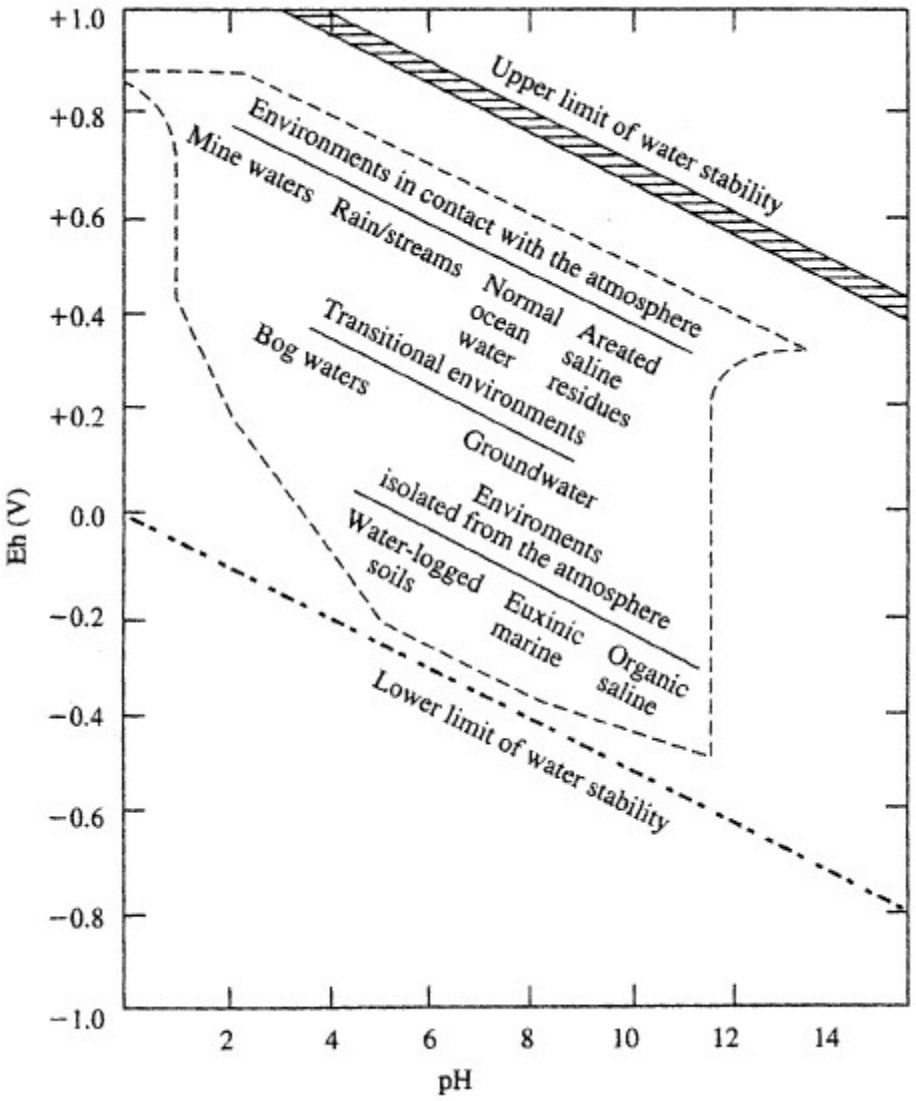


Figure A1. Estimated locations of some natural environments of Eh-pH diagram.
Source: US EPA (2007).

Eh-pH diagrams of metals in aqueous solutions are a valuable means of predicting the corrosion problems and regions of stable conditions. Eh-pH diagrams delineate the predominant area of each chemical or ionic species in aqueous solutions (Garrels and Christ 1990, Degremont 1979; Chen and Aral 1982). When a metal is submerged into an aqueous solution that contains various chemicals (such as oxygen, boric acid, sulfur compounds, chlorides, fluorides, etc.) corrosion problems frequently occur. Eh-pH diagrams of metals in aqueous solutions illustrate the equilibrium phases of a metal, its oxides, its ions, or metal compounds associated with the solution's components and are a valuable means of predicting corrosion problems. The use of such diagrams helps to avoid separate investigations of every combination of metal, solution, pH, and temperature in order to ensure that certain corrosion problems would not take place (Chen and Aral 1982).

The Pourbaix diagram for iron (Figure A2) shows that during favorable oxidizing and alkaline conditions, natural passivation (formation of natural protective film) is detected. The solubility of Fe^{2+} drops

significantly when pH increases, resulting in the formation of an insulating film of ferrous hydroxide and other oxides. This leads to an appreciable increase in the cathodic regions and the reduction of the anodic areas to very small surfaces. As the areas of the anodic regions decrease, the density of the corrosion current increases. As the pH approaches 10, the chance of perforating or pitting corrosion in the presence of oxygen decreases and, in most natural water, corrosion stops at pH 10.5 (Degremont 1979).

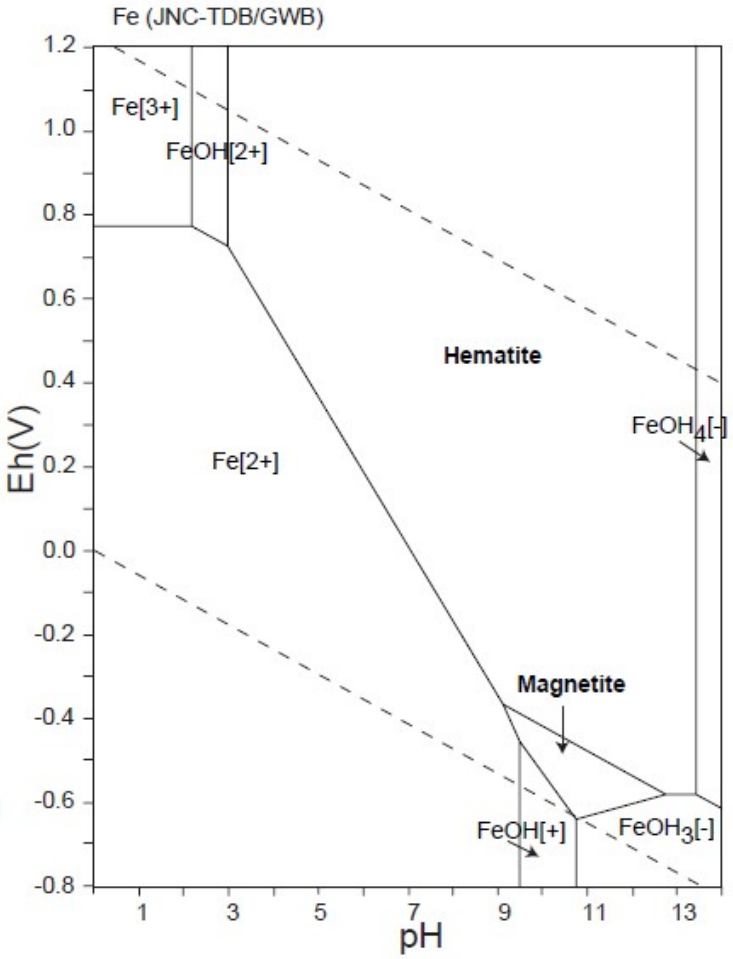


Figure A2. Eh-pH diagram of the system Fe-O-H. Σ Fe = 10^{-10} mole/kg, 298.15 K, 10^{5} Pa.

Phase (pC-pH) Diagrams

Phase (pC – pH) diagrams are useful in determining equilibrium concentrations of various species present in the solution and their total concentrations. These diagrams can be utilized to identify regions in which certain metal-containing species are predominant (Snoeyink and Jenkins 1980). These diagrams can also be used to show the predominant species and their concentrations in a given pH range (Snoeyink and Jenkins 1980). For example, Figure A3 (calculated by Ogburn 2013 using the water

chemistry program Medusa, http://www.kemi.kth.se/medusa/) for typical stormwater conditions) is a phase diagram of hydrolysis products of Fe (II). $Fe^{2+}$is the predominant species at pH values between 1 and 8.7. At pH values greater than 8.7, $Fe(OH)_2(c)$ precipitates. A $Fe(OH)_3^-$ complex forms at pH values greater than 11.4; and a $Fe(OH)_4^-$complex forms at pH values greater than 12.2.

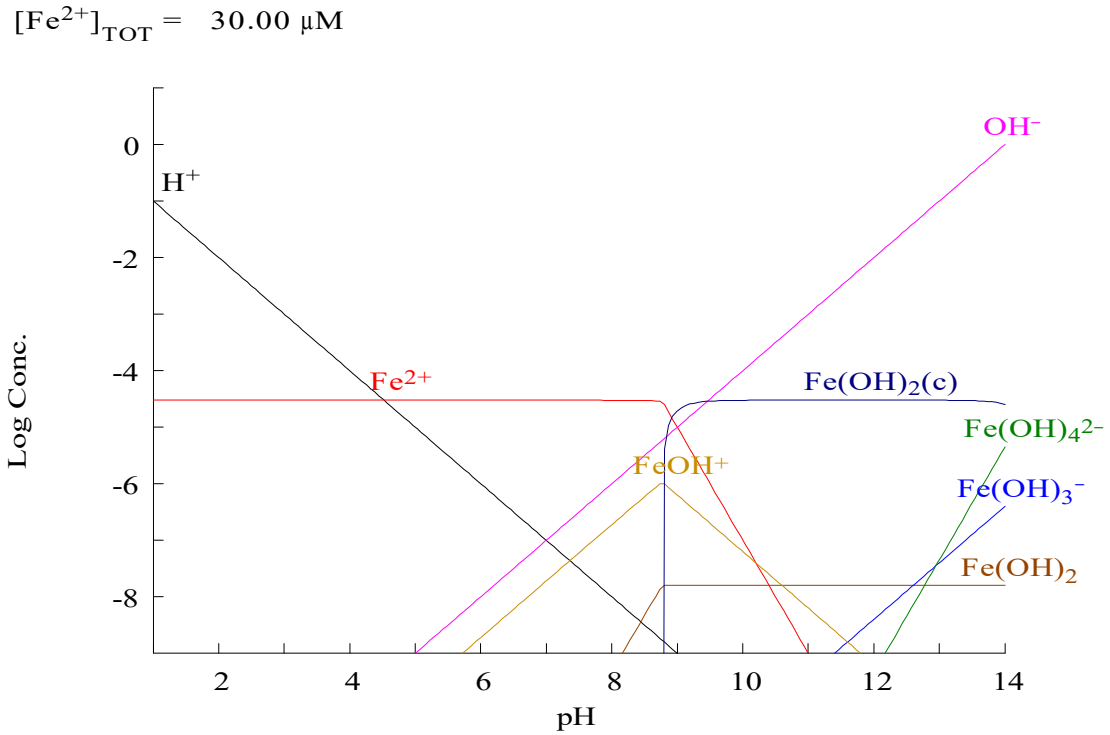


Figure A3. Phase diagram of hydrolysis products of Fe (II).

Literature Review: Iron Losses Associated with Exposure of Rooftop and Drainage System Materials to Rainfall and Stormwater

Roofing drainage systems are often made of metallic materials or may have metals as components, including aluminum, steel, zinc, and copper. Researchers have determined these heavy metals are common contaminants in roof runoff at potentially high concentrations (Clark, et al. 2008 a, b; Wallinder 2001; Pitt, et al. 1995; Förster 1996; Morquecho 2005; Tobiason 2004). The following are summary tables containing observed concentrations of iron from the different monitoring studies associated with material exposure.

Iron

The following table summarizes iron concentrations and runoff yields from different materials reported by various researchers.

Table A2. Iron Releases from Various Sources (Ogburn 2013)

Materials tested	Test conditions	Observed iron concentrations or runoff yields	Reference
Uncoated Galvanized Aluminum Roofing Materials			
Galvalume roofs	Pilot-scale. Austin, Texas	18 - 1690 µg/L during first flush, and 8.94 - 563.00 µg/L for later samples	Mendez, et al. (2011)
Coated Galvanized Aluminum Roofing Materials			
7-year-old Kynar®-coated Galvalume® roof	Full-scale. Austin, Texas	6.23 - 23.8 µg/L during first flush; 4.10 - 7.88 µg/L for later samples	Mendez, et al. (2011)
Other Roofing Materials			
Stainless steel	1 year field exposure. Stockholm, Sweden	10 - 200 mg/m^2/year	Wallinder, et al. (2002)
Carbon steel	(salt spray) Medellin, Colombia. 1 year test	1280 g/m^2/year mass loss	Corvo, et al. (2005)
Carbon steel	(salt spray) Havana, Cuba. 1 year test	Samples (2mm x100 mm x150 mm) completely destroyed by corrosion after 6 months of exposure	Corvo, et al. (2005)
Carbon steel	(natural conditions) Havana, Cuba. 1 year test	280 g/m^2/year mass loss	Corvo, et al. (2005)
Clay tile roof with 15-year old copper	Field test. Tuffenwies, Switzerland	Average 2.05 mg/m^2 per event	Zobrist, et al. (2000)

Table A2. Iron Releases from Various Sources (Ogburn 2013), continued

Drinking Water Distribution Systems (DWDS)			
2 weeks aged galvanized iron pipes after 72 h of contact time	Lab test	Avg. 0.7 mg/L	Lasheen, et al. (2008)

20 weeks aged galvanized iron pipes after 72 h of contact time	Lab test	Avg. 1.44 mg/L	Lasheen, et al. (2008)
2 weeks aged galvanized iron pipes after 72 h of contact time	pH = 6	Avg. 0.99 mg/L	Lasheen, et al. (2008)
20 weeks aged galvanized iron pipes after 72 h of contact time	pH = 6	Avg. 1.65 mg/L	Lasheen, et al. (2008)
2 weeks aged galvanized iron pipes after 72 h of contact time	pH = 8	Avg. 1.44 mg/L	Lasheen, et al. (2008)
20 weeks aged galvanized iron pipes after 72 h of contact time	pH = 8	Avg. 1.3 mg/L	Lasheen, et al. (2008)
Drinking Water Distribution System (asbestos, polyethylene, and iron pipes), after min of 6 hrs.	Zarrinshahr, Iran	Before DWDS 0.08 µg/L, after DWDS 0.71 µg/L	Shahmansouri, et al. (2003)
Drinking Water Distribution System (asbestos, polyethylene, and iron pipes), after min of 6 hrs.	Mobarakeh, Iran	Before DWDS 0.05 µg/L, after DWDS 0.85 µg/L	Shahmansouri, et al. (2003)
2 weeks aged PVC pipes after 72 h of contact time	Lab test	Avg. 0.058 mg/L	Lasheen, et al. (2008)
20 weeks aged PVC pipes after 72 h of contact time	Lab test	Avg. 0.07 mg/L	Lasheen, et al. (2008)

Table A2. Iron Releases from Various Sources (Ogburn 2013), continued

2 weeks aged PVC pipes after 72 h of contact time	pH = 6	Avg. 0.068 mg/L	Lasheen, et al. (2008)
20 weeks aged PVC pipes after 72 h of contact time	pH = 6	Avg. 0.08 mg/L	Lasheen, et al. (2008)
2 weeks aged PVC pipes after 72 h of contact time	pH = 8	Avg. 0.07 mg/L	Lasheen, et al. (2008)
20 weeks aged PVC pipes after 72 h of contact time	pH = 8	Avg. 0.06 mg/L	Lasheen, et al. (2008)
2 weeks aged polypropylene pipes after 72 h of contact time	Lab test	Avg. 0.06 mg/L	Lasheen, et al. (2008)

20 weeks aged polypropylene pipes after 72 h of contact time	Lab test	Avg. 0.07 mg/L	Lasheen, et al. (2008)
2 weeks aged polypropylene pipes after 72 h of contact time	pH = 6	Avg. 0.073 mg/L	Lasheen, et al. (2008)
20 weeks aged polypropylene pipes after 72 h of contact time	pH = 6	Avg. 0.083 mg/L	Lasheen, et al. (2008)
2 weeks aged polypropylene pipes after 72 h of contact time	pH = 8	Avg. 0.069 mg/L	Lasheen, et al. (2008)
20 weeks aged polypropylene pipes after 72 h of contact time	pH = 8	Avg. 0.06 mg/L	Lasheen, et al. (2008)

PVC, polypropylene, galvanized iron, clay tile, polyester, stainless steel, galvanized iron, and Galvalume® metal materials were found to release iron into runoff water. Exposure time had an effect on iron released from PVC, polypropylene, and galvanized iron materials. Greater iron runoff concentrations were observed for aged PVC, polypropylene, and galvanized iron pipes compared to new materials. As pH decreased, iron concentrations leaching from PVC, polypropylene, and galvanized iron, cast iron, and galvanized steel materials increased. High Cl^-/SO_4^{2-} ratios increased iron concentrations from PVC, polypropylene, and galvanized iron pipes. The mass loss of carbon steel is influenced by the frequency and the amount of rain and is proportional to the chloride deposition rate.

Iron Releases from Materials during Washdown Tests

SPAWARSYSCEN-PACIFIC Navy personnel conducted a series of material washoff tests as part of the Navy stormwater research project (Pitt 2014). The following pictures show the how these tests were conducted for several different types of materials. Generally, 2 to 4 L of DI water was gently sprayed over a known area (about 2 ft^2) with the wash water collected in a plastic tray. Each test lasted about 15 to 30 minutes. The wash water was then chemically analyzed for a suite of heavy metals. The 79 materials tested were sorted into the following 16 categories: aluminum ramps, artificial turf, brick wall, concrete, galvanized metal (bare), galvanized metal (painted), galvanized metal (coated), barge hull, metal (bare), metal (painted), plaster, roof, rubber, wood (bare), wood (painted), and wood (treated).

These data were evaluated in SigmaPlot (version 15) using the non-parametric Kruskal-Wallis one way analysis of variance on ranks to determine if at least one group is significantly different from any of the others (this test only examines single groups). These results were then used to group the groups into a fewer number of combined groups indicating materials that had low washoff concentrations, high concentrations, and the other categories. Box and whisker plots and Kruskal-Wallis analyses were also used to evaluate these categories. These data summaries, plots, and analyses were made for both the concentration and the unit area loading washoff data.

Galvanized shed, sides; NBK Bangor

Galvanized rail; SUBASE

Utility pole, galvanized; NB Kitsap

Sheath, over concrete barrier edge; Everett

Stairs, galvanized; Everett

Scaffold parts, galvanized; Pt. Loma Subase

Barge hull; Little Creek

Barge hull; Little Creek

Pipe, uncoated steel; Little Creek

Engine block; Saint Julian

Metal panel, uncoated iron, "weathered"; Bangor	

Table A3. Iron Washdown Concentrations (µg/L)

Fe (µg/L)	low	high	low	other	other	other	high	other	low	low	low	high	other
	Al ramp	artificial turf	brick wall	concrete	galv bare	galv painted	barge hull	metal bare	metal painted	roof	rubber	wood bare	wood treated
	78	769	90	227	71	480	5,995	373	16	281	59	1,135	269
					783	6		399	393	6	103		
					158			4	28		81		
					63			1,571	10				
					4				46				
					332				1,301				
					74				74				
					131				412				
					1,258				6				
									938				
									13				
									5				
									2				
Grouped Category for Iron:	low	high	low	other	other	other	high	other	low	low	low	high	other
Fe (µg/L)	Al ramp	artificial turf	brick wall	concrete	galv bare	galv painted	barge hull	metal bare	metal painted	roof	rubber	wood bare	wood treated
number	1	1	1	1	9	2	1	4	13	2	3	1	1
min					4	6		4	2	6	59		
max					1,258	480		1,571	1,301	281	103		
average					319	243		587	249	143	81		
median	78	769	90	227	131	243	5,995	386	28	143	81	1,135	269
st dev					425	335		680	418	194	22		
COV					1.3	1.4		1.2	1.7	1.4	0.3		

Table A4. Kruskal-Wallis One Way Analysis of Variance on Ranks (Fe concentrations)

Normality Test (Shapiro-Wilk)	Failed	(P < 0.050)			
Group	N	Missing	Median	25%	75%
low	20	0	66.461	10.813	236.464
others	12	0	144.818	64.608	443.176
high	3	0	1134.599	768.534	5995.28
H = 7.405 with 2 degrees of freedom. (P = 0.025)					

The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = 0.025)					
To isolate the group or groups that differ from the others use a multiple comparison procedure.					
All Pairwise Multiple Comparison Procedures (Dunn's Method) :					
Comparison	Diff of Ranks	Q	P<0.05		
high vs low	16.9	2.664	Yes		
high vs others	12.667	1.915	No		
others vs low	4.233	1.131	No		

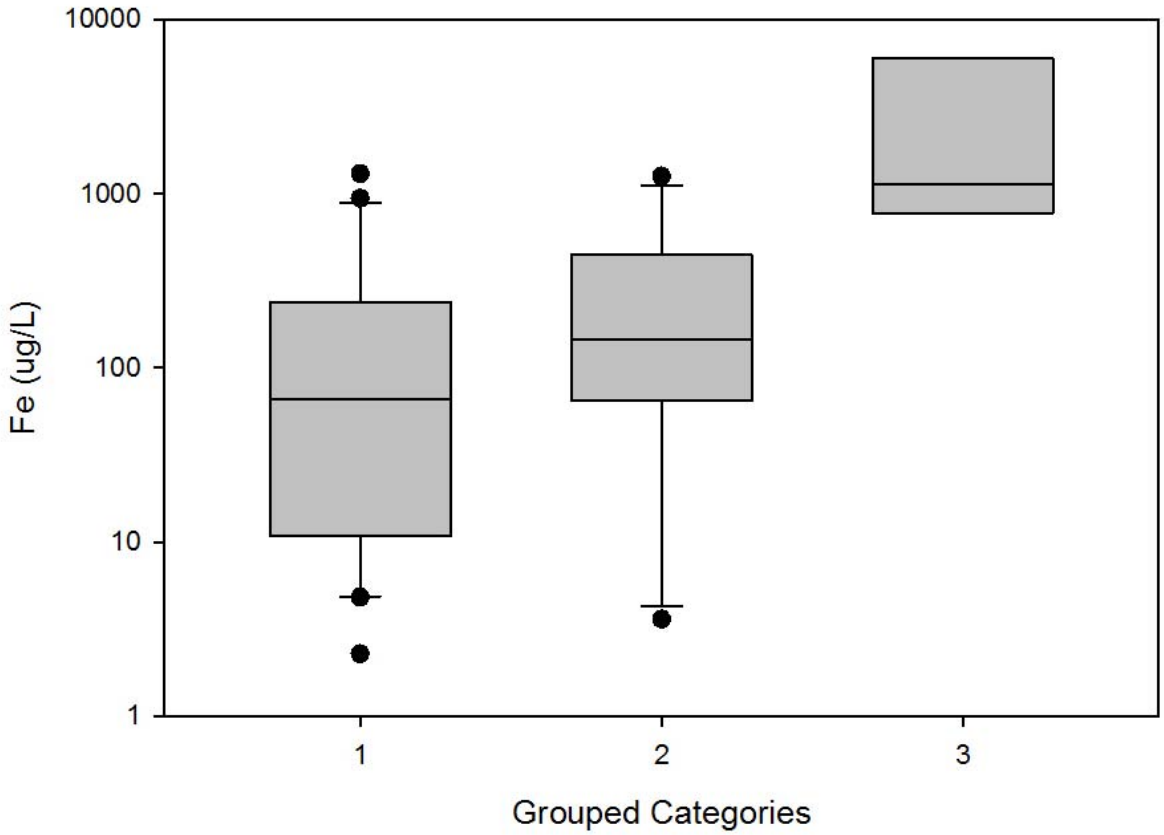


Figure A4.Iron concentrations for material groups.

Table A5. Summary Statistics for Iron Concentration Grouped Categories

Grouped category:	low	others	high
Sample Category in Groups:	Al ramp brick wall metal painted roof rubber	concrete galv bare galv painted metal bare wood treated	artificial turf barge hull wood bare
number	20	12	3
min	2	4	769
max	1,301	1,258	5,995
average	197	299	2,633
median	66	145	1,135
st dev	344	378	2,918
COV	1.7	1.3	1.1

Table A6. Iron Washdown Mass (µg/ft^2)

	low	other	low	other	other	other	high	other	low	low	low	high	other
	Al ramp	artificial turf	brick wall	concrete	galv bare	galv painted	barge hull	metal bare	metal painted	roof	rubber	wood bare	wood treated
	157	727	85	286	267	372	5,673	471	15	199	56	1,074	254
					741	6		378	949	6	165		
					150			5	26		76		
					190			1,882	10				
					3				110				
					839				3,282				
					212				70				
					265				2,078				
					1,191				5				
									710				
									30				
									5				
									2				
	low	other	low	other	other	other	high	other	low	low	low	high	other
	Al ramp	artificial turf	brick wall	concrete	galv bare	galv painted	barge hull	metal bare	metal painted	roof	rubber	wood bare	wood treated
number	1	1	1	1	9	2	1	4	13	2	3	1	1
min					3	6		5	2	6	56		
max					1,191	372		1,882	3,282	199	165		
average					429	189		684	561	103	99		
median	157	727	85	286	265	189	5,673	424	30	103	76	1,074	254
st dev					397	259		824	1,018	137	58		
COV					0.9	1.4		1.2	1.8	1.3	0.6		

Table A7. Kruskal-Wallis One Way Analysis of Variance on Ranks (Fe mass)

Normality Test (Shapiro-Wilk)	Failed	(P < 0.050)			
Group	N	Missing	Median	25%	75%
low	20	0	73.065	11.011	190.947
others	18	0	276.548	179.659	730.653
high	2	0	3373.324	1073.614	5673.034
H = 8.140 with 2 degrees of freedom. (P = 0.017)					
The differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference (P = 0.017)					
To isolate the group or groups that differ from the others use a multiple comparison procedure.					
All Pairwise Multiple Comparison Procedures (Dunn's Method) :					
Comparison	Diff of Ranks	Q	P<0.05		
high vs low	21.35	2.463	Yes		
high vs others	14.056	1.613	No		
others vs low	7.294	1.921	No		
Note: The multiple comparisons on ranks do not include an adjustment for ties.					

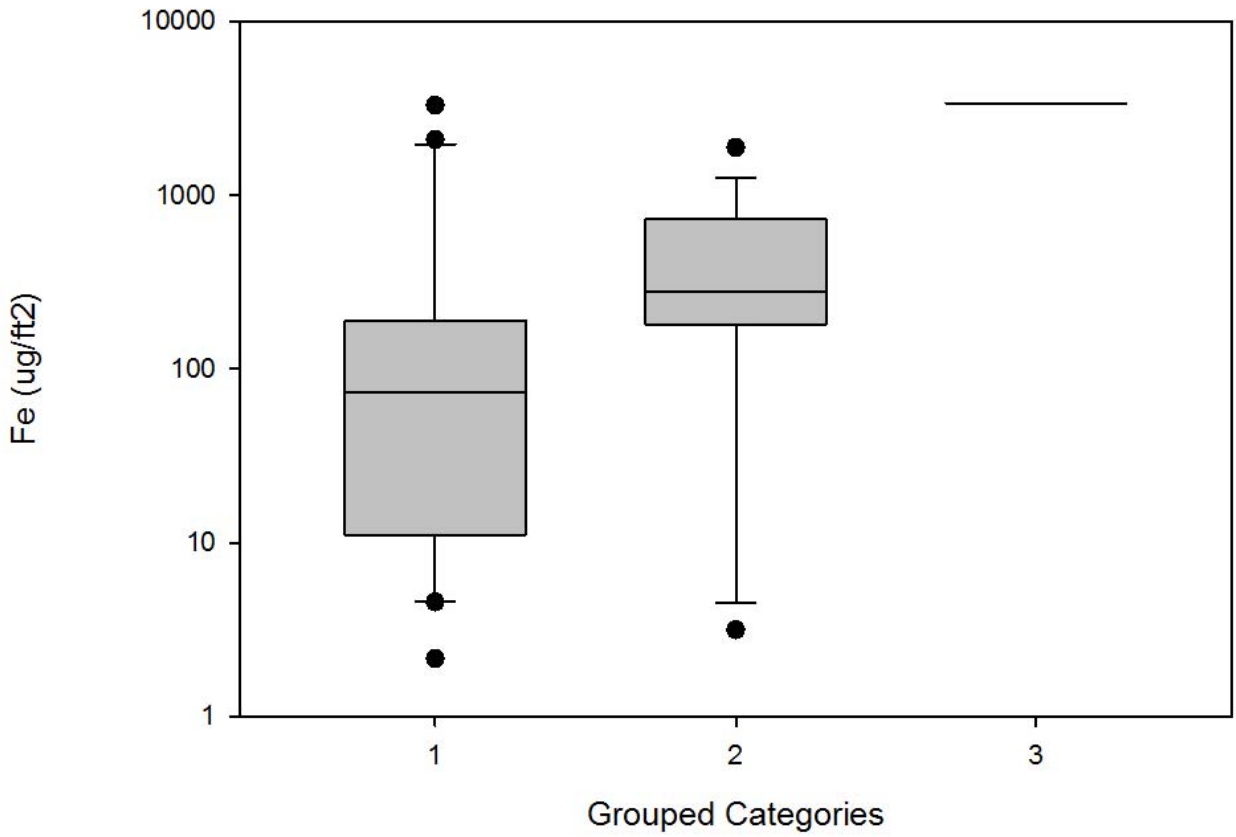


Figure A5. Iron releases for material groups.

Table A8. Summary Statistics for Iron Mass Grouped Categories (µg/m^2)

Grouped Category:	low	others	high
Sample Categories in Groups:	Al ramp brick wall metal painted roof rubber	artificial turf concrete galv bare galv painted metal bare wood treated	barge hull wood bare
number	20	18	2
min	2	3	1,074
max	3,282	1,882	5,673
average	402	458	3,373
median	73	277	3,373
st dev	840	477	3,252
COV	2.1	1.0	1.0

Summary of Washoff Tests

Due to the varying number of observations for the different material categories, some of the test statistics are incomplete, but they do enable the identification of the types of materials of greatest interest. Table A9 summarizes the "low," "other," and "high" categories for each sample type and metal. In almost all cases, the concentration and mass washoff categories are the same; for the few that differ, the differences are not large (low/other or other/high). Most of these groupings are obvious and as expected, such as the bare galvanized metal being the highest category for zinc, and the aluminum ramp being the highest for aluminum. Other findings are interesting and potentially important, such as:

- Aluminum ramp high for aluminum (as expected)
- Artificial turf high for zinc and possibly high for iron, possibly due to recycled rubber tire crumbles used to support artificial grass leaves
- Bare galvanized metal high for zinc (as expected)
- Painted galvanized metal high for zinc, and high for aluminum and lead (the aluminum and lead are higher than for bare galvanized materials, likely due to the metal primers or paints; coated galvanized metals were much lower for all metals)
- Barge hull high for zinc, copper, and iron, possibly associated with anti-fouling paints (for zinc and copper) and the hull material (for iron)
- Bare wood high for aluminum and iron
- Treated wood high for copper (as expected)

High contributions of aluminum and iron are not closely related for any of these sources (as they are in soil), except for bare wood.

Table A9. Summary of Washdown Tests for Various Materials

	Al ramp	artificial turf	brick wall	concrete	galv bare	galv painted	galv coated	barge hull	metal bare	metal painted	plaster	roof	rubber	wood bare	wood painted	wood treated
Zn conc	low	high	low	other	high	high	low	high	other	other	low	other	other	other	low	other
Zn mass	low	high	low	low	high	high	low	high	other	other	low	other	other	other	low	other
Cu conc	low	other	low	low	other	other	other	high	other	other	low	low	other	other	other	high
Cu mass	others	others	low	low	others	low	others	high	others	others	low	low	others	others	others	high
Al conc	high	other	other	other	other	high	n/a	other	other	low	n/a	other	low	high	n/a	other
Al mass	high	other	other	other	other	high	n/a	other	low	low	n/a	other	low	high	n/a	other
Fe conc	low	high	low	other	other	other	n/a	high	other	low	n/a	low	low	high	n/a	other
Fe mass	low	other	low	other	other	other	n/a	high	other	low	n/a	low	low	high	n/a	other
Cd conc	other	other	other	other	other	other	n/a	other	other	other	n/a	other	other	other	n/a	other
Cd mass	other	other	other	other	other	other	n/a	other	other	other	n/a	other	other	other	n/a	other
Pb conc	other	other	low	other	other	high	n/a	other	other	low	n/a	low	other	other	n/a	low
Pb mass	other	other	low	other	other	high	n/a	other	other	low	n/a	low	other	other	n/a	low

Exposure Tests of Materials in Stormwater under Varying pH and Conductivity Conditions

The primary objective of this research was to examine how different drainage system and tank materials, water chemical characteristics, and exposure times affect contaminant losses during controlled tests examining the expected range of these characteristics. Static leaching tests for eight pipe and gutter materials were conducted over two separate three month periods during which pipe and gutter test materials were exposed to roof runoff and stormwater buffered to pH 5 and 8 and for exposure to different salinity conditions. A suite of heavy metal and nutrient constituents were periodically analyzed during the exposure periods. Also, pH, Eh, toxicity, alkalinity, total and calcium hardness, chloride and sulfate analysis were evaluated.

Iron releases from galvanized steel materials exceeded those from other materials and were greater under pH 5 conditions than under pH 8 conditions. At pH 5 the releases ranged between 6 mg/L and 22 mg/L (260 mg/m^2 and 850 mg/m^2) and around 1 mg/L (<45 mg/m^2) at pH 8. Iron releases from the galvanized steel specimens submerged into bay and river water were between 1 and 2 mg/L (<66.49 mg/m^2) and were similar to iron releases at pH 8 values. Iron concentrations leached from concrete pipes in bay water (>2 mg/L; 68.3 mg/m^2) were greater than those in river water (<1 mg/L; 25 mg/m^2).

Table A10 summarizes particulate and filterable iron fractions during natural pH tests. After three months of exposure during natural pH tests, iron in containers with PVC and HDPE pipes and with vinyl and aluminum gutters were associated predominantly with dissolved fraction (70% and greater), while iron in containers with the rest of the materials were mainly associated with particulates. These are in contrast to the very high particulate fractions of iron found in runoff from background sites.

Table A10. Filterable and particulate fractions of iron in natural pH waters after three months of exposure (Ogburn 2013)

Water	Material	% Filterable Fe	% Particulate Fe
Bay	Concrete Pipe	29	71
	PVC Pipe	90	10
	HDPE Pipe	84	16
	Steel Pipe	49	51
	Vinyl Gutter	92	8
	Aluminum Gutter	88	12
	Steel Gutter	41	59
	Copper Gutter	43	57
River	Concrete Pipe	18	82
	PVC Pipe	73	27
	HDPE Pipe	77	23

	Steel Pipe	6	94
	Vinyl Gutter	69	31
	Aluminum Gutter	70	30
	Steel Gutter	19	81
	Copper Gutter	16	84

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